

THE BASICS FOR UNDERSTANDING: QASSAMS, SCUD MISSILES TO CRUISE MISSILES, DRONES TO UAVs AND CBRN WARFARE



Security Briefing: The Basics For Understanding: Qassams, Scud Missiles to Cruise Missiles, Drones to UAVs and CBRN Warfare (Chemical, Biological, Radiological and Nuclear) . This Security Briefing is for those that has little to none knowledge on the subject matters. However there is plenty recent research in these fields which would be inviable to professionals.



This Briefing facilitates a more thorough insight towards understanding the magnitude of the deadly threat of these weapons and CBRN. This is a primer for understanding SCUD missiles, Kassam Rockets, cruise missiles, UAVs, solid-fueled, liquid-fueled, hyper-sonic, subsonic, and stealth capabilities."

Israel Center of the Storm: Asymmetrical Rocket Warfare and State sponsors of terrorism. Such states do not have to

declare war upon their opponent, fight through a proxy and can strike where, when and how at their own choosing. In the age of Asymmetrical Rocket Warfare, the tiny state of Israel

is in the center of this storm. This Security Briefing is laced historical backdrops from Israel's 1973 War to Saddam Hussein, Hezbollah to Hamas and more.

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The Basics for Understanding: Qassams, Scud Missiles to Cruise Missiles, Drones to UAVs and CBRN Warfare

INTRODUCTION: Asymmetrical Rocket Warfare as Air Power: The first priority in air operations is to gain command of the air,

"To bend the enemy's will, one must put him in intolerable circumstances; and the best way to do that is to attack directly the defenseless population of his cities and great industrial centers. It is as sure as fate that, as long as such a direct method of attack exists, it will be used"

"With command of the air, one's own air force is free to operate whenever and wherever it desires, while the enemy's air arm is rendered permanently helpless. The enemy then has no effective defense against the ensuing air attacks."

"A complete breakdown of the social structure cannot but take place in a country subjected to this kind of merciless pounding from the air. The time will soon come when, to put an end to the horror and suffering, the people themselves, driven by the instinct of self-preservation, would rise up and demand an end to the war,"

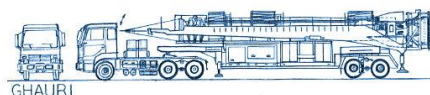
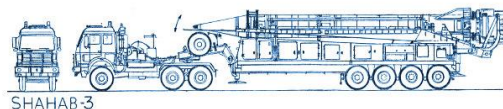
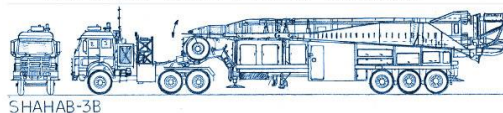
"All future conflicts would be unrestrained, total wars. No longer should there be a distinction between belligerents and nonbelligerents: when a nation is at war, everyone takes part. Wars are won by crushing the resistance of the enemy--an action that can be accomplished more easily, faster, more economically, and with less bloodshed by attacking the weakest points in that resistance, namely, the vital centers (cities) and civilian morale"

General Giulio Douhet (30 May 1869 - 15 February 1930) was an Italian general and air power theorist. He was a key proponent of strategic bombing in aerial warfare. He was a contemporary of the 1920s air warfare advocates Walther Wever, Billy Mitchell and Sir Hugh Trenchard

The Command of the Air B Y Giulio Douhet Translated By Dino Ferrari Air Force History And Museums Program Washington, D.C. 1998 <http://www.afhso.af.mil/shared/media/document/AFD-100924-017.pdf>

Modern Nations rely on major industrial and economic infrastructure productivity for the society and their armed forces. From basic medical services to cultural day to day normal activities and well being are critical elements. Disruption of these critical elements and systems undermines both the ability and will to fight in a prolonged conflict, resulting in political paralysis. Though Command of the Air Paradigm by Giulio Douhet was directed to manned aircraft as a tool for modern war, his concept concerns the high ground of the sky as geo-strategy to conduct warfare. Asymmetrical Rocket Warfare is the new unrestricted carpet bombing. Radical militant Islamist consideration type of target selection process is like any conventional military organization, it is methodical, structured around strategic and tactical goals. Even with random undirected rocket fire into Israeli communities, with limited damage and casualties has tremendous unrecognized repercussions not only for Israel, but Western Nations as well. The western cultural mindset does not understand how a group could attack a building full of innocent people such as in 9/11, a city bus or a street side café with a suicide bomber, nor the 4/15 Boston marathon bombings, because it goes against our cultural norms. Terrorists and their state sponsors follow their own ideology to determine acceptable behavior and legitimacy of targets. They are searching for an end and are willing to go to extremes to refashion the world in their image. The early visionaries and proponents made great claims for air power; basic concept was bombers could reach their targets and destroy them. Today cruise missiles are the leading new air power, as first seen in the 1991 & 2003 Gulf Wars against Saddam Hussein. Following them are the emerging UAV strike vehicles.

Understanding Missile Threats - CBRN In The Mid-East Crisis



SCUD & Cruise Missiles, Drones to Qassams, What are they, how do they work ?

The tiny Nation of Israel is under constant rocket attacks and the current unrecognized air battlefield arena. Among the missiles fired into Israel from Gaza by Hamas and other terrorist entities during Operation Pillar of Defense in November 2012 was the Fajr-5 missile, with a range of 46.6 miles (75km) which reached as far as Tel Aviv. The "home made" M75 missile with a range of 80 kilometers (about 50 miles) produced in Gaza by Hamas, These rockets were fired for the first time and reached as far as Rishon Lezion. These rockets were made with parts shipped from Iran to Gaza. Today no part of Israel is free of from the threat rocket strikes.

The Fourth goal of air power according Giulio Douhet was collapsing the enemy internally rather than physically destroying him. Targets would include such things as the population's support for the war and the enemy's culture." *By taking the war to the people and generating unrest within a society a small group can make a large group do what they want*".

Support for asymmetrical rocket warfare from State sponsors of terrorism, such as the Islamic Republic of Iran, Syria and North Korea is perfectly suited for them because they do not have to declare war upon the opponent and can strike where and when they want. All the planning, prepositioning forces and execution of an assault can be accomplished before the opponent realizes what is going on. A good example again is the 2012 when Israel was attacked for the first time by long range rockets like the M-75 with a range of up to 80 kilometers (about 50 miles). The Low risk high return is reflected in international political paralysis, where an opponent can only wage war on the proxies and not their sponsors. This guide is to a very complex subject which is at the center of the Middle East crisis. This chapter is intended to facilitate a more thorough insight to understand the magnitude of the deadly threat of these projectiles and CBRN. The rich terminology in this field varies from SCUD missiles, Kassam Rockets, cruise missiles, solid-fueled, liquid-fueled, hyper-sonic, sub-sonic, and stealth capabilities. Do these missiles only travel in a straight line? And can they be launched from a submarine or an aircraft?

A diversity of charts, glossaries and further tools will be expanded to help the reader through this missile maze. In order to facilitate the reader's task, a glossary terms will be readily available in small side charts.

In addition I will touch on the missile payloads: Can they carry biological, chemical warfare agents and what about nuclear? It's noteworthy to keep in mind that depending on a country's technological and financial resources, these missile weapons even though they may have similar structure and name, they can have vastly different military potential. For instance, a country's SCUD missile could carry a nuclear warhead while another country would not be able to do the same based on their technological and economic capabilities. Also individual countries often obscure their military missile arsenal's potency for secrecy reasons. The reader will be taken through the maze of technological procurement, from such sources as China, Russia, North Korea, Europe and even America. This tour will also touch International military/nuclear/ tech- black-markets, just enough to shed some light on that shadowy world. A source, bibliography, including some free downloads will be available.

Glossary: I have placed it after the introduction. I recommend reading it now, and become familiar with these abbreviations, acronym and terms. In addition

A Free 300 Page Glossary * downloadable missile glossary from the Federation of American Scientists

<http://www.fas.org/news/reference/glossary.pdf>

WW II German Rocket which evolved into the SCUD Missile



V-2 Ballistic Missile

Glossary

Ballistic Missile: A missile that travels unpowered and unguided after being launched and at a velocity such that it will follow a flight trajectory to its target. Part of the flight of longer-range ballistic missiles may occur outside the atmosphere and involve the "reentry" of the missile

BAMBI: Ballistic Missile Boost Intercept

BMD: Ballistic Missile Defense. Refers to any species of systems designed to destroy ballistic missiles.

Biological weapons: Organisms such as bacteria or virus that causes disease used to incapacitate or kill, the most lethal substance known to man

Boost Phase: section of the trajectory of a ballistic missile or space vehicle in which the booster engine and sustainer engine operate, occurs directly after lift-off, for an ICBM it lasts 3-5 minutes and ends at an altitude of about 200 kilometers

CEP: Circular Error of Probability: Measures the expected accuracy of a weapon system, in which 50% of warheads will hit the target, represented by the radius of the circle surrounding the targeted area.

Chemical weapons: non explosive chemical agents that include choking, blood and nerve agents.

C3I: Command, Control, Communications, and Intelligence systems

Conventional forces: Armed troops that operate weapons such as tanks, artillery, and tactical aircraft but do not operate nuclear weapons or other weapons using kinetic energy

Conventional weapons: weapons including aircraft, tanks, and artillery that use non-nuclear explosives or kinetic energy to hit targets

Counterproliferation: Effort by military to stop proliferation, including the application of military power to protect forces and interests, intelligence collection, and analysis.

Crisis instability: Small events or minor conflicts causing large disturbances or major conflicts within the internationally

Deterrence: The actions of a state to dissuade an opponent from initiating an attack or conflict by threatening equal or worse retaliation. As the term is usually used, however, it applies especially to the use of purely offensive actions or rather capabilities for such dissuasion.

Export control arrangements: treaties, agreements, or laws that restrict the sale of goods to certain countries that are applied to the export and sale of certain types of technologies and materials. The Missile Technology Control Regime is of this sort (MTCR).

Extended deterrence/Nuclear umbrella: Process involving security through military protection from a nuclear power. The country under the nuclear umbrella would then be protected from nuclear attack or threat

GBI: Ground Based Interceptor

GBR: Ground Based Radar

Gimbaled:

GPALS: Global Protection Against Limited Strikes

ICBM: Inter-continental Ballistic Missile

INF: Intermediate-Range Nuclear Forces Treaty

IMU: Inertial Measurement Unit

IRBM: Intermediate range ballistic missile

Kinetic weapons: High-speed projectiles that are non-explosive; may have homing devices

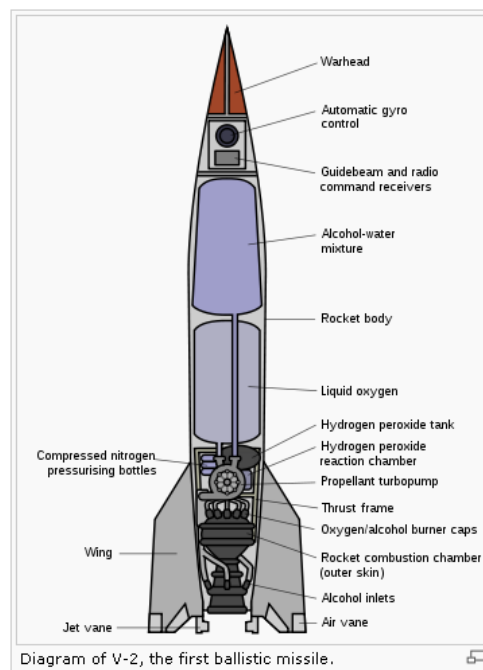
Land-based missile systems: missile systems located on land in hardened bunkers, underground silos or on mobile launchers. The positions of the mobile land-based missile systems can change, rendering the missiles less vulnerable.

Layered BMD system: A ballistic missile defense system that consists of several sets of defensive interceptors that operate against incoming ballistic missiles at different phases during the missile's flight. There could be a first layer of defense during the boost phase with remaining targets passed on to later phases including midcourse and the terminal phase. The Bush Administration uses the terms "BMD" or "layered BMD". "TMD" and "NMD" were phrases preferred by the Clinton Administration.

MAD: Mutually Assured Destruction

MAR: Multi Functional Phased Array Radar

Megaton: A unit of measure of explosive power of an atomic weapon that has the equivalence of one million tons of TNT.



Midcourse Phase:

MIRV: Multiple Independently-targetable Re-entry Vehicle is an offensive ballistic missile system with multiple warheads, each of which can strike a separate target and can be launched by a single booster rocket.

MRBM: Medium Range Ballistic Missile

MTCR: Missile Technology Control Regime

NATO: North Atlantic Treaty Organization

NIE: National Intelligence Estimate

Nodong: Name for a series of theater ballistic missiles being developed by North Korea.

Nonproliferation: Prevention of the spread of weapons of mass destruction.

Nuclear Deterrence: to have a country realize the catastrophic consequence of launching a nuclear attack by having the willingness and ability to counter attack with nuclear weapons.

NMD: National Missile Defense. The phrase national missile defense has been around for as long as the debate has existed, but came to prominence about during the distinction between "national" and "theatre" missile defense (TMD) which rose in prominence during the Clinton administration. Three of the four laws passed by congress were titled "National Missile Defense Act" of their respective years. In George W. Bush's NSPD 23 of December 2002, the artificial distinction between theatre and national missile defense was explicitly rejected. National missile defense has always meant the sort of capabilities necessary for defending the American population at large. However, during the Clinton years it acquired a more sophisticated meaning relating to the speed of the missiles a particular system could intercept. A TMD interceptor could intercept missiles with shorter ranges which had a reentry speed of no greater than 5km/sec. Anything over that was considered "NMD." The relation of this to the real world was that any ICBM launched by Russia or China would be traveling much faster, around 7km/sec. National Missile Defense thus became a euphemism for any system which threatened to defend against Russian and Chinese ballistic missile threats.

NPT: Nonproliferation Treaty

Preemptive strike: Attack launched to destroy a country's weapons in order to eliminate the threat of those weapons being used in an attack against an enemy. Orders to launch a preemptive strike would be given after intelligence data has been received and analyzed. If the data indicate that an adversary is preparing for a nuclear attack, a preemptive strike could be undertaken to stop (or 'blunt') the nuclear attack.

Proliferation: fast growth or spread of weapons and weapon technology to other countries

Ratification: The implementation of the formal process established by a country to legally bind its government to a treaty, such as approval by parliament. In the United States, treaty ratifications require approval by the president after he has received the advice and consent of two-thirds of the Senate. The country then submits the required legal instrument of ratification to the treaty's depositary governments.

Road mobile: A road mobile missile is one which is launched from a rail or truck launcher. Because these may be moved they may be more easily hidden from prior targeting. Russia has maintained several ICBMs which are mobile launched.

Rogue states: Sometimes called "states of concern," so-called rogue states are countries regarded as hostile to the United States and its allies and suspected of developing or deploying WMD including North Korea, Libya, Syria, Iran and Iraq. In contemporary discourse, they are those which do not fit into the "rational actor" model underlying concepts of deterrence such as mutually assured destruction (MAD). The existence of irrational rogue states is an embarrassment to rational actor models of purely offensive deterrence, such as Mutually Assured Destruction (MAD).

RV: Reentry Vehicle

Silo-based:

Strategic ballistic missile:

SBIR: Space Based Infra Red.

SBL: Space Based Laser

SCUD:(AKA Scud) Name for a class of short-range ballistic missiles originally developed by the Soviet Union in the 1950s and subsequently transferred to many other countries.

SDI: Strategic Defense Initiative. the name given to the program launched by President Reagan in 1983 for the research and development of ballistic missile defenses. It has subsequently renamed the Ballistic Missile Defense Organization, and then the Missile Defense Agency in 2002.

Shahab: Name for a series of theater ballistic missiles under development in Iran. Also spelled Shehab. silo: Hardened underground facility for housing and launching a ballistic missile and designed to provide pre-launch protection against nuclear attack

Taepo Dong: Name for a series of theater ballistic missiles under development in North Korea. The most advanced versions of this series may have sufficient range to strike Alaska, Hawaii, and parts of the western United States.

Tactical nuclear weapons: Short-range nuclear weapons, such as artillery shells, bombs, and short-range missiles, deployed for use in battlefield operations.

Targeting: Use of computer code to determine the location where a missile will strike. Computer code cannot be observed by the adversary and, therefore, it is difficult to verify whether de-targeting pledges have been implemented.

TEL: Transporter Erector Launcher

Terminal-phase: The final phase of a warhead's trajectory when it re-enters the earth's atmosphere and strikes the target.

THAAD: Terminal High Altitude Area Defense is the U.S. Army's air defense program designed to collide with the target ballistic missile. The interception is intended to occur outside the earth's atmosphere, or high in the atmosphere.

Theater missile: Short-range delivery system (missile) with a range of 1,000 kilometers or less.

Theater missile defense: Theater Missile Defense is a system of missile interceptors designed to destroy shorter-range ballistic missiles aimed at deployed troops or overseas facilities. The ABM Treaty prohibited NMD but allowed defenses against shorter-range missiles. The Clinton Administration tried to separate TMD and NMD. The Bush Administration, planned on withdrawing from the ABM Treaty, and therefore eliminated the distinction between NMD and TMD combined both programs into a layered ballistic missile defense.

Tactical ballistic missile: is a ballistic missile designed for short-range battlefield use. Typically range is less than 300 kilometers (190 mi). Tactical ballistic missiles are usually mobile to ensure survivability and quick deployment, as well as carrying a variety of warheads to target enemy facilities, assembly areas, artillery, and other targets behind the front lines. Warheads can include conventional high explosive, chemical, biological, or nuclear warheads. Typically tactical nuclear weapons are limited in their total yield compared to strategic rockets.

TEL: Transporter Erector Launcher

Thermonuclear weapon: Also called a hydrogen bomb, it is a nuclear weapon in which fusion of light nuclei, such as deuterium and tritium, is responsible for the majority of explosive energy. The high temperatures needed for such fusion reactions are obtained by means of an initial fission explosion.

Triad: The strategic force structure that has nuclear weapons deployed on intercontinental ballistic missiles, submarines, and aircraft.

Unauthorized launch: The accidental or unintended launch of nuclear missiles, usually in the sense that a particular nation's normal hierarchy did not authorize or intend it.

WMD: Weapons of Mass Destruction. The phrase first came into usage to refer to nuclear weapons, but is now regularly applied to chemical and biological weapons as well.

Yield: The amount of energy released by a nuclear explosion, generally measured in equivalent tons of TNT

Cruise Missiles

Glossary for Cruise Missiles

Active Radar — A terminal phase guidance method in which a cruise missile emits its own radar signal, and then homes in on the energy reflected off the target.

Anti-Ship Cruise Missile (ASCM) — A type of cruise missile designed to strike sea-based targets ranging from small craft to aircraft carriers. ASCMs normally use radar and/or heat-seeking sensors to find and strike their targets.

Autonomous Target Acquisition (ATA) — A terminal phase guidance method in which a cruise missile can find locate and attack a target completely autonomously. Target data is not necessarily preloaded, as in the case of Digital Scene Matching Area Correlation (DSMAC).

Booster Rocket — A liquid- or solid-fuelled rocket that provides the initial thrust in a cruise missile launch from land or sea. After the booster burns out, thrust is provided by a sustainer motor, usually a jet engine.

Canard Stabilizer — A horizontal airfoil mounted in front of the main wing on a cruise missile. It reduces the lift-induced drag of the wing, and lowers the overall drag of the missile.

Circular Error Probability (CEP) — A simple measure of a cruise missile's precision. It is defined as the radius of a circle into which the missile will land at least half the time.

Cruise Missile — A guided missile, the major portion of whose flight path to its target is conducted at an approximately constant velocity. It depends on the dynamic reaction of air for lift and upon propulsion forces (usually a jet engine) to balance drag. It is distinct from a ballistic missile, which follows a ballistic trajectory. A cruise missile can be launched from an aircraft, ship, submarine, or from land, and can be armed with a conventional or nuclear warhead.

Datalink — A means of connecting one location to another for the purpose of transmitting and receiving data. In cruise missiles, the datalink is used to send command and control signals and receive telemetry.

Delta Wing — A wing configuration in the shape of a triangle, named after the Greek uppercase delta (letter). The primary advantage of the delta wing design is that the wing's leading edge remains behind the shock wave generated by the nose of the cruise missile when flying at supersonic speeds.

Digital Scene Matching Area Correlation (DSMAC) — A navigation system that compares terminal phase area imagery with preloaded satellite imagery that the cruise missile carries in its memory.

Global Positioning System (GPS) — A U.S. navigation system consisting of more than 24 satellites that allows a cruise missile to accurately determine its location in any weather, day or night, anywhere on Earth.

Global Navigation Satellite System (GLONASS) — A Russian navigation system similar to the U.S. Global Positioning System (GPS). Like GPS, the complete GLONASS constellation consists of 24 satellites allowing a cruise missile to accurately determine its location in any weather, day or night, anywhere on Earth.

Electronic Jamming — The deliberate radiation or reflection of electromagnetic energy for the purpose of disrupting enemy use of electronic devices or systems.

Forward-Swept Wings — A wing configuration, consisting of wings located further back on the body that angle forward (rather than backward as is the case with conventional-swept wings). Forward-Swept wings allow for increased maneuverability at supersonic speeds.

Fragmentation Warhead — A warhead that is designed to expel a large amount of shrapnel upon explosion.

Hypersonic Speed — A speed greater than Mach 5.0.

Imaging Infra-red Seeker (IIS) — A terminal phase guidance method in which a cruise missile can recognize the heat-based image of its target.

Infra-red (IR) — A terminal phase guidance method in which a cruise missile homes in on the heat emitted from its target.

Inertial Navigation System (INS) — A guidance system that measures a cruise missile's acceleration in all three axes to determine its displacement from its launch point, and that determines its position. It is immune to electronic jamming.

Joint Direct Attack Munition (JDAM) — A "smart" bomb fitted with a tail control system and a Global Positioning System-aided inertial navigation system (INS).

Kiloton (KT) — An explosive force equivalent to that of 1,000 metric tons of TNT. It is used to rate the energy output, and hence the destructive power, of nuclear weapons.

Land-Attack Cruise Missile (LACM) — A type of cruise missile designed to strike land targets ranging in size from individual buildings to entire cities. LACMs are usually equipped with Global Positioning System and terrain-matching navigation systems that allow them to fly low-altitude, terrain-following, defense-evading paths.

Launch Phase — The initial phase of a cruise missile's trajectory, during which the missile is guided by its inertial navigation system (INS).

Liquid Propellant — Any liquid combustible fed to the combustion chamber of a rocket engine.

Mach Number — The ratio of a cruise missile's speed to the speed of sound (344 meters per second, 1,238 kilometers per hour). Objects with a speed of less than Mach 1.0 are known as "subsonic." Objects with a speed of greater than Mach 1.0 are known as "supersonic." Objects with a speed of greater than Mach 5.0 are known as "hypersonic."

Megaton (MT) — A unit of explosive force equal to that of 1,000,000 metric tons of TNT. It is used to rate the energy output, and hence the destructive power, of nuclear weapons.

Midcourse Phase — The second phase of a cruise missile's trajectory. During this phase, the missile is powered by a sustainer motor, usually a jet engine. It is guided by its inertial navigation system (INS) updated by one or more of the following systems: a radar-based terrain matching system, a radar or optical scene matching system, or a Global Positioning System-type satellite system.

Non-Nuclear Electromagnetic Pulse (EMP) Warhead — A payload designed to generate a non-nuclear electromagnetic pulse, which releases a high-intensity, short-duration burst of electromagnetic energy that can cripple electronic equipment within a certain radius.

Passive Radar — A guidance method in which a cruise missile detects and homes in on enemy radar emissions.

Penetration Warhead — A warhead that is designed to penetrate hardened targets, such as bunkers.

Precision Terrain Aided Navigation (PTAN) — A navigation system for cruise missiles currently in development by the U.S. that uses a worldwide digital database with radar maps.

Ramjet Engine — A newer type of cruise missile engine that contains no major moving parts and is ideally suited for high speed flight trajectories.

Sea-Skimming Trajectory — A low-level cruise missile trajectory, about 10 m above sea level. A warship under attack can only detect a sea-skimming missile when it emerges over the horizon at a distance of 15 to 25 nautical miles (28 to 46 km), which translates to only 25 to 60 seconds of warning time.

Stealth Technology — A range of techniques used by cruise missiles to make them less visible or invisible to radar and other detection methods. Stealth technology includes changing the shape of the missile body to minimize radar reflections, moving the minimize the infra-red signature.

Solid Propellant — A rocket propellant in solid form, combining both fuel and oxidizer in the form of a compact, cohesive grain.

Submunitions — Small bomblets contained in a larger warhead. Their primary purpose is to kill enemy infantry and vehicles, although submunitions have been designed for anti-runway, anti-armor, and mine-scattering purposes.

Subsonic Speed — A speed lower than the speed of sound (Mach 1.0; 344 meters per second, 1,238 kilometers per hour).

Supersonic Speed — A speed greater than the speed of sound (Mach 1.0; 344 meters per second; 1,238 kilometers per hour).

Sustainer Motor — A motor, usually a jet engine, that powers the cruise missile during its midcourse and terminal phases.

Tailplane — The fixed horizontal airfoil of a cruise missile's tail assembly.

Television Imaging (Electro-Optical Imaging) — A navigation system for cruise missiles in which an electro-optical seeker scans a designated area for targets via optical imaging. Once a target is acquired, the missile will lock on to it for the kill. TV imaging does not depend on a target's heat signature, and thus can be used against low-heat targets. The system, however, has the drawback that the target must be "seen" by the missile, which limits its range of action.

Terminal Phase — The third and final phase of a cruise missile's trajectory. The terminal phase begins when the missile enters the target area and uses either more accurate terrain-matching guidance technology, or a terminal seeker (usually an optical or radar-based seeker).

Terrain Contour Matching (TERCOM) — A navigation system for cruise missiles that uses an on-board contour map of the terrain over which the missile flies over. TERCOM "sees" the terrain it is flying over using its radar system and matches it to an internally stored ground-map.

Terrain Profile Matching (TERPROM) — A navigation system for cruise missiles that uses stored digital elevation data combined with navigation system and radar altimeter inputs to compute the location of the aircraft or missile above the surface of the earth.

Thermobaric Warhead — A warhead that expels a cloud of explosive mist using a small charge and then ignites it with a second charge, thus producing greater explosive energy. Thermobaric warheads are also known as a fuel-air munitions, heat and pressure weapons, or vacuum bombs.

Transporter-Erector-Launcher (TEL) — A ground vehicle capable of carrying and firing one or more cruise missiles.

Turbofan Engine — A newer type of cruise missile engine, similar to a turbojet. It consists of a ducted fan with a smaller diameter turbojet engine mounted behind it that powers the fan. Part of the air stream from the ducted fan passes through the turbojet where it is burnt to power the fan, but the majority of the flow bypasses it and produces most of the thrust.

Turbojet Engine — An older type of cruise missile engine consisting of a turbine-driven compressor that expels hot gases and produces a high velocity jet in the exhaust plume. The momentum of the exhaust stream propels the missile forward.

PHASES OF BALLISTIC MISSILE TRAJECTORY



The Basics for Understanding: Qassams, Scud Missiles to Cruise Missiles, Drones to UAVs and CBRN Warfare

Ballistic Missiles:

Ballistic Missiles Follow A Three-Phase Flight Plan First is the powered-flight or "boost" phase, during which a rocket engine (or series of rocket engines) puts the missile on a particular trajectory. Finding the right trajectory is crucial. The engine will soon shut down, and gravity will take over. Once the missile "goes ballistic", moving only with momentum and the force of gravity there isn't much anyone can do to steer it.

Next comes the free-flight or "midcourse" phase, when the missile coasts along, generally above the Earth's atmosphere. During this phase, the warhead (or other missile payload) often separates from the rest of the missile. Today's highest-tech missiles can even release multiple warheads, placing each on its own ballistic trajectory.

Last comes the re-entry or "terminal" phase, when the missile--or at least the warhead--falls back through the atmosphere and down to its target on Earth. Gravity does the work here, and does it well. Impact speeds for an ICBM warhead can reach 9,000 miles per hour (14,500 km/h). [1]

Scud Ballistic Missile : Scud is the NATO reporting name (not an acronym) for the former Soviet army short-range liquid propellant surface-to-surface ballistic missile, the SS-1. The Makeyev OKB Design Bureau developed it from the German V2 in the 1950s. Variants were the -B (SS-1C) in 1961 and the -C (SS-1D) in 1965, both of which could carry either a conventional high-explosive, a 5 to 80 kiloton nuclear, or a chemical warfare agent warhead. The SCUD-D (SS-1E) variant developed in the 1980s can deliver a conventional high-explosive warhead, a fuel-air warhead, 40 runway-penetrator sub-munitions, or 100 x 5 kg anti-personnel bomblets. All models are 11.25 meters long (except Scud-A, which is one meter shorter) and 0.88 meters in diameter. They are propelled by a single engine burning either kerosene or nitric acid in the Scud-A. The name "Scud" is also used to refer to an Iraqi modification of the same missile. Altered for greater range, it came to particular prominence during the Gulf War, when a number of missiles were fired at Israel and Saudi Arabia. The US-made Patriot missile system claimed successes in shooting down the missiles, but many critics claim that the accuracy of the Patriot missiles has been greatly exaggerated.

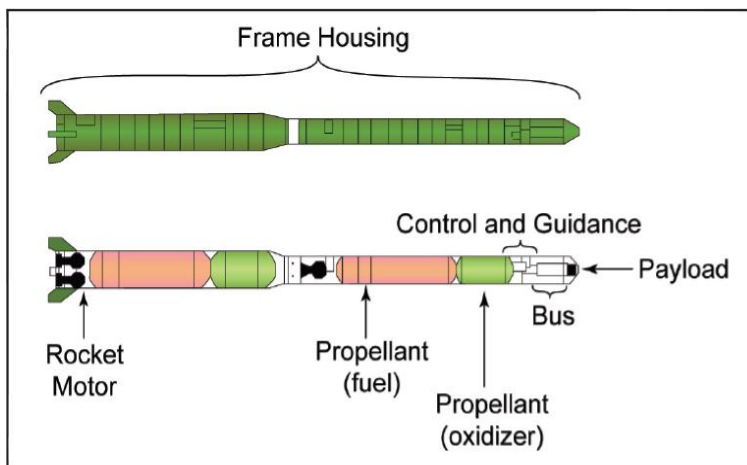


The missiles were one of Iraq's most threatening offensive weapons, especially to Israel. There was great concern that they would be armed with chemical or biological warheads. All "Scud" versions derive from the German V-2 rocket (just like the majority of early American missiles and rockets) and are very inaccurate due to their construction. The Iraqi modifications increased range, at the cost of accuracy. [2]

1). The Stages of a Ballistic Missile's Flight <http://www.missilethreat.com/overview/pageID.157/default.asp>
2). information Paper Iraq's Scud Ballistic Missiles Released July 25, 2000
<http://www.iraqwatch.org/government/US/Pentagon/dodscud.htm>

Propulsion

Missile propulsion involves combining fuel and an oxidizer in a combustion chamber, in which chemical reactions produce a high-pressure, high temperature gas. Exhausting that gas produces a thrust that propels the missile. Ballistic missiles can use solid or liquid propellant rocket propulsion systems. In general, liquid systems are somewhat more powerful than solid systems because liquid fuels and oxidizers that yield more energy. The advantage of solid propellant systems is that they are rugged, easily stored, transportable, and have no moving parts. Modern missile systems tend towards the use of solid propellants because of their simplicity of operation and reduced logistical requirements. Yet, other countries have better access to liquid propellant technology and therefore continue to develop new liquid propellant missiles. [3]



Ballistic Missile Components

Liquid-fueled Missile

A liquid-fueled rocket has both a fuel and an oxidizer often a pressurized and super cooled liquid which are housed in separate insulated tanks. Both are mixed in a precisely controlled ratio by a complex system of pipes, valves, and pumps into a combustion chamber. Powerful these liquid-fueled rocket motors generate high thrust-to-weight ratios which are an important in the rockets ability to deliver heavy payloads over distances or up into space. A key indicator of a rocket's performance is a liquid propellant.

When liquid-fueled ballistic missiles are made road-mobile by deployment aboard transporter-erector-launcher vehicles, they are accompanied by fuel trucks rather than pre-loaded in order to prevent accidental explosion. This, consequently, increases the amount of time needed to ready and fire liquid-fueled missiles. This is a disadvantage in combat situations, or employing a pre-empted strike. [4]

Solid-Fuel Advantages	Solid-Fuel Disadvantages	Liquid-Fuel Advantages	Liquid-Fuel Disadvantages
Very stable, durable	Can't be turned off- once the burn starts, it goes until fuel is used up.	Variable thrust- the amount of fuel and rate of burn can be changed in flight	Fragile, many complex parts
More thrust for a similar size rocket	Fuel decomposes, must be replaced.	Liquid-fuel boosters are more easily re-usable	Oxidiser (liquid oxygen) must be kept extremely cold.

3). NASA - Rocket my.nasa.gov/worldbook/rocket_worldbook_prt.htm

4). Ballistic Missile Technology 101 Rocket Fuel AUG 8, 2012 <http://csis.org/blog/ballistic-missile-technology-101-rocket-fuel>

Rocket / Missile: *A missile is self-guided object used as a weapon, generally using rockets or jet engines for propulsion. Missiles usually have explosive warheads. A rocket is simply the mechanism or device for propelling an object, an explosive warhead, space ship, missile, or other objects. I use both terms interchangeably.*

Tehran's Shahab-3 can take an hour or more to prepare for launch. Due to the difficulty and cost associated with handling and storing cryogenic oxidizers necessary with earlier-generation liquid propellants to maintain their consistency as liquids – hypergolic fuels, which can be stored as liquids at standard temperatures and pressures, were developed. Due to these properties, hypergolic fuels are often referred to as storable liquid propellants.



Shahab-3 IRBM

The Iranian Shahab-3 is a single-stage, liquid-fueled, road-mobile, medium-range ballistic missile with a range of approximately 800 miles (1,280 km). A MRBM variant, sometimes called Shahab-4, has a range of more than 1,200 miles (1,930 km). Shahab-3 is capable of carrying a one ton (1,000-760 kilogram) warhead.

Hypergolic fuels react together without the need for an external ignition system, which allows the rocket to be fired, stopped, and restarted simply by controlling the flow of the propellants to the combustion chamber. Being able to throttle the thrust generated by the engine provides much greater control over the flight to the operators. This allows for emergency shutdowns in the event of leaks or other accidents. Hypergolic fuels are reliable, however even these advanced liquid propellants are highly toxic, notoriously unstable and explosive. Nonetheless, liquid-fueled rockets are highly efficient and continue to be used in both fledgling missile programs and even advanced space programs. [5]

Solid-fueled Missile, unlike liquid-fueled rockets, the reaction of solid-propellants cannot be slowed or stopped once it has been ignited the burn rate is solely determined by the composition of the propellant. Although this makes solid-fueled rockets ill-suited for sudden course changes, the use of lofted or depressed trajectories can permit solid fuel rockets to reach a wider range of targets than a typical minimum energy trajectory would allow. While solid fueled missiles are less expensive, they do not have the lift and power capabilities as hypergolic fuels. In a solid rocket fuel the propellant and oxidizer are mixed together as a single synthetic polymer, called the propellant grain. This grain is molded to give the desired length of burn and amount of thrust. Solid-fueled Missiles require fewer components and enjoy greater safety and stability over long periods of storage than their liquid-fueled equivalents. In addition to its other benefits, once the process of developing the propellant has been accomplished, solid rocket fuel is fairly inexpensive to create. [6]



5.) Shahab-3 <http://www.fas.org/programs/ssp/man/militarysumfolder/shahab-3.html>

6.) Ballistic Missile Technology 101 Rocket Fuel AUG 8, 2012 <http://csis.org/blog/ballistic-missile-technology-101-rocket-fuel>

Solid propellant missiles can be stored and transported while already fueled and can be launched very quickly, leaving them less vulnerable during launch preparations.

The successful development of solid-fueled rockets is a significant achievement in ballistic missile design. The International Institute for Strategic Studies has called Iran's shift to solid-fueled ballistic missiles "a turning point" with "profound strategic implications" because this technological advancement will greatly aid Iran in the development and deployment of true long-range missiles. [7]

- ***With solid fuel rockets, nuclear weapons can sit ready to launch for years without significant maintenance. Liquid fueled missiles are generally easier to develop and manufacture at smaller scales, but their high maintenance cost and vulnerability to first-strike attacks limits their usefulness.***

Fears over the survivability of one's nuclear arsenal and the nuclear force posture of launch on warning necessitated the development and deployment of advanced solid-fueled missiles during the Cold War Era.

- 🇮🇷 ***Tehran is engaged in a solid propellant, multi-stage strategic range ballistic missile program.***

The Islamic Republic of Iran developing additional MRBM/IRBM (Intermediate Range Ballistic Missiles) most importantly the solid fueled Sejil that could form the backbone of a strategic missile force that would allow Iran to conduct more effective strikes against population centers and area targets throughout the region, and deliver Chemical, Biological and Nuclear weapons on distant targets. Future development in the MRBM/IRBM field is likely to be concentrated in solid-fueled designs.[8]

Tehran's Missile Capabilities & Forces are covered extensively in the following chapters:

CHAPTER 3: *Armed Forces of The Islamic Republic Of Iran Artesh-IRIA, & The Islamic Revolutionary Guard Corps – IRGC*

CHAPTER 5: *The Two Naval Branches of the Islamic Republic Of Iran* CHAPTER 8: *The Deadly Capabilities of the Missile and Drone Forces of Iran*

Iran "has developed a robust and capable solid-propellant production industry, complete with facilities, equipment and most importantly indigenous technical know-how" and that no longer will the Islamic Republic be held hostage to foreign suppliers for its strategic delivery capabilities, except for the need to import navigation and guidance units for its missiles." The study forecasts that a three-stage version of the solid-propellant Sejil (Sejil) missile capable of delivering a one-ton warhead a distance of 2,299 miles (3,700 kilometers) is "at least four or five years away from possible deployment" and could therefore be expected as soon as 2015. The implications are that the prospects of a near-term Iranian missile threat to Europe cannot be dismissed and that tightening export controls may not be effective in diminishing those prospects.

**Arms Control
Today » January/February
2012 Showcase of Missile
Proliferation: Iran's Missile
and Space Program Uzi Rubin
armscontrol.org/**

7.) IISS Strategic Dossier on Iran's Ballistic Missile Capabilities: A net assessment 2010 By Dr John Chipman www.iiss.org

8) US/Gulf-Iran Completion: Gulf Military Balance – II The Missile And Nuclear Dimensions Ninth Edition By Anthony H. Cordesman, Michael Gibbs, Bryan Gold, And Alexander Wilner page 15 November 24, 2012 www.csis.org



As with some other missiles, the military advantage of this weapon consists in its ease of transportation, on a TEL vehicle (transporter-erector-launcher). This

mobility allows for a choice of firing position and increases the survivability of the weapon system (to such an extent, that of the approximately 100 launchers claimed destroyed by coalition pilots and special forces in the 1991 Gulf War, *not a single destruction could be confirmed afterwards*.

The late Saddam Hussein's Iraq developed four versions: Scud, longer-range Scud, Al Hussein, and Al Abbas SCUD Missile versions. The SCUD missile is set upon a mobile 9P117 8x8 truck, which made it difficult for Allied aircrews and special forces to zero in on their locations (SCUD crews would launch their missiles and immediately move to a new location).[9]

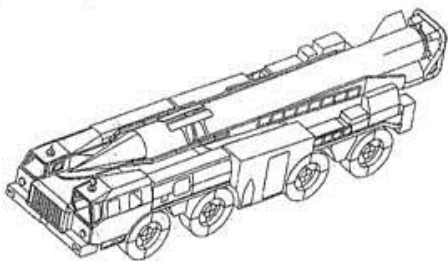
BALLISTIC MISSILES ARE CLASSIFIED BY THEIR RANGE AS FOLLOWS:

SRBM = Short-range ballistic missile, 70-1,000 km (43-620 mi.)

MRBM = Medium-range ballistic missile, 1,000-3,000 km (620-1,860 mi.)

IRBM = Intermediate-range ballistic missile, 3,000-5,500 km (1,860-3,410 mi.)

Transporter-Erector-Launcher (TEL)



A transporter erector launcher (TEL) is a vehicle with an integrated prime mover that can carry, elevate to firing position and launch one or more missiles. Such vehicles exist for both surface-to-air missiles and surface-to-surface missiles. Early such missiles were launched from fixed sites and had to be loaded onto trucks for transport, making them more vulnerable to attack since once they were spotted by the enemy they couldn't easily be relocated, and if they were it often took hours or even days to prepare them for launch once they reached their

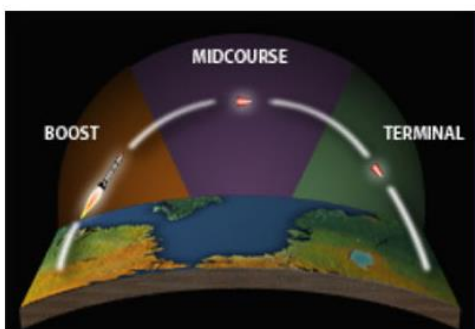
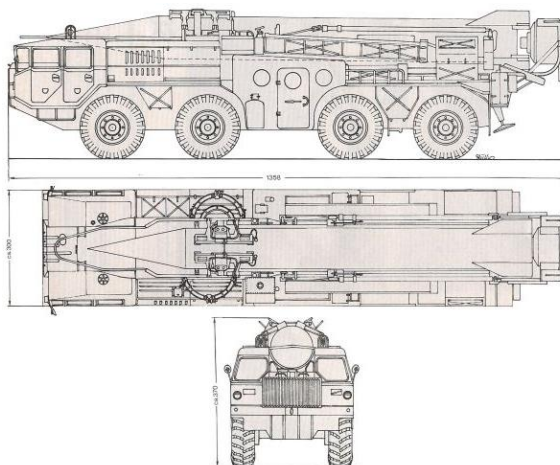
new site. A transporter erector launcher and radar (TELAR) is the same as a TEL but also incorporates part or all of the radar system necessary for firing the missile(s). Such vehicles have the capability of being autonomous, greatly enhancing their effectiveness. With this type of system each vehicle can fight regardless of the state or presence of support vehicles. The TEL or TELAR may have a rotating turntable that it can use to aim the missiles. The vehicle may have to turn to aim the missiles or they may fire straight up. Conversely, a transporter launcher and radar (TLAR) is the same as a TELAR without the erector capability (presumably because the missile does not need to be erected for launch).

Usually a number of TELs and TELARs are linked to one Command post vehicle (CP or CPV). They may utilize target information from Target acquisition, designation and guidance radar (TADAGR) or, simply, TAR. These vehicles can be wheeled or tracked. Various types not only launch Scud missiles but cruise missiles as well. [4] Scud missile (including derivatives) is one of the few ballistic missiles to be used in actual warfare, second only to V2 in terms of combat launches (Tocka-U being the only other ballistic missile fired "in anger"). Besides the aforementioned 1991 Gulf War, Scud missiles were used in several regional conflicts, most prominently by Soviet forces in Afghanistan, and by the Iranians and the Iraqis in so called "War of the cities". The latter occurred in 1988, when in response to Iranian missile strikes against Baghdad, Iraq fired 190 Scud missiles at Iranian cities including Tehran. These strikes resulted in thousands of deaths and widespread panic in Iran, perhaps resulting in a more favorable peace treaty for Iraq. [10]

9). Scud B SS-1 ground-to-ground mobile medium range ballistic missile <http://www.armyrecognition.com/>

10). IBID3

There was also a small number of SCUD ballistic missiles were used in the 1994 civil war in Yemen and by Russian forces in Chechnya in 1996. The missile itself is measured at 11.25m (36.9 ft) with a weight of 5,600kg (5.6 tons). The warhead consisted of a single payload measured at roughly 985kg and could be armed with conventional, nuclear or chemical armaments. The SCUD ballistic missile is normally propelled by a single-stage liquid booster and has an overall range of 300km (186.4 miles). Once the rocket motor would give out, the missile system became completely unguided making the weapon extremely inaccurate. Missile programs of Pakistan, North Korean and Iran have been reported to use the Soviet Scud-based technology to produce battlefield missiles capable of reaching up to 1,500km in range (932 miles). Add this range with the potent ability to deliver a payload of explosive, chemical, biological or even nuclear warheads and these armies gain a certain tactical advantage on the battlefield. There are variety of SCUD Ballistic Missiles, each with vary degrees of capability. As Iran, North Korea, and the former Saddam Hussein's Iraq worked to improve the SCUD lethal capacities'. [11.]



A typical ballistic missile flight plan

A ballistic missile is a missile that follows a sub-orbital ballistic flight path with the objective of delivering one or more warheads to a predetermined target. The missile is only guided during the relatively brief initial powered phase of flight and its course is subsequently governed by the laws of orbital mechanics and ballistics. To date, ballistic missiles have been propelled during powered flight by chemical rocket engines of various types. A ballistic missile trajectory consists of three parts: the powered flight portion, the free-flight portion which constitutes most of the flight time, and the re-entry phase where the missile re-enters the Earth's atmosphere.

Ballistic missiles can be launched from fixed sites or mobile launchers, including vehicles (transporter erector launchers, TELs), aircraft, ships and submarines. The powered flight portion can last from a few tens of seconds to several minutes and can consist of multiple rocket stages.

When in space and no more thrust is provided, the missile enters free-flight. In order to cover large distances, ballistic missiles are usually launched into a high sub-orbital spaceflight; for intercontinental missiles the highest altitude (apogee) reached during free-flight is about 1200 km. The re-entry stage begins at an altitude where atmospheric drag plays a significant part in missile trajectory, and lasts until missile impact. [12]

11). Report Ballistic Trajectory The Evolution Of North Korea's Ballistic Missile Market Joshua Pollack http://cns.miis.edu/npr/pdfs/npr_18-2_pollack_ballistic-trajectory.pdf

12). Intercontinental Ballistic Missiles <http://www.fas.org/nuke/intro/missile/icbm.htm>

Some seventeen countries are produce ballistic missiles: the United States, France, Russia, China, North Korea, South Korea, Taiwan, India, Pakistan, Iran, Iraq, Israel, Egypt, Syria, Ukraine, Brazil and Argentina. More are on their way. When a country has a missile production facility, its ability to produce large quantities of missiles is limited only by its ability to obtain certain critical materials and components. When a country acquires a large number of missiles and launchers, it may be able to launch sustained attacks and to overwhelm existing and planned missile defense systems. Production and research facilities also enable these regional powers to enhance the range, accuracy, destructiveness, and penetration aids of their missiles. Another important factor is that countries with an indigenous missile production capability also avoid export control restrictions when trying to import missiles and missile technology from outside sources. Finally, once a country produces missiles it can consider exporting them as well as the production technology to still more countries for financial, political, or ideological rewards.

Emerging ballistic missile states such as Iran, Syria, Pakistan and North Korea continue to increase the range, reliability, and accuracy of the missile systems in their inventories. This poses ever greater risks to US forces, and allies throughout the world. A decade ago, US and allied forces abroad faced threats from SRBMs—primarily the Scud and its variants. Today, countries have deployed or are on the verge of deploying MRBMs, placing greater numbers of targets at risk.

Proliferation of ballistic missile-related technologies, materials, and expertise— especially by Russian, Chinese, and North Korean entities—has enabled emerging missile states to accelerate the development timelines for their existing programs, acquire turnkey systems to gain previously non-existent capabilities—in the case of the Chinese sale of the M-11 SRBM to Pakistan—and lay the groundwork for the expansion of domestic infrastructures to potentially accommodate even more capable and longer range future systems.

13) NASIC-1031-0985-09 Ballistic and Cruise Missile Threat National Air And Space Intelligence Center Wright-Patterson Air Force Base

Chemical & Biological Chemical & Biological



Weapons are attractive to many Third World countries because they are much easier to produce than nuclear weapons. Many countries with chemical and biological warfare programs also are equipped with ballistic and/or cruise missiles. Accuracy is not very important for these weapons when used against urban areas or large concentrations of military forces. Chemical & biological weapons are capable of producing massive casualties, inducing panic and chaos in civilian populations, and severely degrading military operations. Nearly all countries that reportedly have or are seeking nuclear biological or chemical weapons also have ballistic missiles. Elements in North Korea, Russia, China, India, Pakistan, and other countries continue to export weapons technology. The potential for secondary proliferation markets has grown and concern about the ability of individual actors like the Pakistani nuclear scientist, A.Q. Khan, (more on this later) to peddle nuclear technology has grown considerably.(a)

(a)Nuclear, Biological and Chemical Weapons & Missiles: Status & Trends Congressional Research Service CRS 20 Feb. 2008

The ballistic missile remains a central element in the military arsenals of nations around the world. States willingly devote often scarce resources in efforts to develop or acquire ballistic missiles; build the infrastructures necessary to sustain future development and production; and actively pursue technologies, materials, and personnel on the world market to compensate for domestic shortfalls, gain increased expertise, and potentially shorten development timelines.

As missiles and missile production technology have become internationally available, the demand for ever longer-range missiles with nuclear, biological, and chemical warheads have increased. Because of their relatively low cost, ability to penetrate defenses, strike deep into an enemy's homeland, and to deliver nuclear or biological weapons that could threaten the survival of an enemy country, missiles have become a delivery system of choice and a symbol of national might.

- Ballistic and cruise missiles can be armed with conventional or nonconventional warheads. Conventional warheads are filled with a chemical explosive, such as TNT, and rely on the detonation of the explosive and the resulting metal casing fragmentation as kill mechanisms.
- Nonconventional warheads include weapons of mass destruction (nuclear, biological, and chemical weapons), as well as nonlethal warheads. Conventional, biological, and chemical weapons can be packaged in unitary (single) warheads and in submunitions (multiple small bomblets) that are released at altitude to disperse over a wide area.

Conventional warheads can be optimized for specific types of targets. For example, submunitions can be used to create craters in an aircraft runway or destroy armored vehicles. A penetrator warhead, which uses a relatively small amount of explosive surrounded by a heavy metal casing, can pass through a hardened structure such as a bunker to destroy its contents.

In many short-range ballistic missiles, the entire missile remains intact until the warhead detonates. In longer range ballistic missiles, warheads are contained in separating reentry vehicles. Some long-range ballistic missiles carry multiple independently targetable reentry vehicles (MIRVs), with up to 10 reentry vehicles (RVs) per missile. RVs reenter the Earth's atmosphere at very high velocities, on the order of 4-5 miles per second (6 to 8 KM) at ICBM ranges. . In many short-range ballistic missiles, the entire missile remains intact until the warhead detonates

Almost all of the longer range ballistic missiles and several types of cruise missiles carry a nuclear warhead. Ballistic missiles can use solid- or liquid-propellant rocket propulsion systems. The trend in modern missile systems has been toward the use of solid propellants because of their reduced logistical requirements and simplicity of operation. However, some Third World nations have greater access to liquid propellant technology and therefore continue to develop new liquid-propellant missiles.

14). Intercontinental Ballistic Missiles <http://www.fas.org/nuke/intro/missile/icbm.htm>



The nuclear warheads mounted on modern long-range ballistic missiles are usually thermonuclear warheads having yields in the range of several hundred kilotons to several megatons. (One kiloton equals the explosive power of one thousand tons of the chemical explosive TNT; one megaton is equivalent to a million tons of TNT.) Those nations that do not possess nuclear weapons mount conventional-explosive warheads on their ballistic missiles. [15]

Ballistic Missiles Can Be Composed Of One Or More Stages Multiple-stage missiles, which are configured so that each stage has its own independent propulsion system, are used for longer range missions. Intercontinental ballistic missiles (ICBMs) typically have two or three stages with powerful liquid-propellant engines or solid propellant motors that propel the payload toward the target, as well as a post-boost vehicle (PBV) with a much smaller propulsion system. The technology needed to separate each of the stages in high velocities and under difficult atmospheric conditions is relatively sophisticated and difficult. That is why there are only few countries with intercontinental-range ballistic missile technology.

Multiple-Stage Missiles, with each stage having its own independent propulsion system, are more efficient for longer range missions. ICBMs typically have two or three stages, with powerful liquid-fuel propellant engines or solid-fuel propellant motors to propel the payload toward its target, in addition to a post-boost vehicle (PBV) with a much smaller propulsion system. A post-boost vehicle can be used to improve the RV deployment accuracy for a single-RV missile. For a missile with a MIRV payload (ballistic missile system with multiple warheads) the PBV is used to release reentry vehicles so that they follow different trajectories, allowing them to hit targets that may be separated by over a thousand miles.

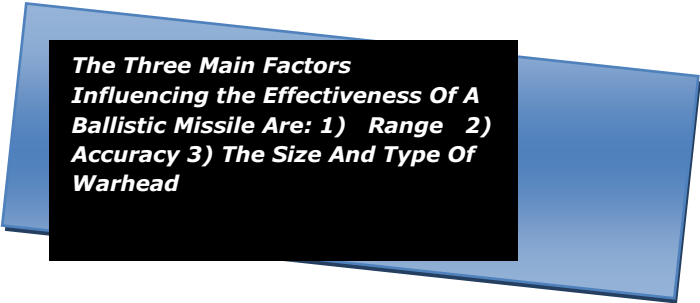
Accuracy: A ballistic missile with a high-quality inertial guidance system is capable of delivering a reentry vehicle within a few hundred feet of the target after a flight of over 6,000 miles (9656KM). For many missiles accuracy can be greatly improved by utilizing satellite-aided navigation. As more modern guidance technology is proliferated, countries will be able to improve the accuracy and lethality of their missile forces. However, even a missile with an inaccurate guidance system is capable of inflicting massive casualties when armed with a weapon of mass destruction. There is some divergence of evidence and opinion as to the accuracy of ballistic missiles. There is common ground that ballistic missiles with advanced computer-controlled guidance systems, mainly US and Russian nuclear-armed ICBMs and Submarine Launched Ballistic Missiles (SLBMs), are relatively accurate. Most other ballistic missiles, which lack advanced guidance systems, are relatively inaccurate and thus most effectively directed at large target areas such as cities, whether they are armed with weapons of mass destruction (Nuclear, Biological, Chemical or Radiological) or conventional high-explosive warheads. [16]

15). The Increasing Ballistic Missile Threat Jeffrey Chatterton February 8, 2010 <http://blog.heritage.org/2010/02/08/the-increasing-ballistic-missile-threat/>

16). Fact Sheet: U.S. Ballistic Missile Defense July 2012 Background http://armscontrolcenter.org/issues/missiledefense/articles/fact_sheet_us_ballistic_missile_defense/

As a general rule, accuracy is likely to diminish as range is increased, particularly if designed range is boosted by modification, as was the case with Iraq's modified Scuds. The development of more capable Intermediate Range Ballistic Missiles (IRBMs) by downsizing ICBMs rather than by extending SRBM technology increases the potential threat posed by missile proliferation. The Soviet SS-20

mobile IRBMs of the 1980s, for example, had a degree of accuracy which was of considerable concern to NATO leaders at that time. The missiles themselves have been retired under the 1987 Intermediate-Range Nuclear Forces (INF) Treaty, but their advanced guidance technology has survived and may be amongst those widely offered from Russian sources on the international black and grey markets. [17]



The Three Main Factors Influencing the Effectiveness Of A Ballistic Missile Are: 1) Range 2) Accuracy 3) The Size And Type Of Warhead

CEP - Circular Error Probable: Missile accuracy is usually expressed in terms of Circular Error Probable (CEP), defined as "the radius of a circle around a target within which there is a 50% probability that a weapon aimed at that target will fall." Elaborating on this technical definition, the US. Office of Technology Assessment notes:

"CEP does not take into account either launch failures or the systematic errors associated with miss-aiming the missile in the first place, called the 'bias.' The CEP is also a median, rather than a mean; it does not predict how far outside the circle the other half of the missiles will land. (For instance, some of the Iraqi Scuds fired toward Israel during the Persian Gulf War landed quite far from intended targets or in the Mediterranean Sea.) Furthermore, in practice the expected miss-distance is usually elongated in the down range direction, leading to an elliptical rather than a circular error pattern. Therefore, even ignoring the bias, a CEP gives only a rough indication of the likelihood that a missile will hit an intended target. "[18]

In practical terms, this means that the Saddam's SCUD missiles in the 1991 Gulf War the Iraqi Al Hussein SRBM, with a CEP of some 3280yds (3,000 meters), the Soviet-made SS-1 Scud B SRBM with a 984yds (900-meter) CEP, or the Chinese M-9 SRBM, with a 656yds (600-meter) CEP, are so inaccurate that, with a high explosive warhead, they can only be used effectively against large targets, such as cities, or 'soft' military targets. However this targeting inaccuracy may be compensated for by fitting the missile with a WMD warhead. Inaccuracy might also be compensated for by firing a number of missiles in a salvo attack aimed at a particular target or set of targets. [19]

Range: The range of a missile is essentially determined by the velocity it reaches when all its propellant has been used up (its 'burnout velocity'). These velocities are many times in excess of those of aircraft or cruise missiles. A 310 miles (500 km-range) Short Range Ballistic Missile (SRBM) reaches a burnout velocity of some 1.3 miles (2.2 kilometers) per second (km/sec). A 3106 miles (5,000 km-range) Intermediate Range Ballistic Missile (IRBM) reaches a velocity of some 3.5 miles (5.7 km/sec) a second.

17). Executive Summary Of The Report Of The Commission To Assess The Ballistic Missile Threat To The United States July 15, 1998 Pursuant To Public Law 201 104th Congress <http://www.fas.org/irp/threat/bm-threat.htm>

18). Ballistic Missile Defense Glossary Version 3.0 June 1997 Department Of Defense Ballistic Missile Defense Organization 7100 Defense Pentagon Washington, Dc 20301-7100 <http://www.defense.gov/specials/missiledefense/glossary.pdf>

19). The Military Balance in the Gulf and the Threat from Iraq Anthony H. Cordesman Senior Fellow for Strategic Assessment May, 2000 <http://www.iraqwatch.org/perspectives/csis-milbalance-iraqthreat-2000.pdf>

The missile's burnout velocity is affected by a number of other factors. These include the energy produced by the propellant, the weight of the warhead or warheads, casing and guidance systems the missile carries (its 'payload') and the missile's ability to discard the dead weight represented by the parts of its fuselage in which the propellant has been burnt up. A ballistic missile may be single-stage or multi-stage. Single-stage ballistic missiles, such as the German V-2 of World War II or the Russian and North Korean Scuds, have one stage containing both the warhead and propellant that will fall to earth in one piece. Multi-stage missiles can discard the stage, or stages, that contain fuel once that fuel has been spent; meaning that only the part containing the warhead will actually hit the target.

Multi-stage missiles have multiple powered stages that fire in sequence during the boost phase and detach themselves when the propellant is burnt up. Thus the dead weight of the used stage (or 'booster') does not have to be accelerated throughout the entire period of the boost phase, increasing the burn-out velocity and thus the ultimate range. While multi-staging is far more technically demanding than single staging, it is necessary if a missile is to achieve ranges much in excess of 9032 miles (1,500 km). In practice, SRBMs and IRBMs with ranges of less than 9032 miles (1,500 km) tend to be single-stage; MRBMs and IRBMs with ranges of less than 3417 miles (5,500 km) tend to have two stages, while Intercontinental-Range Ballistic Missiles (ICBMs) with ranges of 3417 miles (5,500) km or more tend to have three stages. The simplest way to increase the range of a missile is to reduce the weight of the payload (i.e. the warhead). For an SRBM, halving the payload increases its range by 150%. However, the lighter warhead reduces the military effectiveness of the missile, especially if the warhead contains conventional high-explosives. This method has been used by Egypt, Iraq, and North Korea to increase the range of their Scud-derived SRBMs. For ballistic missiles with ranges of greater than 1,000 km, however, halving the payload increases the range only by some 20%. A more effective way to increase range without resorting to multi-staging is to 'cluster' multiple rocket engines together and fire them simultaneously, as is the case with the North Korean Nodong-1 missile, which uses four Scud engines to achieve a range of 6210 miles (1,000 km).

Multiple-stage missiles, with each stage having its own independent propulsion system, are more efficient for longer range missions. ICBMs typically have two or three stages; have powerful liquid-fuel propellant engines or solid-fuel propellant motors to propel the payload toward its target, in addition to a post-boost vehicle (PBV) with a much smaller propulsion system. A post-boost vehicle can be used to improve the RV deployment accuracy for a single-RV missile. A ballistic missile with a high-quality inertial guidance system is capable of delivering a reentry vehicle within a few hundred feet of the target after a flight of over 6,000 miles (9656 KM). For many missiles, accuracy can be greatly improved by utilizing satellite-aided navigation. As more modern guidance technology is proliferated, countries will be able to improve the accuracy and lethality of their missile forces. However, even a missile with an inaccurate guidance system is capable of inflicting massive casualties when armed with a weapon of mass destruction. Therefore, many Third World ballistic missiles, although inaccurate, have the potential to pose a serious threat to urban targets. A ballistic missile's range may also be increased by boosting the efficiency (or 'specific energy') of the fuel used in the boosters. However, exotic fuels such as halogen or hydrogen/oxygen based liquids are technically demanding to develop and highly dangerous to handle. While solid fuels are far more stable, easier to store, and safer to handle, making them particularly attractive for mobile ballistic missiles, the technology required to extract long ranges from solid fuel is highly advanced.

Although the SCUD missile was originally designed as a tactical battlefield support weapon, many countries view it and other SRBM systems as strategic weapons to be used against urban areas. The late Saddam Hussein Iraq used extended-range SCUDs as strategic weapons during both the Iran-Iraq War and the 1991 Persian Gulf War. In the future, other countries could modify SCUDs to significantly improve their accuracy and use them against high-value military targets as well as cities. [21]



Combat operational ballistic Scud missiles are deployed in silos, on submarines, and on land-mobile launchers, including trucks and railcars. Mobile missiles are favored by many nations because they can be hidden, which greatly increases their survivability.

Many ballistic missiles carry penetration aids to improve the chances of a reentry vehicle penetrating a ballistic missile defense system. Penetration aids are devices that attempt to deceive or jam sensors used to detect and track missiles and RVs. Penetration aids are of increasing importance to countries developing and operating ballistic missiles. Several countries are now producing and/or developing SRBM systems, while many other countries have purchased missiles or missile technologies from one or more of the missile producers. New SRBM systems are in development in several countries. The Russian SS-1c Mod 1, also called the SCUD B, has been exported to more countries than any other type of guided ballistic missile and has proven to be a versatile and adaptable weapon. For example, the Iraqi SCUDs used during the Persian Gulf War had been modified to double their range. North Korea has produced its own version of the SCUD B, as well as the SCUD C, an extended-range version of the SCUD B. [22]

SRBM - Short Range Ballistic Missile 1,000 km or 621 miles

MRBM - Medium Range Ballistic Missile 1,000-2,500 km or 621 to 1553 miles

IRBM - Intermediate Range Ballistic Missile 2,500-3,500 km or 1553 to 2174 miles

LRICBM - Limited Range Intercontinental Ballistic Missile 3,500-8,000 km or 2174 to 4970 miles

FRICBM - Full Range Intercontinental Ballistic Missile 8,000-12,000 km or 4970 to 7456 miles

SLBM -Submarine-Launched Ballistic Missile: Any ballistic missile launched from a submarine, regardless of maximum range.

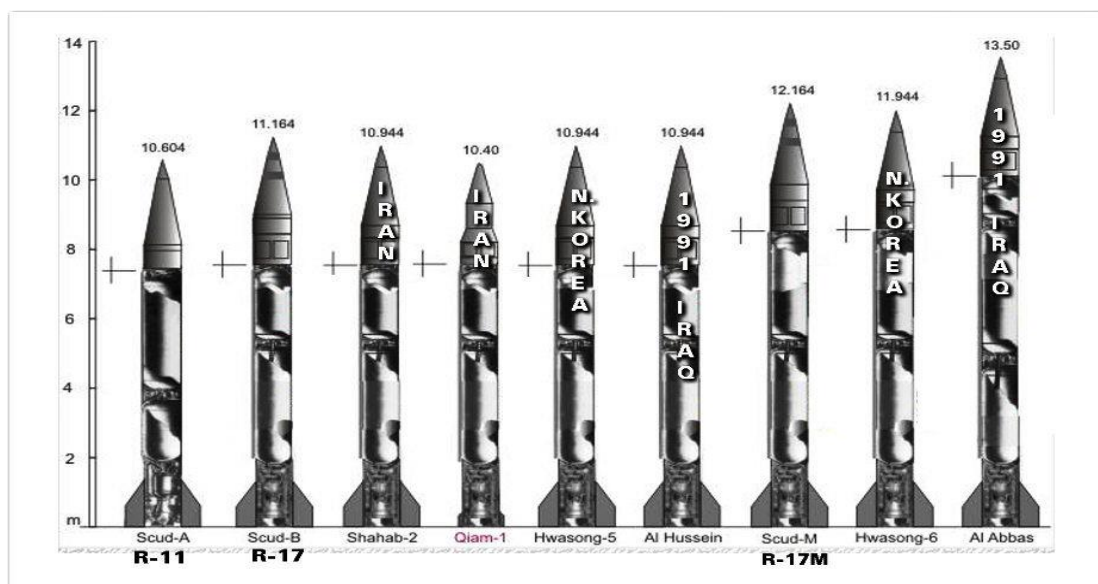
TBM - Short- and medium-range missiles are often collectively referred to as **theater** or **tactical ballistic missiles** (TBMs). [23]

21). The Military Balance in the Gulf and the Threat from Iraq Anthony H. Cordesman Senior Fellow for Strategic Assessment May, 2000 <http://www.iraqwatch.org/perspectives/csis-milbalance-iraqthreat-2000.pdf>

22). Fact Sheet: U.S. Ballistic Missile Defense July 2012 Background

http://armscontrolcenter.org/issues/missiledefense/articles/fact_sheet_us_ballistic_missile_defense/

23). IBID 2



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Iskander SS-21 / Scarab/Tochka Iskander E (SS-26 Stone)

The Iskander Tactical Missile System is considered to be among the most advanced surface / surface missiles available today.



The Iskander system developed by Russian KBM in Kolomna has become the "Scud" of the 21st A single -stage, short-range, solid-fueled missile designed for launch from highly mobile four-axis trucks, carrying two rockets each. Army units armed with the Iskander missiles would also include reloading trucks capable of carrying two missiles each, as well as firing control, data-processing and maintenance vehicles. In comparison to previous-generation systems, Iskander boasts higher accuracy, increased mobility and shorter pre-launch processing time.

Does Not Fly In A Straight Line / Releases Decoys/ Supersonic Speed In flight, the missile follows a quasi-ballistic path, performing evasive maneuvers in the terminal phase of flight and releasing decoys in order to penetrate missile defense systems. The missile never leaves the atmosphere as it follows a relatively flat trajectory. Targets can be located not only by satellite and aircraft but also by a conventional intelligence center, or by a soldier who directs artillery fire. Targets can also be located from aerial photos scanned into the computer. [25]

24). Fact Sheet: U.S. Ballistic Missile Defense July 2012 Background

http://armscontrolcenter.org/issues/missiledefense/articles/fact_sheet_us_ballistic_missile_defense/

25). Iskander Tactical Ballistic Missile System, Russian Federation <http://www.army-technology.com/projects/iksander-system/>

25a). Iskander SS-21 / Scarab/Tochka Iskander E (SS-26 Stone) KB Mashynostroeniya <http://www.defense-update.com/products/i/iskander.htm>



Iskander SS-21 / Scarab/Tochka Iskander E (SS-26 Stone) The missiles can be re-targeted during flight in case of engaging mobile targets. Another unique feature of Iskander-M (not Iskander-E) is the optically guided warhead, which can also be controlled by encrypted radio transmission, including such from AWACS or UAV. The electro-optical guidance system provides a self-homing capability. The missile's on-board computer receives images of the target, *then locks onto the target with its sight and descends towards it at supersonic speed.* The missile can be re-targeted during flight in case of engaging mobile targets. Another unique feature of Iskander-M (not Iskander-E) is the optically guided warhead, which can also be controlled by encrypted radio transmission, including such from AWACS or UAV. The electro-optical guidance system provides a self-homing capability. The missile's on-board computer receives images of the target, then locks onto the target with its sight and descends towards it at supersonic speed. The Iskander missile is equipped with autonomous inertial flight control system and its warhead features optical self-guidance system, which reportedly allows flight controllers to adjust the trajectory of the missile in flight. The rocket can carry conventional explosives, cluster and shrapnel penetrating charges. *The capability to carry a tactical nuclear warhead was also reported.* Iskander is a tactical missile system designed to be used in theater level conflicts. It is intended to use conventional warheads for the engagement of small and area targets (both moving and stationary), such as hostile fire weapons, air and antimissile defense weapons, command posts and communications nodes and troops in concentration areas, among others. The system can therefore destroy both active military units and targets to degrade the enemy's capability to wage war. It offers a high probability of fire mission accomplishment in hostile active countermeasures environments, a high probability of failure-proof functioning of the missile during its launch preparation and in flight, automatic computation and input of missile flight missions by the launcher devices, high tactical maneuverability and strategic mobility owing to transportability of the system vehicles by all types of transport and long service life and ease of operation. [26]



Russia has two variants, the 'Tender' or 'Iskander-M' for the Russian Federation military and the 'Iskander-E' version for export. The SS-26 is 7.3 m long, 0.92 m in diameter, and has a launch weight of 3,800 to 4,020 kg. The Tender has a range of 400 km (249 miles) and a payload of approximately 700 kg. The Iskander-E has a reduced range of 280 km (174 miles) and payload of about 480 kg. Both systems use a single separating warhead equipped with a terminal guidance system, though the accuracy of the missile depends upon which system is used. An inertial guidance system would probably give an accuracy of 200 m CEP while inertial coupled with a Global Positioning Satellite (GPS) or equivalent system would provide about 50 m CEP. The use of the inertial navigation, GPS, and active radar or electro-optical sensors provides an accuracy of 10 to 30 m CEP. Its warheads can be equipped with high explosives (HE), HE submunitions, fuel-air explosives or a HE penetrator. During the terminal phase, the missile is capable of making maneuvers of 30g and can release decoys, making it extremely difficult for theater missile defenses to intercept the missiles.[27]

26). SS-26 http://www.missilethreat.com/missilesoftheworld/id.162/missile_detail.asp

27). SS-26 Stone Iskander Iskander-M 9M72 9P78E Ballistic missile system <http://www.armyrecognition.com>

The question for U.S. Forces and Israel in The Mid-East, does Iran and Syria have the Iskander Missile? What about Pakistan? The answer is, yes, no and maybe. I could build a case for this issue either way. The deadly threat this weapon provides is certainly one Iran, North Korea and many others would love to have their hands on. With today's military hardware black-market I tend to believe it is a distinct possible for Iran.

Belarus 'selling Iran Iskander-M missiles' 2009 edition.presstv.ir/detail/93244.html

December 2012, another report: Hours after NATO agreed on Tuesday to send Patriot missiles to Turkey because of the crisis in Syria, Russia delivered its first shipment of Iskander missiles to Syria. According to Mashregh, the Iranian Islamic Revolutionary Guard media outlet, Russia had warned Turkey not to escalate the situation, but with Turkey's request for Patriot missiles, it delivered its first shipment of Iskanders to Syria. Potential Military Confrontation: Russia Arms Syria with Powerful Ballistic Missiles by Reza Kahlili Dec 2012 globalresearch.ca/potential-military-confrontation-russia-arms-syria-with-powerful-ballistic-missiles/5314850

Iran, Belarus Discuss Export of Russian Iskander-M Surface Attack Missiles May 3, 2009 Defense Update

While deliveries of Russian S-300 air- and missile defense systems to Iran are not likely to happen soon, Iran could be getting a more offensive weapon system from Russian ally and neighbor Belarus. The two countries are discussing the delivery of Russian made Iskander-M tactical missile systems to Iran. This is not the first time Iran indirectly obtaining Russian origin offensive weapons - In 2001, Ukraine transferred twelve X-55 nuclear-capable air-launched cruise missiles to Iran. These missiles, also known as Kh-55 Granat (or AS-15 Kent) are capable of hitting targets from a range beyond 3,000 km are designed to carry nuclear weapons.

http://defense-update.com/newscast/0509/news/iskander_030509.html

Syria Missile Milestones - 1972-2005 Wisconsin Project On Nuclear Arms Control *The Risk Report* Volume 11 Number 5 (September-October 2005) The Russian periodical Kommersant reports that Russia has plans to sell Syria the Iskander-E tactical missile system, which has a striking accuracy of "an order of magnitude less" than the 2 m accuracy of the Iskander-M. The solid-fuel 280 km-range, 480 kg-payload Iskander-E missile is equipped with autonomous inertial guidance and an optical seeker and can deliver cluster, blast fragmentation, & penetration warheads according to its manufacturer KB Mashynostroyeniya.

<http://www.wisconsinproject.org/countries/syria/syria-missile-miles.html>

Belarus - Early reports said Belarus planned to purchase a brigade of Iskander-E as a pro-Russian deterrence weapon to counter the proposed NATO missile shield in Central Europe.[1] Belarus later denied that it was negotiating with Russia about placing the missile system inside its borders as a counter to the U.S. missile-shield project,[2] but Belarusian President Aleksandr Lukashenko said he's planning to buy the weapons for the Belarusian army regardless.

1. itar-tass.com "Missile tests in Russia--an answer to the US ABM plans in Europe," available at <http://www.itar-tass.com/eng/level2.html?NewsID=11587396&PageNum=0>

2. Belarus Not Planning to Deploy Russian Missiles to Counter U.S. By Paul Abelsky - November 17, 2008

http://www.bloomberg.com/apps/news?pid=newsarchive&sid=anBbIJAKy_PA

3. Belarus puts Russian missiles on shopping list Russia Today

Iran- Has expressed interest in obtaining the system. In May 2009, the President of Belarus Alexander Lukashenko, referring to selling the system to Iran, stated: "We will sacredly fulfill our agreements with Iran President Mahmoud Ahmadinejad and expect more activity in projects earmarked for joint implementation". Belarus buys missile systems Iskander. Belarus is to purchase missile systems Iskander in Russia, commander of the Belarusian Missile Forces and Artillery Col. Mikhail Puzikau said at a briefing in Minsk. "It is planned that one brigade of the Missile Forces and Artillery will be equipped with Iskander missile systems", Puzikau said. According to him, the equipment will be delivered within the framework of the Belarusian state military equipment program up to 2015, Interfax reports.

<http://www.charter97.org/en/news/2007/11/14/1555/>

Iran and Belarus Forge 'Strategic Partnership' New York Times By Judy Dempsey Published: Monday, May 21, 2007

<http://www.nytimes.com/2007/05/21/world/europe/21iht-belarus.4.5810021.html>

Iranian Banks To Expand Into Belarus 20Aug 09 Info-Prod Strategic Business Information <http://www6.lexisnexis.com/publisher/EndUser?Action=UserDisplayFullDocument&orgId=574&topicId=100007193&docId=I:1026087541&start=23>

Tactical (Nonstrategic) Nuclear Weapons (TNWs) typically refer to short-range weapons, including land-based missiles with a range of less than 500 km (about 300 miles) and air- and sea-launched weapons with a range of less than 600 km (about 400 miles).



- ***Though TNWs constitute a large percentage of the arsenals of the nuclear weapon states, TNWs are the least-regulated category of nuclear weapons covered in arms control agreements.***
- ***In some respects, TNWs are more dangerous than strategic weapons. Their small size, vulnerability to theft, and perceived usability make the existence of TNWs in national arsenals a risk to global security.***

TNWs are only subject to an informal regime created by unilateral, parallel declarations made by George Bush and Mikhail Gorbachev in the fall of 1991. But the informal nature of the 1991 regime has resulted in considerable uncertainty with regard to implementation, as well as considerable disparity in numbers. And the new perception of the usability of nuclear weapons in both Russia and the United States, albeit for different reasons, could create a dangerous precedent for other countries. TNWs are the least-regulated category of nuclear weapons covered in arms control agreements. They are only subject to an informal regime created by unilateral, parallel declarations made by George Bush and Mikhail Gorbachev in the fall of 1991. Prompted by mounting concern about the security of nuclear weapons in the Soviet Union, George Bush announced on September 17, 1991 that the United States would eliminate its entire worldwide inventory of ground-launched TNWs and would remove all nuclear weapons from surface ships and attack submarines. While the Soviet government would have preferred a formal, negotiated action on TNWs, it accepted the U.S. approach as an opportunity to achieve its long-standing objective of reducing the number of U.S. TNWs in Europe. Mikhail Gorbachev responded on October 5, 1991, largely repeating the measures outlined by George Bush. Namely, the Soviet Union promised to remove all categories of nuclear weapons from deployment to "central storage facilities," while maintaining the deployment of one-half of its air-based weapons; between one-third and one-half of the weapons removed from deployment were scheduled for elimination. In January 1992, the Gorbachev statement was confirmed and slightly expanded by Boris Yeltsin in the name of Russia. During the Senate debate on the new U.S.-Russian Strategic Arms Reduction Treaty (New START) in 2010, many Senators raised questions about Russian nonstrategic nuclear weapons and noted their absence from the treaty limits. The United States and Russia have not included limits on these weapons in past arms control agreements. Nevertheless, Congress may press the Administration to seek solutions to the potential risks presented by these weapons in the future. During the Cold War, the United States and Soviet Union both deployed nonstrategic nuclear weapons for use in the field during a conflict. While there are several possible ways to distinguish between strategic and nonstrategic nuclear weapons, most analysts consider nonstrategic weapons to be shorter-range delivery systems with lower yield warheads that the United States and Soviet Union/Russia might use to attack troops or facilities on the battlefield. They have included nuclear mines; artillery; short-, medium-, and long-range ballistic missiles; cruise missiles; and gravity bombs. In contrast with the longer-range "strategic" nuclear weapons, these weapons had a lower profile in policy debates and arms control negotiations, possibly because they did not pose a direct threat to the continental United States. At the end of the 1980s, each nation still had thousands of these weapons deployed with their troops in the field, aboard naval vessels, and on aircraft.



Tactical (Nonstrategic) Nuclear Weapons

The Dangers Associated with TNWs:

TNWs are more dangerous than strategic weapons. Their small size and the absence of electronic locks or Permissive Action Links (PALs) on older versions contribute to their vulnerability to theft and unauthorized use. In addition, the modes of the basing and employment of TNWs also pose major problems:

- TNWs historically were intended for the use in battlefield and theatre-level operations in conjunction with conventional forces. This was to encourage their forward-basing, providing TNWs psychological-threat and ease of tactical employment operationally easier.
- Strategic & Tactical Military doctrine argues for the pre-delegation of launch authority to lower-level commanders, especially once hostilities commence, because of an orientation toward the employment of TNWs in conjunction with conventional forces and a concern about their survivability. This could / allows diminished control over TNWs by the political leadership.
- Low-yield TNWs are sometimes seen as less destructive and thus more usable than other classes of nuclear weapons. This therefore increases the probability of limited use of TNWs.

We need to realize the existence of TNWs in International arsenals increases the risk of proliferation and reduces the nuclear threshold, making the nuclear balance less stable. If the two leading nuclear powers, America & Russia consider TNWs essential and “usable,” other countries will emulate this example. [29]

29). Tactical Nuclear Weapons (TNW) Dr. Nikolai Sokov, Senior Research Associate CNS NIS Nonproliferation Program Center for Nonproliferation Studies (CNS) Monterey Institute of International Studies http://www.nti.org/e_research/e3_10a.html

Tactical versus Strategic

What is a strategic nuclear weapon is, which itself has been the subject of considerable debate. Yield, target, effect, and more have all been considered in the definition, but from a practical point of view, a strategic nuclear weapon is one that is *delivered* strategically. That means delivered via ICBMs, SLBMs, or heavy bombers. Tactical nuclear weapons, it follows, are those that are delivered using battlefield-type delivery systems over battlefield-type distances. However, since the size of a battlefield can vary greatly all we can really say is that they are *not* strategically-delivered. From a non-proliferation point of view, the world should consider the fact that non-strategic nuclear weapons pose a much greater danger than their strategic counterparts. This is because they are more vulnerable to non-authorized use, including theft, than strategic weapons, which almost always have dedicated delivery vehicles, better physical security, and better-established and mature methods and procedures. Additionally, because non-strategic nuclear weapons *tend to* have lower yields and are inclined towards „battlefield“ use, it can be argued that their inherent nature makes their *authorized* use more probable.

The Tactical versus Strategic Distinction: It's A Big Deal, Right?

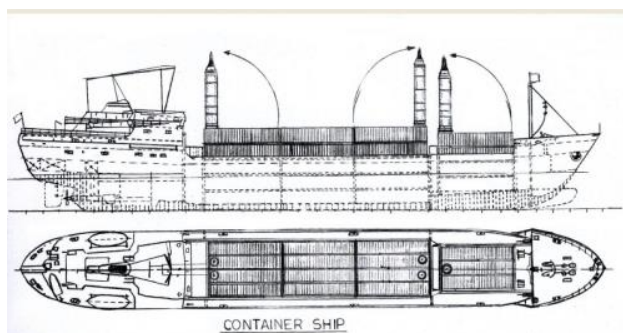
By Mark Stout 2010

<http://www.au.af.mil/au/awc/awcgate/nssc/op-ed/tactical-versus-strategic-distinction.pdf>



Submarine-Launched Ballistic Missile (SLBM) is a ballistic missile capable of delivering a nuclear warhead or other type of warhead that can be launched from submarines. Modern variants usually deliver multiple independently targetable reentry vehicles (MIRVs) each of which carry a warhead and allow a single launched missile to strike several targets. Submarine-launched ballistic missiles should not be confused with submarine-launched cruise missiles, which operate in a different way.

Ballistic missile submarines have been of great strategic importance as they can hide from reconnaissance satellites and fire their nuclear or other weapons with virtual impunity. This makes them immune to a first strike directed against nuclear forces, allowing each side to maintain the capability to launch a devastating retaliatory strike, even if all land-based missiles have been destroyed. This relieves each side of the necessity to adopt a launch on warning posture, with its grave attendant risk of accidental nuclear war. Additionally, the deployment of highly accurate missiles on ultra-quiet submarines allows an attacker to sneak up close to the enemy coast and launch a missile on a depressed trajectory - a very close range attack which will hit its target in a matter of minutes, thus opening the possibility of a decapitation strike. In short totally destroy the enemy's military capabilities. [30]



Cargo Ship Scud Launch Many foreign flagged commercial ships could carry Scuds or cruise missiles for easy launch from outside a nation's territorial waters. Some types of dry cargo ships could launch a Scud or a cruise missile from their holds. A container ship could stack a missile-carrying container on its deck, and the missile could be launched directly from the innocuous container. A small cruise missile such as Silkworm cruise missile fits neatly inside a standard shipping container. Terrorists or other state actors would be able to completely launch its deadly cargo

before a country's military even knew that an attack was in progress. Although such an attack would be able to identify the culprit ship shortly after launch, this discovery would do nothing to protect the citizenry. And, if al Qaeda or other actors were operating the ship, with a suicidal mentality would leave have little concern about their capture or death after the deed is done. It terms of low cost, just simply take a cargo ship and load a Scud missile truck, vehicles transporter erector launchers, TELs. In February 2004, U.S. Secretary of Defense Donald Rumsfeld related that one nation had launched a Scud from a cargo ship successfully. (Classified memorandum) This was a test conducted by a nation that fired the missile into its own territory from a ship offshore. North Korea has announced a ship-launched ballistic missile with a range of 2,500 kilometers. [31]

30). The Cruise Missile Threat and its Proliferation August 18, 2003 by John G. Heidenrich, p 7 <http://www.marshall.org/pdf/materials/478.pdf> Department of the Air Force, National Air and Space Intelligence Center, "Ballistic and Cruise Missile Threat," NAIC-1031-0985-06, March 2006. <http://www.nukestrat.com/us/afn/NASIC2006.pdf>

31). Missile Threat :: Lockheed Continues Study of Ship-Launched Threat www.missilethreat.com



Citing U.S. officials, Middle East Newsline reported that Iran had deployed a number of short-range and medium-range Scud ballistic missiles aboard cargo vessels, and equipped them to be launched from the ships. The ships are said to be stationed in the northern Persian Gulf and the Straits of Hormuz. The officials also said that Iran began deployment of ship-based missiles in 1997, and that several such vessels are already so equipped.

2004 Middle East Newsline

Some 75 percent of the total U.S. population of 290 million people and 75 percent of its military bases are within 200 miles of the coast. The number of potential launch platforms is immense.

[32]

Israel is a Maritime Nation, standing at the crossroads of Europe, Asia and Africa. The majority of Israel's population lives in cities close to the shoreline, making them an inviting target for attacks from the sea. Because of this close proximity to hostile neighbors, these areas have served as launching sites for attacks, terrorists or weapons smuggling. The entire Western border of Israel is the Mediterranean Sea. Israel's combined coastline is 206 km (about 128 miles). North of Israel is bordered by Lebanon and Syria. The northern city of Nahariya (population of 50,000) is only 9 km (about 5.5 miles) south of the Lebanese border, where Hezbollah has built its maritime bases.

To the East is Jordan and to the South by the Red Sea and Egypt. In the south, Israel's Ashkelon (population 106,600) is just 15 km (about 9.3 miles) north of Hama's Gaza. Eilat (population 55,000) the third largest harbor and gateway to Asia is 8.5 km. (about 5.2 miles) north of Egypt and is 2.4 km (about 1.2 miles) west of Jordan. Israel's major port and naval base is at Ashdod (population 204,000) is 25 km (about 15.5 miles) north of Gaza. Fast inflatable boats or scooters can cover such distances in only minutes, giving Israel, only minutes to identify, evaluate and - if necessary - engage the threat. (33)

Many intelligence experts believe that al-Qaida and affiliates already possesses a fleet of commercial cargo ships. But an adversary need not even own a cargo ship to carry out a missile launch. Piracy is on the increase worldwide, and the means of grabbing a cargo ship on the high seas and changing its identification are well established. Even if a ship has all the necessary legitimate papers in hand, it still might be hiding a deadly cargo. This would defeat any vigilance that relies on a 96-hour warning. [34]

PIRACY FACTS: January 2010
-- There were 324 pirate attacks worldwide in the year to Oct. 20, with 37 vessels hijacked and 639 hostages taken. In the same period in 2008 there were 194 attacks, 36 ships hijacked and 631 hostages, according to the latest figures from the ICC International Maritime Bureau's Piracy Reporting Centre (IMB).

-- Of the 324 incidents, attacks by Somali pirates in the Gulf of Aden and the east coast of Somalia numbered 174, with 35 vessels hijacked and 587 crew taken hostage.

-- Of the 324 incidents, attacks by Somali pirates in the Gulf of Aden and the east coast of Somalia numbered 174, with 35 vessels hijacked and 587 crew taken hostage.

-- Nearly 20,000 ships pass through the Gulf of Aden each year, to and from the Suez Canal.

**Reuters/ECOTERRA
International/International
Maritime Bureau Piracy
Reporting Centre/Lloyds
List/Inquirer.net**

32). Gaffney: Missiles Abroad Should Concentrate the American Mind July 25, 2006 Washington Times

33) The Threat of Maritime Terrorism to Israel Akiva J. Lorenz Consultant, Oct. 1, 2007

<http://www.ict.org.il/Articles/tabid/66/Articlsid/251/currentpage/6/Default.aspx>

34). Asymmetric Missile Threats Loom on Horizon By Robert K. Ackerman October 2005

http://www.afcea.org/signal/articles/templates/SIGNAL_Article_Template.asp?articleid=1032&zoneid=167

Cruise Missiles

Overall, the threat posed by ballistic missile delivery systems is likely to continue increasing while growing more complex over the next decade.

Current trends indicate that adversary ballistic missile systems, with advanced liquid- or solid-propellant propulsion systems, are becoming more flexible, mobile, survivable, reliable and accurate while also presenting longer ranges. Prelaunch survivability is also likely to increase as potential adversaries strengthen their denial and deception measures and increasingly base their missiles on mobile sea- and land-based platforms. Adversary nations are increasingly adopting technical and operational countermeasures to defeat missile defenses. For example, China, Iran and North Korea exercise near simultaneous salvo firings from multiple locations to defeat these defenses. The availability of CBRN weapons for use on ballistic missiles vastly increases the significance of this threat. Ballistic missiles also have substantial political and psychological value. They can strike out of nowhere without warning, and there are no effective counter weapons available. Although the United States is making progress in antiballistic missile (ABM) technology, tests to date make clear that this is a technologically challenging and financially costly undertaking, one that, as best as one can tell. In truth ABM technology is not keep pace with the missile threats we face.

Cruise Missiles: World War II witnessed the first modern cruise missile: the V-1 of Nazi Germany. Its acronym is short for *Vergeltungswaffen-1*, or *Vengeance Weapon-1*. British civilians nicknamed the V-1 the “buzz bomb” because its engine made a distinct buzzing sound. Having a range of 150 miles (240 km), the V-1 was noisy and subsonic as it cruised at some 3,000 feet (900 m), flying a fairly predictable course after being launched from the German-occupied French or Dutch coasts—all factors which made it fairly vulnerable to Britain’s aerial defenses.² Nevertheless, of the more than 8,000 V-1s which over-flew the English Channel to terrorize London and other targeted cities, the great majority did get through. Furthermore, those which the British knocked down still proved deadly to anyone directly below the missile’s 1,875 pounds (850 kg) of high explosive. At least 6,000 people were killed by V-1 attacks, another 24,000 were wounded, and hundreds of thousands of civilian homes were damaged or destroyed.³ Remarkably, potentially much higher casualties were averted because double-agents run by British Intelligence fooled the Germans into programming many of their V-1s to undershoot—and thus fall short of—heavily populated London, falling instead into the southern suburbs and countryside. Though the V-1 was not a weapon of mass destruction (WMD) in the contemporary sense, Nazi contingency plans did exist to arm it with deadly Tabun (GA) nerve gas. Records also suggest a plan to arm the ballistic V-2 rocket with radiological isotopes, thereby creating a giant “dirty bomb,” albeit without a thermo-nuclear explosion.⁶ The end of the war interrupted these plans, but if the war had dragged on longer, or if the V-2 rocket had not been developed, the V-1 could have proven vastly more destructive than it was. In other words, more than half a century ago. [35]

■ Cruise Missiles

Glossary Cruise Missile Abbreviations:

ALCM = Air-launched cruise missile

ASM = Anti-ship missile

CM = Cruise missile (generic)

LACM = Land attack cruise missile

SLCM = Submarine-launched cruise missile



Vergeltungswaffen-1 WW II



Britain's National Maritime Museum, London

35). The Cruise Missile Threat and its Proliferation 2006 <http://www.marshall.org/pdf/materials/478.pdf>
by John G. Heidenrich*

Cruise missile airframe does not undergo particularly severe stress on its flight to a target, it does not pull any high "g" maneuvers, and it does not experience propulsion accelerations associated with gun or ballistic missile launches. Virtually any airframe that is structurally sound enough to be used in an ordinary airplane is adequate for a cruise missile.

Before the Cold War had even begun, the theory and technical feasibility of a cruise missile as both a terror weapon and as a CBRN delivery vehicle had already been established. The Cold War and its after-years saw the creation of much more sophisticated cruise missiles, some quite supersonic and having ranges exceeding 1,500 miles (2,500 km).

A standard cruise missile can be described as an unmanned, self-propelled, winged, non-recoverable aerial vehicle designed to

destroy a surface target. It can be launched from UAVs, aircraft, ships, submarines, or ground-based platforms, fixed or mobile. The popular image of a cruise missile is that of a smart bomb and indeed, with today's inexpensive sophisticated navigational technology. Several types of early and mid-generation surface-to-surface and sea-skimming anti-ship cruise missiles, such as the French made Exocet and the Chinese Silkworm has proliferated widely. [36]

In July 2002 Defense Secretary Donald H. Rumsfeld sent a classified memo to the White House in calling attention to the growing cruise missile threat. Two months later, he went public with a related warning by noting that ballistic missiles can be moved within range of key US targets by concealing them aboard inconspicuous commercial ships. At "any given time, there's any number of nondescript vessels off our coast, coming, going," Rumsfeld explained at a Sept. 16 2002 Pentagon press briefing. *Enemies on ships equipped with a hidden Scud-type launcher could "simply erect it, fire off a ballistic missile, put it down, cover it up,"* he asserted. The modus operandi for a cruise missile would be similar. [37] U.S. Army's Space and Missile Defense Command, Lt. Gen. Joseph Cosumano, quoting him about his complaint "about the absence of a single Pentagon agency to coordinate Rumsfeld's warning grew out of threat anticipation rather than any specific threat warning from the intelligence community; simply put, Rumsfeld believed that the threat was imminent because all of the underlying technologies needed for land-attack cruise missiles were commercially available. And not only were states expected to acquire cruise missiles; non-state actors like al Qaeda were seen to have the capacity to develop crude but effective "poor man's" cruise missiles, capable of delivering biological or chemical weapons. [38]

Affordable and Easily Acquired or Built At one time sophisticated and much longer-range deadly cruise missiles remained largely the domain of a few industrial states, most notably France, the United States and Russia. However since 2004 cruise missiles have begun to spread across the Middle East, Northeast Asia, and South Asia. The main advantage of cruise missiles is that they are relatively inexpensive, compact, accurate, and easier to develop or access than ballistic missile technology. In 2011 the average, the cost of a single cruise missile was one sixth of a ballistic missile. There are 130 types of cruise missiles which are distributed among 75 nations' of which 56 countries are pure importers. Cruise missiles have become an inexpensive form of an air force but with capabilities that even the leading states have come to value. The latest generation cruise missiles such as the Indian BrahMos are supersonic (faster than speed of sound) making defense nearly impossible. Unlike ballistic missiles that follow a predictable upward trajectory, modern cruise missiles can fly hugging the earth at low altitudes to stay below radar's detectional horizon and even hide behind terrain features. Like aircraft they can approach and attack targets from different directions to overwhelm air defenses. [39]

36). The Cruise Missile Threat and its Proliferation by John G. Heidenrich <http://www.marshall.org/pdf/materials/478.pdf>

37). Cruise Control By Adam J. Hebert December 2002 Senior Editor: Devastating cruise missile attacks on US cities? The danger, for years a back-burner issue, now gets high-level attention. <http://www.airforce-magazine.com>

38). Bradley Graham, "Rumsfeld: Cruise Missile Threat Rises", Washington Post, August 18, 2002, p. A1

39). Cruise Missiles: Evolution, Proliferation and Future

by Sitakanta Mishra, Delhi: KW Publishers, 2011, pp. 206, INR 680

Zorawar Daulet Singh* http://idsa.in/system/files/jds_6_3_ZorawarDauletSingh.pdf

Most cruise missiles use airbreathing (i.e., pulsejet, ramjet, turbojet, or turbofan) engines; others are rocket propelled while still others are propeller driven. Some fly at less than 100 mph, while others travel at greater than three times the speed of sound. Some have tactical ranges, while others are capable of spanning intercontinental distances. Some employ inertial guidance systems, while others use precision navigation information from the Global Positioning System (GPS) or other satellite navigation constellations. Some fly at a high altitude before descending on their targets, while others hug the terrain. Some such as the Kh-55 (AKA X-55) can fly in a circular path to its target. [40] In 2005 it was reported there were about 130 different types of cruise missiles in the world and

approximately 75 different countries are believed to have cruise missiles with the majority of these countries having only short range anti-ship cruise missiles (ASCM). Land attack cruise missiles (LACMs), which can be launched against ground targets from the air, cargo ships, surface naval vessels, submarines, and from the ground, are of particular concern.[41]

Cruise Missiles Are Built Four Key Components Groups:

Airframe (same manufacturing skills as required for light aircraft)

Propulsion System (e.g., a rocket, turbojet, turbofan, or ramjet and corresponding fuel supply)

Guidance System (e.g., a INS, GPS, terrain matching, radar, IR and/or video, and an electronic brain capable of interfacing with the airframe's flight controls)

Payload (WMD, or various conventional munitions)

The most highly capable ASCMs (Anti-ship cruise missile) come from the former Soviet or Russian arsenal such as the SS-N-22 Sunburn, the SS-N-26 Yakhont (recently transferred to Syria), as well as more modern systems. For example, the Sunburn anti-ship missile, (believed to be in Iranian inventory) fly's up to three times the speed of sound and sea-skimming 5 feet (1.5 meters) above the water. [42]

Of the four major subsystems that compose a cruise missile airframe, propulsion, guidance, control, and navigation, and weapons integration none is expensive in and of itself, and a steady supply of each is available. In the late 1960's, the United States first introduced turbine propulsion systems that weighed less than 100 lb and produced many hundreds of pounds of thrust. These turbine engines, or their lineal descendants, powered most of the early U.S. cruise missile designs and were one of the least costly items. Depending upon the range a proliferate desires for its cruise missile; the powerplant may even be as prosaic as a reciprocating engine with a propeller. The latter, of course, has little hope of disguising its signature from defenses, but the mission profile may allow it to disguise itself as another platform. Even if no signature modification is considered, this type of missile has applications in regional wars where the technology of the defense is not as important as it is to an attacking capability. Currently, GPS receivers provide more capability and accuracy than any targeting strategy requires of the guidance, control, and navigation subsystem. Cruise missiles, being aerodynamic vehicles, do not need the rapid response cycle time that ballistic missiles must have to keep the vehicle under control and on an appropriate track. Avionics systems available for first-generation commercial aircraft are both light enough and accurate enough to keep a cruise missile under control for long periods of time. For navigation, civilian code GPS is priced for the civilian hobbyist market, so purchasing an off-the-shelf navigation unit capable of obtaining 20 m of CEP is within the range of the common pocketbook. This level of accuracy is better than that of the early TERCOM systems installed on U.S. cruise missiles, which made them practical for the first time in the late 1970's. [43]

40). The Cruise Missile Challenge by Thomas G. Mahnken Center for Strategic & Budgetary Assessments March 2005 Washington, DC

41). Cruise Missile Proliferation Andrew Feickert Specialist in National Defense Foreign Affairs, Defense, and Trade Division Updated July 28, 2005 <http://www.fas.org/sgp/crs/nuke/RS21252.pdf>

42). Cruise Missiles: Evolution, Proliferation and Future by Sitakanta Mishra, Delhi: KW Publishers, 2011, pp. 206, INR 680 Zorawar Daulet Singh http://idsa.in/system/files/jds_6_3_ZorawarDauletSingh.pdf

43). Cruise Missiles Global Security, <http://www.globalsecurity.org/wmd/intro/cm.htm>

The first generation guidance and navigation involved inertial navigation systems (INS), with radio altimeter and basic radio frequency (RF) or infra-red (IR) terminal homing. These systems provide the cruise missile with a limited range but reasonable accuracy, making it suitable for large targets such as ships. They are commonly found in anti-ship variants of cruise missiles. Improvements for first generation guidance and navigation for LACM missions involve INS/GPS/GLONASS, radio altimeter, advance IR image processing terminal guidance and data links. Such improvements in anti-ship cruise missile derivatives have led to range improvements, improved accuracy, and pinpoint targeting capabilities which reduce collateral damage and thereby make them suitable for use even in urban or heavily populated area – they have been used in Baghdad over course of the Iraq War. [44]

GLONASS - Global Orbiting Navigation Satellite System
GPS - Global Positioning System
INS - Inertial Navigation System

Today's advanced integrated guidance and navigation systems include GPS/GLONASS/INS systems providing accurate accelerometers measurement, accurate missile position, velocity updates, and improved missile trajectory accuracy, as well as terrain contour matching systems (integrating barometers for missile reference altitude, radio-altimeter altitude profile measurement, terrain elevation database exploitation, and altitude profile data processing and correlation for missile position updates). These however have limitations over sea or over flat terrain because these do not possess contour features (3D features) from which the cruise missile can make measurements and accurately match references against ground geographical contours and align its position to the location references. Advanced generation cruise missiles also come fitted with scene matching correlation systems, enabling IR and optical scene sampling with pre-programmed images, scene image database processing and correlation, and missile position update. More advanced versions of cruise missiles have Automatic Target Recognition (ATR) for accurate pinpoint targeting down to 3meters (about 10 ft) for the terminal phase. However the final targeting performances remain dependent on factors such as weather, season, time of day, and accurate image availability. [45]The Cold War and its after-years saw the creation of much more sophisticated cruise missiles, some quite supersonic and having ranges exceeding 1,500 miles (2,500 km). Today's long-range cruise missiles have guidance systems which use internally programmed terrain contour-matching (TERCOM) navigation maps, some with satellite uplinks for in-flight course corrections. [46]



Above left: a Chinese-made Silkworm ASCM. Above right: a standard shipping container.
Below left: shipping containers at sea. Below right: a Silkworm is launched.

Like the Scud missile the cruise missile can be hidden and launched from a cargo ship. However unlike the Scud missile cruise missiles need not be stabilized at their launch points, whereas ballistic missiles do. For that reason and because cruise missiles are compact, a cruise missile can be launched from a rather innocent-looking commercial ship, concealed inside until just before its flight.

Even a bulky large Silkworm (HY-2) can fit into, with some space, a standard 12-meter shipping container Yards). [47]

44). The Cruise Missile Threat and its Proliferation by John G. Heidenrich <http://www.marshall.org/pdf/materials/478.pdf>

45). INEGMA Special Report No. 3 Proliferation Assessment of Cruise Missiles in the Middle East Major General (Ret.) Khalid Abdullah Al Bu-Ainnain Former Commander of UAE Air Force and Air Defense President, Institute of Near East and Gulf Military Analysis (INEGMA)December 2009 p 5

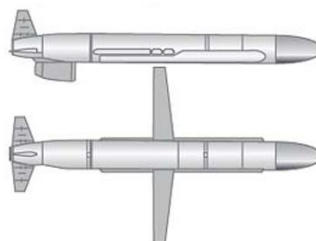
46). Cruise Missile Guidance Technologies 2009 Dr Carlo Kopp, Defense Today <http://www.ausairpower.net/DT-CM-Guidance-June-2009.pdf>

47). IBID 3

The Islamic Republic of Iran's Nuclear Cruise Missile Delivery System the Kh-55 Granat or (aka AS-15 Kent & X-55)

There is an irrational and irresponsible assumption of several International Intelligence Agencies who still maintain Tehran never obtained the deadly Kh-55 nuclear cruise missile. Other Agencies say, "perhaps", while others estimate the number of the Kh-55's the Islamic Republic obtained number anywhere from 1 to 18. However the body of evidence and available public documentation for the Kh-55 nuclear cruise missile and the Islamic Republic is overwhelming. This extreme pivotal military strike capability must not be overlooked. Therefore I have decided to place the issue and documentation in this chapter as well as Chapter eight, The Deadly Capabilities of the Missile and Drone Forces of Iran.

KH-55 NUCLEAR CRUISE MISSILE



Dimensions: 27 feet long, 10.2 feet wingspan, 1.7 feet diameter
Weight: 3,740 pounds
Range: 1,860 miles
Speed: Mach 0.48 - Mach 0.77
Warhead: Thermonuclear (200 kilotons)



SOURCE: GlobalSecurity.Org

"The Islamic Republic of Iran has numerous programs for the development and deployment of ballistic missiles and long-range artillery rockets, and with approximately 1,000 short and long-range missiles currently possesses the largest number of deployed ballistic and cruise missiles in the Middle East. Tehran Iran is also known to have imported 18 Kh-55 cruise missiles from Ukraine in 2001. The Kh-55 has a range of 3,000 kilometers, enabling it to reach targets as far away as Israel. [48]"

- ***March 2005, Prosecutor General of Ukraine, Svyatoslav Piskun, reluctantly confessed in an interview with the Financial Times that Kiev had sold 18 strategic Kh-55 air-to-surface cruise missiles to Beijing and Tehran in 2001. [49]"***

575 Nuclear Cruise Missiles Missing

- ***Ukrainian Defense Minister Yevhen Marchuk finally admitted, that several hundred of his country's missiles were 'unaccounted' ...including " 575 X-55 and X-55M which were supposed to have been decommissioned in the years that followed the break-up of the USSR." [50]"***

This was for the most part arranged through Official Ukrainian Ministry departments, by fraudulent means. This came to light, following an investigation, which revealed that the missile deal was based on a fabricated contract with the Russian state-owned Rosvooruzhenie Corporation. According to these reports, a document, apparently unsigned by a responsible person, merely stated, that it was filed on February 1st, 2004 by the Ukrainian arms export company, Ukraviazakaz. [50]

47). Iran Missiles <http://www.nti.org/country-profiles/iran/delivery-systems/>

48). Why Would Iran Want Cruise Missiles [Http://www.Defense-Update.Com/Russia News & Information Agency \(RIA NOVOSTI\) Http://En.Rian.Ru/Russia/20060419/46622413.Html](http://www.Defense-Update.Com/Russia%20News%20&%20Information%20Agency%20(RIA%20NOVOSTI)%20Http://En.Rian.Ru/Russia/20060419/46622413.Html)

49). In August 2005, a Ukrainian government probe into lucrative illicit weapons sales by officials loyal to the former Ukrainian President Leonid Kuchma, led to secret indictments or arrests of at least six arms dealers accused of selling nuclear-capable missiles destined to Russia and went to Iran and China. Ukraine Goes After Missile Dealers (*The Moscow Times* 07.Ii.05) [://Templetonthorp.Com/Fr/News862](http://Templetonthorp.Com/Fr/News862)

50). IBID 3

Scuds and Cruise Missiles Compared

Most Scud missiles are inaccurate delivery systems, and this greatly limits their conventional military utility. However it makes them idea of CBRN warfare where high accuracy is not needed. Because of the operational characteristics inherent in the system a ballistic flight path increasing accuracy significantly is very technologically complicated. When reentering the atmosphere, ballistic warheads travel several times the speed of sound, and usually at a great distance from the launch point. In contrast to (ballistic)-Scud missiles, improving cruise missiles guidance, and accuracy, is becoming increasingly easier. Outside of launching satellites into orbit, there are very few civilian uses for a ballistic missile. Since cruise missiles are similar to aircraft in propulsion, guidance, and aerodynamics, designers and engineers can readily apply commercially available technologies and techniques to the manufacture of cruise missiles. Inertial navigation systems, while key to many guidance systems, are not perfect. Similar to problems incurred in ballistic missiles, the navigation systems "drifts" and reports locations incrementally more distant from the real location. To periodically correct this "drift," cruise missiles manufacturers are increasingly turning toward satellite navigation systems.[51]

■ Scuds and Cruise Missiles Compared: Range

The cruise missile threat is downgraded by some because the perceived short range of cruise missiles would limit their military utility. At second glance, however, because of advances in turbojet propulsion technology, cruise missile range is increasing. Since air-breathing engines don't need to carry their own oxygen supply, they are more efficient means of propulsion than solid propellants. Contrary to ballistic missiles, cruise missile range can be extended through air launch, by aircraft. While extending the range through reduction in payload, it reduces the weapons destructive capability. [52]

Senate Governmental Affairs
Committee Subcommittee On
International Security,
Proliferation And Federal Services
Dennis M. Gormley February 12,
2012 Multilateral Non-proliferation
Regimes, Weapons of Mass
Destruction Technologies and the
War on Terrorism.
Cruise Missile Threat

Let me illustrate my assertion by focusing on the example of the proliferation of land-attack cruise missiles. As a delivery means for WMD, land-attack cruise missiles, compared with ballistic missiles, are more accurate by at least a factor of ten, are at most half the cost, and are substantially more effective in delivering chemical or biological payloads (e.g., they enlarge the lethal area for biological attacks by at least ten times). However, to date, ballistic missiles have dominated the missile-proliferation scene, and only recently has concern grown about the emergence of the cruise-missile threat. Concern about the spread of land-attack cruise missiles is driven by two realities: first, the quantum leap in dual-use technologies supporting cruise-missile development (including satellite navigation and guidance, high-resolution satellite imagery from commercial vendors, unregulated flight management systems for converting aircraft into unmanned aerial vehicles, and digital mapping technologies for mission planning); and second, the fact that the 33-nation Missile Technology Control Regime (MTCR) is much less effective at controlling the spread of cruise missiles and UAVs than ballistic missiles.

http://www.bioterrorism.slu.edu/bt/official/congress/gormley021202_p.htm

51). Ballistic And Cruise Missile Threat NASIC-1031-0985-09

<http://www.fas.org/programs/ssp/nukes/NASIC2009.pdf>

52).). Cruise Missiles and NATO Missile Defense: Under the Radar? Proliferation Papers, No. 41, Spring 2012 Dennis M. Gormley
<http://www.ifri.org>



Cruise Missile: Chemical and Biological Warfare Agent Payload

Their Precise Accuracy Makes Cruise Missiles Effective Delivery Systems For Unconventional Payloads. Cruise missiles may also be very effective distributors of unconventional weapons. Because they travel at relatively slow speeds, cruise missiles could disseminate chemical agents very efficiently either through submunitions, or a spraying method. In contrast, coordinating the dispersal of chemical or biological agents from a ballistic warhead traveling many times the speed of sound is very complicated. [53]

Bomblets can also be included on transonic or supersonic cruise missiles. These bomblets can be released over a target to ameliorate the airstream problem. After release, the bomblets decelerate, float to the target, and spray their agent into the air. Bomblets reduce the packing fraction of agent within the cruise missile airframe and, therefore, reduce the overall payload of a cruise missile. A subsonic cruise missile equipped with a sprayer dispensing agent from a single tank onboard the missile may simply release the agent into the airstream. In most cases, a large fraction of this agent will be destroyed before it reaches its target. To be more effective, the sprayer must dispense the agent so that it avoids the vortex from the tips of the wings and the disturbed airflow from the fuselage. [54]

A cruise missile's steady horizontal flight permits the release and spraying of chemical or biological warfare agents at right angles to the wind direction and upwind of the target area, greatly increasing dissemination efficiency. Although there are a number of technological hurdles to disseminating chemical and especially biological agents, it is worth remembering that the US Army Chemical Corps overcame those many decades. Such a capability is within the reach of a range of states. Disseminating either chemical or biological agent from a rapidly descending ballistic missile is both less efficient and more technologically challenging. [55]

Submunitions

Submunitions include bomblets, grenades, and mines filled with explosives or chemical agents. They may be antipersonnel, anti-materiel, antitank, dual-purpose, incendiary, or chemical submunitions. Submunitions are typically spread over a large area by dispensers, missiles, rockets, or projectiles. Each of these delivery systems disperses the submunitions while still in flight, scattering the submunitions over an area. Submunitions are activated in a variety of ways, depending on their intended use. Some are activated by pressure, impact, or movement or disturbance. Others are activated in flight or when they come near metallic objects. Some submunitions contain a self-destruct fuse as a backup. The self-destruct time can vary from a couple of hours to several days. Submunitions are extremely hazardous because even very slight disturbances can cause them to explode. Some types of submunitions require stabilization to hit the target straight on. Stabilization can be provided through an arming ribbon, parachute, or fin assembly.

<http://www.globalsecurity.org/military/systems/munitions/sub>

53). Cruise Missiles: Evolution, Proliferation and Future by Sitakanta Mishra, Delhi: KW Publishers, 2011, pp. 206, INR 680 Zorawar Dault Singh http://idsa.in/system/files/jds_6_3_ZorawarDaultSingh.pdf

54) IBID 1

55). Cruise Missiles and NATO Missile Defense: Under the Radar? Proliferation Papers, No. 41, Spring 2012 Dennis M. Gormley <http://www.ifri.org>



Cruise missile technology offers the means for developing a precision strike capability much more cheaply than would be required to procure a modern air force. Once built, cruise missiles require little maintenance and fewer trained personnel to operate and deploy than does a fleet of jet aircraft.

The use of chemical or biological weapons by cruise missiles would further complicate US air operations in the Middle East. According to one study, it is possible to degrade operations at 11 air bases in the Persian Gulf region by delivering between 500 and 2,000 kg of Sarin or VX nerve agent. Moreover, only 5 to 10 kg of anthrax would be required to cover most of an air base. [56] The Iranian Islamic Revolutionary Guard Missile Forces draw its effectiveness from the combination of precision (from GPS guidance) and highly lethal submunitions warheads. Even more lethal scenarios are plausible, however. For example, if the Iranians used converted kit aircraft, they could have delivered a larger payload of submunitions at one-quarter to one-sixth of the cost. If they used more advanced cruise missiles, coordinated ballistic and cruise missile strikes would prove much easier to effect. ASCMs would also figure into an Iranian effort to deny the United States access to the region. Iran could use land-based ASCMs to raise the cost of operations in the confined waters of the Persian Gulf and North Arabian Gulf. The Iranian leadership would calculate that the possibility of missile strikes would force the US Navy to keep a healthy distance, thereby substantially reducing its effectiveness. These bases were selected because all have been used in the past and are within 1,100 km of Iran. This scenario is documented in Stillion and Orletsky, *Airbase Vulnerability to Conventional Cruise-Missile and Ballistic-Missile Attacks*, Ch. 3. 97 Gormley, *Dealing with the Threat of Cruise Missiles*, p. 49. .

Pasdaran: Iranian Revolutionary Guard Corps

"The IRGC are separate from the regular Iranian military Forces. They are considered the most loyal and elite of all Iranian Military Forces. In reality there are an entire Military Force of about 125,000 comprising their own Naval, Air Power, Ground Forces and more. The IRGC is in total control of Iran's chemical, biological, radiological, and nuclear (CBRN) weapons, and Missile arsenals"

Iranian Weapons Of Mass Destruction: Doctrine, Policy And Command Anthony H. Cordesman Arleigh A. Burke Chair in Strategy and Adam C. Seitz January 12, 2009 page 20 csis.org



**Iranian Defense Minister
Brigadier General Ahmad Vahidi**

In 2012 Iranian Defense Minister Brigadier General Ahmad Vahidi stated Tehran has the necessary capability to give a crushing response to any possible enemy threat, thanks to its high cruise missile capability. "Our *cruise missiles can completely respond to any kind of threat*," stressing that Iran's "*Nasr, Qader, Nour, Zafar and Fateh anti-ship cruise missiles can hit every enemy target*" with high precision and power. General Ahmad Vahidi pointed to the different types of missiles displayed during the nationwide parades on the occasion of the Sacred Defense Week late in September of 2012 and noted that the Islamic Republic "*feels no shortage in missile fields*". Nasr cruise missiles are a sea-to-sea cruise missile with high destructive capability and targeting power. Zafar (Triumph) is a short-range, anti-ship, radar guided missile capable of hitting and destroying small and medium-sized targets with high precision. The missile can be mounted onto light and speed boats, enjoys a high capability in anti-electronic warfare and is highly destructive. The anti-ship missile, called Nour (Light), is a long-range cruise missile manufactured by Iran and has already been mounted on several military gears. [57]

56). Stillion and Orletsky, *Airbase Vulnerability to Conventional Cruise-Missile and Ballistic-Missile Attacks*, ch. 3. 97 Gormley, *Dealing with the Threat of Cruise Missiles*, p. 49.

57). DM: Iran's Cruise Missiles Protect Country against Every Threat 06 October 2012 <http://english.riib.ir/news/science-a-technology/item/99636-dm-iran-s-cruise-missiles-protect-country-against-every-threat>

There are various types of cruise missiles that have been adapted for air, land, or sea operations: anti-ship cruise missiles and anti-ship derivatives can hit surface targets or coastal and land targets; low altitude land attack cruise missile (LACM) with terminal guidance can destroy land targets at medium to long ranges potentially travelling at supersonic speeds, and can also be used to equip unmanned aerial vehicles (UAVs) or drones with payloads. It is estimated that the around 80,000 or approximately 90 percent of the combined cruise missile arsenal of the world are anti-ship versions.

Cruise Missile Technology: Propulsion

Solid or Liquid Rocket Motor

- Short Operational Range
- Subsonic /Supersonic

Turbo Jet or Turbo Fan Engines

- Medium to Long Operational Ranges
- Subsonic Speeds

Ram Jet Engines

- Medium Operational Ranges
- Supersonic Speeds



Turbo- jet



Turbo- fan

Turbofan and turbojet propulsion systems technologies have evolved and have become deadly engines for precision strikes. Currently turbofan and turbojet propulsion systems technologies are best suited for subsonic cruise missiles, providing high efficiency to deliver a warhead at long range against non-time-critical targets. To note the use of the turbofan is advantageous in that it provides better fuel consumption than a turbojet, with a reduced infrared signature. Most early variants of the cruise propulsion system were liquid fuelled. But this created many related problems that crippled the missiles operational capability, liquid propellants can leak, possibly leading to the formation of an explosive mixture, large volume fuel tank occupied a very large proportion of the mass of the vehicle

Subsonic cruise missile flies at a speed lesser than that of sound. It travels at a speed of around 0.8 Mach. The well-known subsonic missile is the American Tomahawk cruise missile. Some other examples are Harpoon of USA and Exocet of France.

Supersonic cruise missile travels at a speed of around 2-3 Mach i.e.; it travels a kilometer approximately in a second. The modular design of the missile and its capability of being launched at different orientations enable it to be integrated with a wide spectrum of platforms like warships, submarines, different types of aircraft, mobile autonomous launchers and silos. The combination of supersonic speed and warhead mass provides high kinetic energy ensuring tremendous lethal effect.

58). Air Power Journal Vol. 1 No. 5, Spring 2010 (January-March) 42 Towards 'Intelligent' Cruise Missiles: Contours Of Innovation

Sitakanta Mishra

59). Cruise Missiles and NATO Missile Defense: Under the Radar? Proliferation Papers, No. 41, Spring 2012 Dennis M. Gormley <http://www.ifri.org>

Cruise missile technology 'hides in plain sight'—making it difficult to identify a military program. At the same time, commercial availability generally means relatively low-cost weapons for many nations and, potentially, non-state actors."

Since the beginning of the 1990s, various regional powers have committed themselves to acquiring cruise missiles following an anti-access logic. In particular, the objective is to be able to:

- Slow or even prevent the deployment of American forces and means close to the operations theatre.
- Weaken the will and / or the capability of future host countries to host American forces.
- Slow the rhythm of military operations carried out by the United States and their allies.

Concern about the spread cruise missiles and especially of land-attack cruise missiles are driven by harsh military realities: the quantum leap in dual use technologies supporting cruise missile development (including satellite navigation and guidance, high-resolution satellite imagery from commercial vendors, unregulated flight management systems for converting aircraft into UAVs and digital mapping technologies for mission planning). [60]The emergence of the cruise missile threat even confronts the American military forces with enormous challenges. The



The effectiveness of both airborne and ground based surveillance radars is being undermined by missile designs that are increasingly sleek and aerodynamic, and have lower radar cross-sections. Reduced radar detection means that the defense has less time to react. Also, many cruise missiles have very low flight profiles and employ terrain features to avoid detection. Low flight impedes airborne surveillance, owing to radar "clutter" from ground objects other than the target, which makes cruise missile a land launched cruise missile difficult to detect.[61]The 1991 Gulf War saw the cruise missile deadly capabilities play upon the world stage as American Tomahawk cruise missiles devastated Saddam's Iraq. However it was not until the 2003 US-Iraq war that the Islamic Republic of Iran along with other major countries grasped the cruise missile military depth. Every Scud missile that Saddam Hussein fired at American forces was shot down as expected. But what astonished the international community every cruise missile launched by Saddam (five) not one was shot down. At least two Iraqi ultra light aircraft which were feared capable of carrying chemical or biological agents were detected only after flying over thousands of U.S. troops, equipment, and command facilities prior to a U.S. Army division's advance on Baghdad. [62] The lessons learned in the 2003 Gulf War took effect in the war's aftermath. The five crude Iraqi cruise missiles that evaded detection or destruction caused only limited fratricide damage, friendly aircraft was shot down. Defence Specialists within the U.S. government and elsewhere noted the chief lesson became that ballistic missile defenses alone cannot address the threat of low-flying cruise missiles. Just after the formal combat of the 2003 Iraq war ended senior U.S. military officials voiced their concern about the implications of Iraq's minimal cruise missile attacks. "This was a glimpse of future threats. It is a poor man's air force," the chief of staff of the 32nd U.S. Army Air and Missile Defense Command told the New York Times. "A thinking enemy will use uncommon means such as cruise missiles and unmanned aerial vehicles on multiple fronts." [63]

60). Missile Contagion: Cruise Missile Proliferation and the Threat to International Security
September 15, 2010 Dennis M. Gormley

61). IBID 1

62). Testimony of Dennis M. Gormley Senior Fellow Monterey Institute's Center for Nonproliferation Studies Before the Subcommittee on National Security, Emerging Threats, and International Affairs Of the U.S. House of Representatives Committee on Government Reform March 9, 2004 <http://cns.mii.edu/research/congress/testim/testgorm.htm>

63). The Risks and Challenges of a Cruise Missile Tipping Point Sept. 1, 2008 Dennis Gormley Senior Fellow, Monterey Institute of International Studies <http://www.nti.org/analysis/articles/cruise-missile-tipping-point/>

In the Middle East, where Iran's cruise missile ambitions took hold roughly a year after the end of major operations in Iraq in 2003. And virtually every new state that has joined the cruise missile club since 2003 has married its cruise missile developments to a growing fascination with preemptive strike doctrines.

The Silkworm was developed at the Institute of Mechanics under Tsien Hsue-shen, a Chinese-American scientist who fled the United States in 1955 after being suspected of Communist ties. The Silkworm gained fame in the 1980s when it was used by both sides in the Iran-Iraq War; both countries were supplied by China,, the missile was used by Saddam Hussein Iraq in the 2003 Iraq War. The most proliferated ASCM may well be the Chinese-made *Silkworm*, which is based on the old Soviet SS-N-2 *Styx*. Among the *Silkworm's* purchasers are Iraq, Iran and North Korea. Its large internal volume allows for the inclusion of more fuel, a heavier payload, and a larger internal guidance system. Reportedly only minor changes to its HY-4 variant can extend its range from about 90 miles (150 km) to more than 310 miles (500 km). Such a missile, if launched from Iran, could reach almost any U.S. surface forces in the Persian Gulf region. Moreover, because 300 miles (nearly 500 km) is a distance farther than the territorial limits of any country, a cruise missile possessing that much range could, if launched from international waters, strike almost any large civilian target on the American or European seaboard. [64]



Iran Raad Cruise Missile Tracked Vehicle

Iran has also been developing an indigenous cruise missile variant known as the Raad, reportedly based on the Chinese Silkworm airframe. The Raad's range would enable IRGC commanders to strike naval vessels operating in the Persian Gulf and the Strait of Hormuz. Moreover, the Chinese Silkworm can carry a 500kg warhead (1/2 ton) , indicating that a similarly designed Raad derivative could hypothetically carry a well-designed nuclear warhead up to a range of 105km (65 mi). The Raad's limited range is not ideally suited for a nuclear delivery role. Despite their limitations, deploying cruise missiles such as the Raad provides the IRGC with a number of tactical advantages, including diversifying its

delivery capabilities and enabling it to rely less heavily on its relatively weak air force. Iranian cruise missiles would also be less vulnerable to interception than ballistic missiles by potential adversaries' missile defense systems, because of their lower and shorter flight trajectory. [65]

The HY-4 is the only anti-ship cruise missile in the HY-series equipped with a turbojet engine, which may explain why Iran was able to achieve a range of 350km (217 mi) for its Raad. According to the NATO Parliamentary Assembly, China has provided substantial assistance to Tehran's cruise missile programs, one of which involved upgrading around 300 HY-2 (Silkworm) anti-ship missiles into land-attack ones by fitting them out with turbojet engines and improved navigation systems. Raad cruise missile, which bears a Chinese HY-2 lineage, may come in both anti-ship and land-attack versions. The new Iranian anti-ship missiles, such as the Nur and the recently revealed Ghader, seem like derivatives of the Chinese C-802. However because such designs are smaller in volume to the HY-series of missiles, they are not best suited as candidates for ranges probably greater than 300km (186 mi). [66]

64). Cruise Missiles and NATO Missile Defense: Under the Radar? Proliferation Papers, No. 41, Spring 2012 Dennis M. Gormley
<http://www.ifri.org>

65). Iran <http://www.nti.org/country-profiles/iran/delivery-systems/>

66). IBID 1

Special Weapons Primer, Federation of American Scientists, Cruise Missiles

"Cruise missiles pose perhaps the gravest delivery system proliferation threat. They are inexpensive to build and can, therefore, overwhelm current defenses by sheer numbers. They can be designed to be small with low-thrust engines and can penetrate radar and infrared-detection networks. The technology to build them is simple and available to any country that builds even rudimentary aircraft."

"Since cruise missiles are unmanned, they require no flight crew training, which takes years for a professional pilot. There are no expensive upkeep programs and flight maintenance, and no need special hangars nor large air bases buildings for housing as with manned aircraft. A cruise missile airframe does not undergo particularly severe stress on its flight to a target, it does not pull any high "g" maneuvers, and it does not experience propulsion accelerations associated with gun or ballistic missile launches. Virtually any airframe that is structurally sound enough to be used in an ordinary airplane is adequate for a cruise missile. A designer can use factors of safety of 1.5 or 2 in the design to ensure structural integrity under all dynamic conditions without recourse to structural finite element computer codes, which generally only assist a designer to shave four or five percent from the weight of a design. (a)FAS Cruise missiles differ from ballistic missiles as a potential threat because they share so many common technologies with existing vehicles that have been designed for other purposes. Much of the hardware to construct a cruise missile can be had by cannibalizing existing commercial aircraft or by purchasing parts and components for the missile from legitimate suppliers. The technology tables serve only as a guideline to alert and inform export control regulators of general categories of technologies as opposed to specific performance specifications".

Cruise Missile Special Weapons Primer, Fas.Org/Nuke/Intro/Cm/Index.Html

One man to prove how easily a cruise missile can be built did so. In New Zealand, a jet-engine



enthusiast and self-styled handyman named Bruce Simpson announced in 2003 his remarkably credible plans to construct, in his garage, his own home-made cruise missile. On his web-site, InterestingProjects.com, Simpson explained: "Some time ago I wrote an article in which I suggested that it would not be difficult for terrorists to build their own relatively sophisticated cruise missiles using off-the-shelf components and materials. Since then, I've received quite a number of emails from former and currently serving U.S. military personnel who acknowledge that the threat is one they are very much aware of and for which there is little in the way of an effective defense available. However, there have also been a number of people who claim I'm overstating the case and that it's not possible to build a real cruise missile without access to sophisticated gear, specialized tools, and information not readily available outside the military. So, in order to prove my case, I decided to put my money where my mouth is and build a cruise missile in my garage, on a budget of just US\$5,000." According to Simpson, he acquired most of the necessary parts from the online auction house

eBay, including a Global Positioning System (GPS) he purchased for only \$120 "delivered by international airmail in less than a week and passed through customs without any problems," he said. He described his cruise missile as being crude, "like a small aircraft powered by a jet engine," with a range of 100 kilometers (62 miles) and a payload of 10 kilograms (22 pounds). [67]

67). The Cruise Missile Threat and its Proliferation by John G. Heidenrich* <http://www.marshall.org/pdf/materials/478.pdf>

Stealth Technology: We are also see stealth technology being incorporated into cruise missiles. As early as 2004 the Iranian Defense Ministry announced that Iran had produced the Kosar, an indigenous and allegedly stealthy ASCM. [68] Pakistan claims to have developed a nuclear cruise missile Babur (Hat7) which uses stealth technology. [69]

Desert Storm proved cruise missiles could be employed successfully against a wide range of the targets that was encountered in the conflict. Cruise missiles provided other advantages over manned aircraft. For

example, tomahawk cruise missile strikes did not require the additional resources as would have a jet squadron strike carrying out the same mission. Cruise missiles are fire and forget and do not have to return to base. When both Air Force land-based and naval carrier-based manned strike aircraft carry out their attacks, they are generally supported by several other types of aircraft. The supporting aircraft protect the strike aircraft from enemy defenses, provide command and control, and refuel the aircraft taking part in the attack. These groups of strike and support aircraft are commonly called "strike packages". Such air craft for a strike mission required electronic warfare aircraft to jam Iraqi Radar, fighter escort to protect from possible enemy aircraft, and refueling. US military and naval aircraft required extensive refueling support during Desert Storm. The distances from the airfields on the Saudi peninsula and from the aircraft carrier operating areas to the targets generally exceeded the operating range of the aircraft. Additionally, as the raid on Iraqi intelligence headquarters in 1993 demonstrated, cruise missile strikes can be launched without the presence of an aircraft carrier battle group. Employing cruise missiles can also avoid possible political constraints, such as obtaining host nation permission to use U.S. aircraft from forward deployed bases or fly through a third nation's airspace. [70]

Operation Iraqi Freedom 2003
Coalition but failed to detect or intercept the five HY-2/CSSC-3 Seersucker cruise missiles launched against Kuwait. All the more troubling was the fact that the HY-2/CSSC-3 missiles were developed in the 1970s and are considered large and slow compared to more modern cruise missiles. This demonstrated vulnerability could further the attractiveness of cruise missiles to countries looking for a means to strike U.S. targets.

Missile Survey: Ballistic and Cruise Missiles of Selected Foreign Countries Updated July 26, 2005 Andrew Feickert Specialist in National Defense Foreign Affairs, Defense, and Trade Division , CRS Report for Congress: Cruise Missile Proliferation

Three hundred and seventeen land-attack cruise missiles were used in the 1991 Gulf War, which lasted roughly 5 weeks. Eight years later, 420 were used in 4 days during Operation Desert Fox. And 12 years after the first Gulf War, 1,370 cruise missiles were employed in the second Gulf War. [71]

The perception of normative differentiation between ballistic and cruise missiles also appears evident in India's attempts to acquire cruise missile technologies to extend the range of its nascent cruise missile programs. Pakistan's surprise cruise missile test in 2005 prompted calls in the Indian press to extend the range of the BrahMos cruise missile at least to that of Pakistan's Babur and much farther if possible. The People's Liberation Army Military Digest reported in May 2007 that China was transforming more than 1,000 retired Jian-5 fighters into cruise missiles, the cost of which, according to a Taiwanese analyst, would be roughly \$100,000 each.

68). Iran Claims to Produce 'Stealth' Anti-Ship Cruise Missile," Jane's Missiles and Rockets, July 1, 2004.

69)."The Babur, which has near stealth capabilities, is a low-flying, terrain-hugging missile with high maneuverability, pinpoint accuracy and radar-avoidance features," <http://www.taipeitimes.com/News/world/arch...2/12/2003392224>

70). April 1995 CRUISE MISSILES Proven Capability Should Affect Aircraft and Force Structure Requirements GAO/NSIAD- GAO Report to Congressional Committees United States General Accounting Office <http://www.gao.gov/assets/160/154937.pdf>

71). Cruise Missiles and NATO Missile Defense: Under the Radar? Proliferation Papers, No. 41, Spring 2012 Dennis M. Gormley <http://www.ifri.org>

The Hague Code of Conduct Against Ballistic Missile Proliferation (HCOC), was established on 25 November 2002 as an arrangement to prevent the proliferation of ballistic missiles. The HCOC is the result of international efforts to regulate access to ballistic missiles which can potentially deliver weapons of mass destruction, (CBRN). The HCOC, as a political initiative, is aimed at bolstering efforts to curb ballistic missile proliferation worldwide and to further delegitimize such proliferation. The HCOC is the only multilateral code in the area of disarmament which had been adopted in recent years, and is the only normative instrument to verify the spread of ballistic missiles. The Code does not call for the destruction of any missiles; it is simply an agreement between States on how they should "conduct" their trade in missiles. The Code is meant to supplement the Missile Technology Control Regime (MTCR) but its membership is not restricted. Under the Code, States make politically binding commitments to curb the proliferation of WMD-capable ballistic missiles and to exercise maximum restraint in developing, testing, and deploying such missiles. Given the similarities between the technologies used in ballistic missiles and civilian rockets, the Code also introduces transparency measures such as annual declarations and pre-launch notifications regarding ballistic missile and space launch programs. The HCOC is the only multilateral code in the area of disarmament which has been adopted over the last years. It is the only normative instrument to verify the spread of ballistic missiles. The HCOC does not ban ballistic missiles, but it does call for restraint in their production, testing, and export. Since its first Regular Meeting (annual conference) in 2002, the Subscribing States of the HCOC have convened ten times in Vienna, Austria, and 41 more countries have subscribed as of October 2011. Although Austria has been appointed the Immediate Secretariat for the HCOC, it is collectively administered by all of the Subscribing States. The fact that the HCOC's exclusion of the cruise missiles undermines its attempts to address the issue of missile threat in its entirety is substantiated by the cruise missile proliferation status in the Middle East, South Asia, and Northeast Asia. This failure of the HCOC and MTCR to address cruise missiles combined with the spread of ballistic missile defenses has led to the proliferation of cruise missiles gaining momentum. Taking advantage of the fact that cruise missiles are not under as much international scrutiny as ballistic missiles, countries such as China, Pakistan, and Iran, have initiated cruise missile advancement programs. [72]

- ***"Even if ballistic missile defenses were effectively deployed to cover all NATO territory, these systems would not stop cruise missiles, which fly low and fast and can carry a nuclear payload, or terrorists with a weapon parked on a boat in a harbor."***

NATO's Missile Defense Realizing Collective Defense for the 21st Century: Sean Kay The Dilemma of Modern Collective Defense 2012 PERCEPTIONS, Spring 2012, Volume XVII, Number 1, pp. 37-54.

Arguably the cruise missile threat has grown uncontrollably, with the high cost of missile defense interceptors makes such defenses increasingly unaffordable and ultimately ineffective in coping with combined ballistic and cruise missile attacks. Even America's existing cruise missile defense programs are underfunded; Homeland defenses are even more sorely lacking. While doctrinal, organizational, and interoperability issues continue to hamper joint military services from producing truly combined solutions for defending U.S. forces and allies. Precision conventional-strike systems to pre-emptive war doctrines, states are moving closer to lowering the vital threshold between peace and war and escalation to CBRN use. [73]

72). Hague Code of Conduct Against Ballistic Missile Proliferation (HCOC) <http://www.nti.org/treaties-and-regimes/hague-code-conduct-against-ballistic-missile-proliferation-hcoc/>

73). Winning on Ballistic Missiles but Losing on Cruise: The Missile Proliferation Battle Arms Control Today » December 2009 » Winning on Ballistic Missiles but Losing on Cruise: The Missile Proliferation Battle http://www.armscontrol.org/act/2009_12/Gormle

Another area of growing concern is the conversion of unmanned aerial vehicles (UAVs) or RPVs into LACMs (land attack Cruise Missiles). Conversion of UAVs or RPVs into cruise missiles is technologically easier than converting ASCMs. Many off-the-shelf UAVs are already equipped with GPS guidance systems and can carry small payloads long distances. At least 100 different countries manufacture hundreds varieties of UAVs, the vast majority of which could be modified to deliver a warhead on a one-way trip over 300 km (186 mi). The ease of converting UAVs or RPVs into cruise missiles is apparent, as there are relatively few modifications needed other than attaching a warhead to the airframe. [74]



Unmanned Aerial Vehicle UAVs

The term UAV has become part of the modern lexicon; it is also an acronym for Unmanned Aerial Vehicle, which is an aircraft with no pilot on board. These can be piloted remotely flown by a pilot at a ground control station. UAVs can be expendable or recoverable. UAVs can also fly autonomously based on pre-programmed flight plans or more complex dynamic automation systems. UAVs models can be aircraft propeller driven to helicopter styles, and hover models. Their sizes can range from a hand held micro-UAV to a full size jet fighter aircraft. There is a difference between UAVs

and cruise missiles, but it can become blurred. UAVs are currently used for a number of missions, including reconnaissance and attack roles. Some of the different types of engines found in UAVs are Turbofans, Two strike, Piston, Rotary, Turboprop, Push and Pull, Electric, and Propeller. UAVs have only been in service for the last 60 years. UAVs are now an important addition to many countries air defenses. Over the years UAVs have been developed into the highly sophisticated machines in use today. Modern UAVs are used for many important applications including coast watch, news broadcasting, and the most common application. In military operations, we find reconnaissance and attack roles, lethal or non-lethal payloads. [75]

RPV: Remotely Piloted Vehicle, e.g. Predator UAV

SUAS: Small Unmanned Aerial System

UAS: Unmanned Aerial System

UAV: Unmanned Aerial Vehicle, remote controlled, e.g. Predator

UCAV: Unmanned Combat Aerial Vehicle - Armed UAV, e.g. Predator equipped with two hellfire missiles

UAV Types

Target and Decoy - providing ground and aerial gunnery a target that simulates an enemy aircraft or missile

Reconnaissance - providing battlefield intelligence

Combat - providing attack capability for high-risk missions (see Unmanned Combat Air Vehicle)

Research and Development - used to further develop UAV technologies to be integrated into field deployed UAV aircraft

Civil and Commercial UAVs - UAVs specifically designed for civil and commercial applications.

Degree of Autonomy :Some early UAVs are called drones because they are no more sophisticated than a simple radio controlled aircraft being controlled by a human pilot (sometimes called the operator) at all times. More sophisticated versions may have built-in control and/or guidance systems to perform low level human pilot duties such as speed and flight path stabilization, and simple prescribed navigation functions such as waypoint following

74). Fall, 2004 STRATEGIC MYOPIA [Florida State University College of Law](http://www.law.fsu.edu/journals/transnational/vol14_1/dutra.pdf) STRATEGIC MYOPIA: THE UNITED STATES, CRUISE MISSILES, AND THE MISSILE TECHNOLOGY CONTROL REGIME MICHAEL DUTRA*

www.law.fsu.edu/journals/transnational/vol14_1/dutra.pdf

75). UAVS <http://www.theuav.com/>

UAVs range from the size of an insect to that of a commercial airliner.

The military role of UAV is growing at unprecedented rates. In 2005, tactical and theater level unmanned aircraft (UA) alone, had flown over 100,000 flight hours in support of Operation ENDURING FREEDOM (OEF) and Operation IRAQI FREEDOM (OIF). Rapid advances in technology are enabling more and more capability to be placed on smaller airframes which is spurring a large increase in the number of SUAS being deployed on the battlefield. The use of SUAS in combat is so new that no formal DoD wide reporting procedures have been established to track SUAS flight hours. As the capabilities grow for all types of UAV, nations continue to subsidize their research and development leading to further advances enabling them to perform a multitude of missions. UAV no longer only perform intelligence, surveillance, and reconnaissance (ISR) missions, although this still remains their predominant type. Their roles have expanded to areas including electronic attack (EA), strike missions, suppression and/or destruction of enemy air defense (SEAD/DEAD), network node or communications relay, combat search and rescue (CSAR), and derivations of these themes. These UAV range in cost from a few thousand dollars to tens of millions of dollars, and the aircraft used in these systems range in size from a Micro Air Vehicle (MAV) weighing less than one pound to large aircraft weighing over 40,000 pounds.

UAVs use has increased for a number of reasons. Advanced navigation and communications technologies were not available just a few years ago, and increases in military communications satellite bandwidth have made remote operation of UAVs more practical. The nature of the Iraq and Afghanistan wars has also increased the demand for UAVs, as identification of and strikes against targets hiding among civilian populations required persistent surveillance and prompt strike capability, to minimize collateral damage. Further, UAS provide an asymmetrical and comparatively invulnerable technical advantage in these conflicts.

CBRN Warfare

It should also be noted that UAVs and RPVs are ideally suited for the delivery of chemical or biological weapons because they fly at relatively low speeds and usually have greater aerodynamic flight stability than other LACMs because most UAVs have wings rather than winglets or fins like other LACMs. This flight stability allows for the more effective use of sprayers for disseminating chemical or biological agents from UAVs or RPVs. UAVs and RPVs are quite vulnerable to anti-aircraft defenses compared to other LACMs, however, because they fly at relatively slow speeds and are easy targets for anti-aircraft guns, SAMs, and air-to-air missiles. However, because of their small size and low speeds, UAVs and RPVs may be able to escape radar detection until they are quite close to their targets

**Fall, 2004 STRATEGIC MYOPIA
Florida State University College Of
Law STRATEGIC MYOPIA: THE
UNITED STATES, CRUISE
MISSILES, AND THE MISSILE
TECHNOLOGY CONTROL REGIME
MICHAEL DUTRA*
Www.Law.Fsu.Edu/Journals/Trans
national/Vol14_1/Dutra.Pdf**

76). U.S. Unmanned Aerial Systems Jeremiah Gertler Specialist in Military Aviation January 3, 2012 Report for Congress, Congressional Research Service 7-5700 www.crs.gov R42136
Prospective Unmanned Aerial Vehicle Operations in the Future National Airspace System Matthew DeGarmo and Gregory M. Nelson
The MITRE Corporation, Center for Advanced Aviation System Development, McLean, Virginia 22102

Initially America's military UAV capabilities came from platforms acquired from Israel. The Israeli Air Force weaponized drone, the Pioneer noted in the 1982 war in Lebanon reinvigorated the Pentagon's interest in armed UAVs. Impressed with the Pioneer, the Navy purchased several and the Reagan Administration began increasing UAV procurement and research in 1987. Powered by a 26-horsepower snowmobile engine the Pioneer made its American debut during the Persian Gulf War. Iraqi soldiers grew to fear the ominous buzzing of the Pioneer in one widely reported incident, a group of Republican guards became the first humans to surrender to a drone. The success of the Pioneer in Desert Storm led to the Department of Defense spending over \$3 billion on UAV programs during the 1990s. UAVs emerged as a critical source of intelligence and asset for employing

naval firepower. For example during Operation Desert Storm UAVs were used by Navy battleships at the tactical level to locate Iraqi targets for their 16-inch guns. The 1991 Gulf War experience demonstrated the potential value of UAVs, and the Air Force's Predator was placed on a fast track, quickly adding new capabilities. Debuting in the Balkans conflict, the Predator performed surveillance missions such as monitoring area roads for weapons movements and conducting battle damage assessment. Operations in Iraq and Afghanistan have featured the Air Force's Global Hawk, as well as adding a new mission that allows the Predator to live up to its Name armed reconnaissance.

In today's military, unmanned systems are highly desired by combat commanders for their versatility and prolonged flight capabilities. By performing tasks such as surveillance; signals intelligence (SIGINT); precision target designation; mine detection; and chemical, biological, radiological, nuclear (CBRN) reconnaissance, unmanned systems have made key contributions to the Global War on Terror.

Military investment in UAV research, systems, and applied technologies is increasing, and potential uses for UAVs in civil operations, particularly for homeland security, is being investigated by federal, state, and local governments. These developments, along with growing scientific interest in UAVs, are fueling commercial interest in the unmanned market. The growing enthusiasm for UAVs is not unfounded. The vehicles offer a unique range of features, most notably ultra-long endurance and high-risk mission acceptance, which cannot be reasonably performed by manned aircraft. Coupled with advances in automation and sensor technologies, and the potential for costs savings, it is understandable that interest in and demand for UAVs is on the rise.

Various unmanned systems illustrating a range of different vehicle sizes and designs including (clockwise from top left) the hand-launched AeroVironment RQ-20 Puma; an unmanned version of the Kaman K-MAX external load helicopter operated by the U.S. Marine Corps; the Honeywell RQ-16 "Tarantula" T-Hawk; the AAI RQ-2 Pioneer; and the "Altair" variant of the General Atomics MQ-9 Predator 2/Reaper.



77). U.S. Unmanned Aerial Systems Jeremiah Gertler Specialist in Military Aviation January 3, 2012 Report for Congress, Congressional Research Service 7-5700 www.crs.gov R42136

Prospective Unmanned Aerial Vehicle Operations in the Future National Airspace System Matthew DeGarmo and Gregory M. Nelson The MITRE Corporation, Center for Advanced Aviation System Development, McLean, Virginia 22102

Washington Report: Monitoring on Unmanned Aerial Vehicle Exports/Proliferation

2012 July GAO-12-536

The United States likely faces increasing risks as countries of concern and terrorist organizations seek to acquire UAV technology. Foreign countries' and terrorists' acquisition of UAVs could provide them with increased abilities to gather intelligence on and conduct attacks against U.S. interests. For instance, some foreign countries likely have already used UAVs to gather information on U.S. military activities overseas. Alternatively, the U.S. government has determined that selected transfers of UAV technology support its national security interests by providing allies with key capabilities and by helping retain a strong industrial base for UAV production. For instance, the United Kingdom and Italy have used UAVs purchased from the United States to collect data on Taliban activity in Afghanistan.

The United States has engaged in multilateral and bilateral diplomacy to address UAV proliferation concerns. The United States principally engaged the Missile Technology Control Regime (MTCR) to address multilateral UAV proliferation concerns. Since 2005, the United States proposed certain significant changes to address how MTCR controls UAVs, but members could not reach a consensus for these changes. Also, while the Wassenaar Arrangement controls the export of some key dual-use UAV components, it does not control other dual-use technologies that are commonly used in UAVs. The Department of State has also used diplomatic cables to address the proliferation of UAV-related technologies bilaterally. State provided to GAO about 70 cables that it sent from January 2005 to September 2011 addressing UAV-related concerns to about 20 governments and the MTCR. Over 75 percent of these cables focused on efforts by a small number of countries of concern to obtain UAV technology.

"According to available analysis, the majority of foreign UAVs those countries have acquired fall within the tactical category. Tactical UAVs primarily conduct intelligence, surveillance, and reconnaissance missions and typically have a limited operational range of at most 300 kilometers (186 mi). However, some more advanced varieties are capable of performing intelligence collection, targeting, or attack missions. Mini UAVs were also frequently acquired across the globe during this period"

U.S. agencies coordinate in several ways to control the spread of UAV technology, but could improve their UAV-related information sharing. For instance, an interagency group reviews many license applications to export UAV technology. However, there is not a formal mechanism to ensure that licensing agencies have relevant and timely intelligence information when making licensing decisions. Also, State's licensing database cannot provide aggregate data on military UAV exports State has authorized, which may impair the U.S. government's ability to oversee the release of sensitive UAV technology. The Department of Defense (DOD) and State each conduct end-use monitoring of some UAV exports, but differences in the agencies' programs may result in similar types of items being subject to different levels of oversight. Currently, there are over 50 countries developing more than 900 different UAV systems. This growth is attributed to countries seeing the success of the United States with UAVs in Iraq and Afghanistan and deciding to invest resources into UAV development to compete economically and militarily in this emerging area.

Hezbollah used an Iranian-made UAV to overfly and reconnoiter military positions in northern Israel in 2005, which is a technology that could also be converted for use as a cruise missile. Hezbollah also fired two Chinese made C-802-class anti-ship cruise missiles against the Israeli missile-corvette, the *Hanit*, in the July 2006 Lebanon war.

The Cruise Missile Challenge: Designing a Defense Against Asymmetric Threats 2007 Jeff Kueter and Howard Kleinberg
<http://marshall.org/pdf/>

78). Report to the Ranking Member, Subcommittee on National Security, Homeland Defense, and Foreign Operations, Committee on Oversight and Government Reform, House of Representatives July 2012 GAO-12-536 NONPROLIFERATION Agencies Could Improve Information Sharing and End-Use Monitoring on Unmanned Aerial Vehicle Exports
<http://www.gao.gov/assets/600/593131.pdf>

Available analysis of the Defense Security Service declassified reports have determined that foreign countries' acquisition of UAVs can pose a threat because it puts U.S. military assets at increased risk of intelligence collection and attack. There is a significant growth in the number of countries that have acquired UAVs, including key countries of concern, has increased the threat to the US. Because some types of UAVs are relatively inexpensive and have short development cycles, they offer even less wealthy countries a cost-effective way of obtaining new or improved military capabilities that can pose risks to the America and its allies. The potential threat to the United States primarily involves tactical UAVs, rather than more sophisticated, strategic systems. However, according to available analysis, countries of concern are pursuing more advanced UAVs through acquisitions from foreign suppliers and indigenous development. Such UAVs would be capable of flying higher, longer, and further and would be capable of a wider range of missions. According to a publicly released Defense Security Service (DSS), Counterintelligence Reports many countries of concern seek to illegally obtain U.S. UAV technology as part of their strategy to advance their UAV capabilities. DSS reported that foreign targeting of U.S. UAV technology through both overt and covert collection efforts had increased dramatically in recent years. [79]

The 2012 GAO Report on Monitoring on Unmanned Aerial Vehicle Exports analysis has noted that there are likely advantages to using UAVs in terrorist attacks, but also factors that may limit the near-term risk. For instance, in certain situations, small UAVs could potentially be more precise in conducting terrorist attacks than using other items, such as mortars or rockets.

2011, the FBI arrested an individual that he planned to crash radio-controlled unmanned airplanes loaded with explosives into the U.S. Capitol and the Pentagon.

The impact of such attacks might be lessened though, given the inability of small UAVs to carry large explosives. However, if terrorists were able to equip UAVs with even a small quantity of chemical or biological weapons an attack could potentially produce lethal results. Certain challenges were cited in acquiring the technology and expertise necessary to field a UAV sophisticated enough to carry out more destructive attacks with conventional weapons. Larger, more sophisticated systems would potentially also be harder to operate without detection. [80]

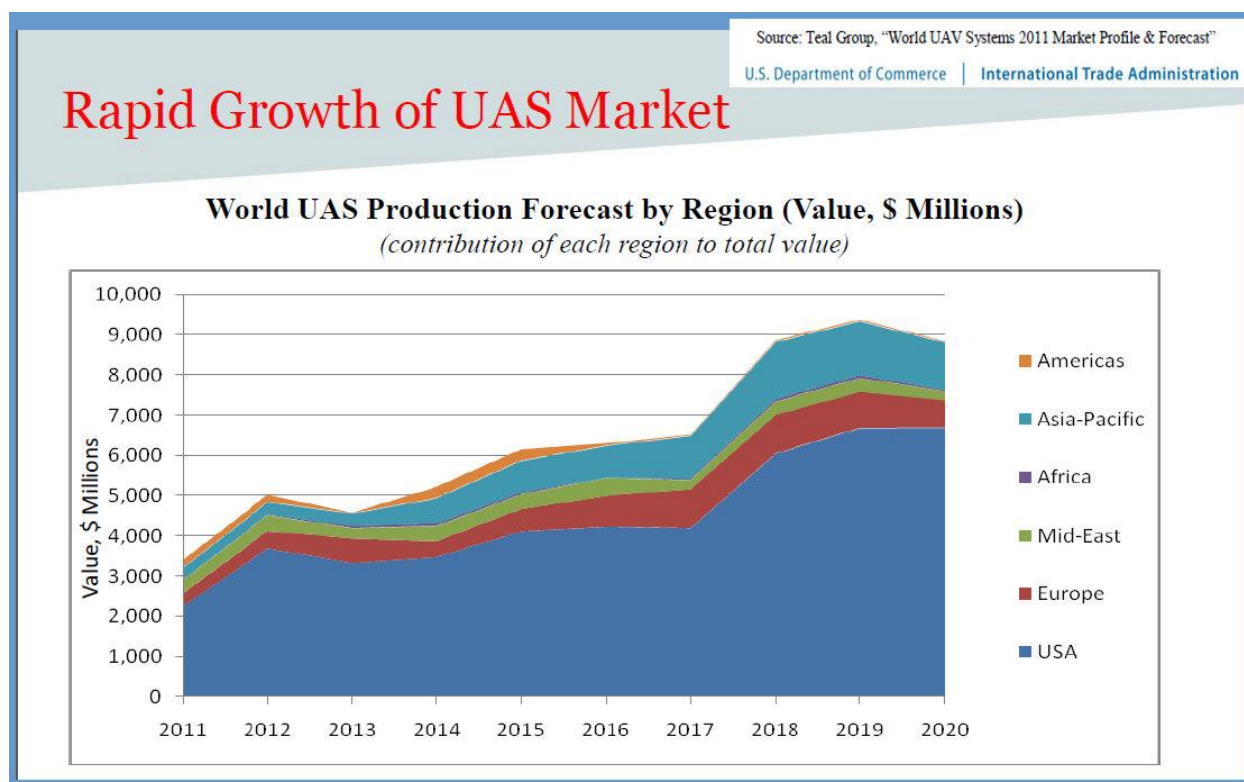


Most recently, military reports from the Persian Gulf region have Iran harassing the ground-based air defenses of the U.S. Army and regional allies by means of employing swarms of UAVs, of reportedly "Chinese design or origin." The Iranian UAVs exploited the limited coverage of these radars by flying low or around them, and on one occasion they were misclassified due to their slow speed or small radar cross section. Such tactics have the character of China's emphasis on taking advantage of the huge cost differential between "tidal waves" of cheap cruise missiles or UAVs and expensive air defense interceptors. China remains a critical wildcard with respect to enabling the spread of land-attack cruise missiles and UAVs. Beijing's current "adherent" status, consisting of a pledge to stand by the MTCR's general guidelines, is problematic especially in regard to cruise missiles. Cruise Missiles and NATO Missile Defense

Dennis M. GORMLEY Cruise Missiles and NATO Missile Defense: Under the Radar? Proliferation Papers, No. 41, Spring 2012 <http://www.ifri.org>

79). Targeting US Technologies 2012 A Trend Analysis of Reporting From Defense Industry Produced by the Defense Security Service Counterintelligence Directorate www.DSS.mil

80). Report to the Ranking Member, Subcommittee on National Security, Homeland Defense, and Foreign Operations, Committee on Oversight and Government Reform, House of Representatives July 2012 GAO-12-536 NONPROLIFERATION Agencies Could Improve Information Sharing and End-Use Monitoring on Unmanned Aerial Vehicle Exports <http://www.gao.gov/assets/600/593131.pdf>



Teal Group's 2010 market study estimated that UAV spending will more than double over the next decade from current worldwide UAV expenditures of \$4.9 billion annually to \$11.5 billion, totaling just over \$80 billion in the next ten years. [81]

UCAVs improve upon the already preferred vector of cruise missiles by both reducing sortie costs and increasing capabilities. The most popular specification for UCAVs is a vehicle that costs under \$15 million and can deliver two 1000lb munitions with the same reliability as two cruise missiles (which have a 1000lb payload).

IRI Karrar UCAV "ambassador of death" bomber In 2010 Tehran inaugurated the country's first domestically built unmanned bomber aircraft, calling it an "ambassador of death" to the Islamic Republic's enemies. Israeli analysts have classified the so-called Karrar, a Farsi word meaning "strike," as a heavily modified version of the Skua target drone manufactured by Denel in South Africa. The 4 meter (13 feet) long drone aircraft can carry up to four cruise missiles and will have a range of 620 miles (1,000 kilometers), not far enough to reach Israel from the Islamic Republic unless launched from coastal areas or adjacent states . Karrar, Iran's first indigenous long-range drone, was unveiled in August 2010, and Iran says it is capable of carrying a military payload of rockets, to carry out bombing missions against ground targets and gather information while flying long distances at a very high speed.

Shahed 129 another indigenous unmanned aerial vehicle (UAV), Shahed 129, unveiled in September, 2012, can carry out combat and reconnaissance missions with its 24-hour nonstop flight capability," according to *Fars*. (IRI's UAVs covered in depth in Chapter 8) [82]

81). Teal Group Predicts Worldwide UAV Market Will Total Over \$80 Billion In Its Just Released 2010 UAV Market Profile and Forecast 01 February 2010
<http://tealgroup.com/>

82). Iran: New Long-Range Drone Can Carry a Bomb By Tzvi Ben Gedalyahu First 10/15/2012 <http://www.israelnationalnews.com/>



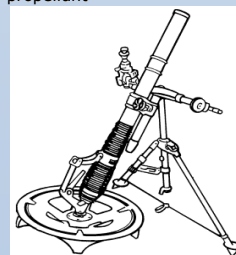
Qassam/Kassam, Katyushas and Rocket Artillery

There hundreds of varieties of Qassam rockets. Qassam rockets are named after the Izz ad-Din al-Qassam Brigades, the armed branch of Hamas, itself named for Izz ad-Din al-Qassam, a militant Syrian preacher whose death during a guerrilla raid against British Mandatory authorities in 1935 was one of the catalysts for the 1936 Arab Revolt. Technically it can be called rocket artillery.

They are easy to manufacture, their components are cheap and readily available, and it is simple to transport and operate them. Hamas and other terrorist organizations in the Gaza Strip easily use the technology for producing large quantities of rockets

Qassam rockets are homemade projectiles made from common civilian products, including pipes made of steel, cast iron, and aluminum. The pipe is affixed at the top end with a small warhead that weighs just a few pounds. At the bottom end of the tube, a set of wings is affixed for stability, along with detonators and fuses. The warheads are usually made of homemade explosives, but now are increasingly made of higher-grade explosives. Hamas has also been adding metal shrapnel to increase the damage. The fuel used to propel the rockets is usually made of melted sugar combined with commercial fertilizer. The rockets are usually launched from crude, hand-made scaffolds or from truck-mounted launchers. Salvos can range from one to six missiles. Due to the fact that the rockets are small, it is relatively easy for the individuals launching them to carry them from place to place, and even fire them without the use of stationary launchers. They do not have guidance systems and are therefore fairly inaccurate and strike randomly. That means that they cannot be pinpoint small military targets, but rather are launched toward large civilian populations, which are the terrorist organizations' preferred targets. They therefore meet the criteria for war crimes in gross violation of the international laws governing warfare, because the rockets are aimed at civilian populations which are in no way connected to military activity. Over the years, Hamas has improved Qassam technology. Indeed, Hamas claims to have developed three updated models since the Qassam I. However, due to the inconsistent level and grade of materials used to manufacture the rockets, not every rocket performs to the intended specifications. The most recent upgrade the Qassam IV. Developed and deployed by the Hamas Izz ad-Din al-Qassam Brigades, the military arm of Hamas. Three models have been produced and used between 2001 and 2010. More generally, all types of Arab Palestinian rockets fired into southern Israel, for example the Palestinian Islamic Jihad Al Quds rockets, are called Qassams by the Israeli media, and often by foreign media.

A Mortar is a portable muzzle loading cannon that fires indirect shells at low velocities short ranges, and high arcing ballistic trajectories. Mortar's larger sibling, artillery, howitzers & field guns, that fire at higher velocities, longer ranges, flatter arcs. These weapons also do not use the mortar's gravity-assisted means of detonating the shell. A modern mortar consists of a tube into which gunners drop a shell. When it reaches the base of the tube it hits a firing pin, which detonates the propellant and fires the shell. The tube is generally set at between 45 and 85 degrees angle to the ground, with the higher angle giving shorter firing distances. Typically a modern mortar consists of a tube into which is dropped a mortar shell onto a firing pin resulting in the detonation of the propellant and the firing of the shell. The chief advantage a mortar section has over artillery pieces is its small size and its mobility. The mortar can travel over any terrain. Modern mortars normally range in size from 60 millimeters (2.36 inches) to 120 millimeters (4.72 inches) however; aberrations both larger and smaller than these specifications have been produced. Most modern mortar systems consist of three main components: a tube, a base plate, and a bipod. These weapons are commonly used and transported by infantry based mortar sections as a substitute for artillery. Ammunition for mortar systems generally come in two main varieties: fin-stabilized and spin-stabilized. The former have short fins on their posterior portion that controls their path in flight. These rounds can either be illumination, smoke, or high explosive. Improvised, or "homemade", mortars have been used by insurgent groups, usually to attack fortified military installations. Some examples were those used by the Provisional Irish Republican Army during the 1970s, 1980s and 1990s. These were usually constructed from heavy steel piping of 3-4 inches in diameter mounted on a steel frame. This could be constructed easily inside a van such as the MK 1 Ford Transit. Shells were also home-made and had simple propellant fuses.



US Army FM 3-22.90 Mortars

83). Rocket threat from the Gaza Strip, 2000-2007 http://www.terrorism-info.org.il/malam_multimedia/English/eng_n/pdf/rocket_threat_e.pdf
83a). HAMAS Rockets 2012 globalsecurity.org

"In recent years, Qassam rockets have become the most dominant conventional threat to the State of Israel. This primitive weapon has become a staple of life in Sderot, and in the kibbutzim and moshavim near the Gaza Strip ". Israel Home Front Command
<http://www.oref.org.il>

Qassam I. This rocket weighs 77 lbs, has a diameter of 4.5 inches, a length of 6 feet, a maximum range of 1.86 miles, and contains a warhead that weighs 18 pounds. The primary target for this rocket is Sderot and its environs. The Qassam I accounts for most rockets fired to date.

Qassam II. This rocket weighs up to 88 pounds, has a diameter of 4.5 inches, a length of 6 feet, a maximum range of 4.35 miles, and contains a warhead that weighs 8.8 pounds. The Qassam II continues to hammer Sderot and its environs.

Qassam III. This rocket weighs 110 pounds, has a diameter of 4.5 inches, a length of over 8 feet, a maximum range of 6.21 miles, and contains a warhead that weighs 17.6 pounds. The Qassam III has reached Ashkelon and its surrounding areas.

Qassam IV. This rocket weighs 88-110 pounds, has a diameter of 4.5 inches, a length over 8.5 feet, a maximum range of 9 miles or more, and its warhead weighs 22 pounds. The Qassam IV has hit Ashkelon and may travel even farther as technology develops.

- ***The Qassam's range is small, and it has very little precision and is unguided, used as a weapon of terror the Iranian backed Hamas target Israeli civilians.***

84). Rocket threat from the Gaza Strip, 2000-2007

<http://www.terrorism->

[info.org.il/malam_multimedia/English/eng_n/pdf/rocket_threat_e.pdf](http://www.terrorism-info.org.il/malam_multimedia/English/eng_n/pdf/rocket_threat_e.pdf)

84a). HAMAS Rockets 2012

<http://www.globalsecurity.org/military/world/para/hamas-qassam.htm>



Understanding Gaza /Hamas the Gaza Strip, an area of only 146 square miles on Israel's western border with a population of 1.5 million

The Israel-Egypt Armistice Agreement of 24 February 1949 established the separation line between Egyptian and Israeli forces. This became the present boundary between the Gaza Strip and Israel. Both sides declared that the boundary was not to be an international border. The southern border with Egypt continued to be the international border which had been drawn in 1906 between the Ottoman Empire and the British Empire. Egypt continued to occupy the Gaza Strip until 1967 Six-Day War, (Egypt never annexed the Gaza Strip, but instead treated it as a controlled territory and administered it through a military governor). Israel took control the Gaza Strip in June 1967, during the period of Israeli control; Israel created a settlement bloc, Gush Katif, in the southwest corner of the Strip near Rafah and the Egyptian border. In total Israel created 21 settlements in the Gaza Strip, comprising 20% of the total territory. In accordance with the Oslo Accords, the Palestinian Authority took over the administrative authority of the Gaza Strip (other than the settlement blocs and military areas) in 1994. After the complete Israeli withdrawal of Israeli settlers (actually some 10,000 Israelis were forcibly removed by the IDF) and military from the Gaza Strip on 12 September 2005, the Palestinian Authority had complete administrative authority in the Gaza Strip. The Hamas are an Iranian Arab Palestinian group seeking to create a single, Islamic state. Hamas Take-Over Of The Strip: In June 2007, the Arab Palestinian Civil War between Hamas and Fatah (Palestine Liberation Movement) . Hamas routed Fatah after winning the democratic election, and by the 14th of June, controlled the Gaza Strip. Palestinian President Mahmoud Abbas responded by declaring a state of emergency, dissolving the unity government and forming a new government without Hamas participation. Abbas's government received widespread international support. In late June 2008 Egypt, Jordan, and Saudi Arabia said that the West Bank-based Cabinet formed by Abbas was the sole legitimate Palestinian government, and Egypt moved its embassy from Gaza to the West Bank. At that time the Hamas government in the Gaza Strip faces international, diplomatic, and economic isolation.

A Brief History of the Arab-Israeli Conflict By Jeremy Pressman (May 25, 2005)

<http://anacreon.clas.uconn.edu/~pressman/history.pdf>

Israel Begins Forced Removal of Jewish Settlers From Gaza as Deadline Expires Aug. 17, 2005

http://www.democracynow.org/2005/8/17/israel_begins_forced_removal_of_jewish

Iran-Hamas Relations: The Growing Threat From A Radical Religious Coalition The Henry Jackson Society p.2

<http://www.henryjacksonsociety.org>

The Israeli Government Reaction? The introduction of the Qassam rocket took Jerusalem politicians and military experts by surprise, and reactions were mixed. In 2006, the Israeli Ministry of Defense viewed the Qassams as "more a psychological than physical threat." Mounting Israeli protests and hunger strikes, still did not awaken Jerusalem members of Knesset. Then Vice Premier Shimon Peres stated, *"This hysteria over the Qassams must end,"* and *"We're just adding to the hysteria,"* he told journalists at the Knesset. [85]

Being that Gaza borders mostly small Israeli communities, the first few years the Qassam range was only a few miles at best, damage was minimal. Members of Knesset could not grasp the concept of rocket warfare. For the Israeli families living with not only rocket but mortar attacks were a deadly game of Russian roulette. Expect in this game every time the trigger was pulled the gun goes off. The families living in these areas were human targets; the question was how close will the bullet come? With only little to none warning, a few moments at best a mother could not protect her children. By 2007 some 27 were killed, 433 wounded, 2,383 rockets and 2,500 mortars had fallen, more than 190,000 people, lived under the potential threat of daily rocket and mortar shell attacks. [86]

The Terrorism

- Sept. 24, 2004: Tiferet Tratner, 24 yrs old, was killed in her home by a mortar attack
- June 28, 2004 - Mordechai Yosephus, 49 yrs old, killed when a rocket lands in a kindergarten
- June 28, 2004 - Afik Ohion Zehavi, 4 yrs old, killed when a rocket lands in his nursery school
- Sept. 29, 2004 - Yuval Abeva, 4 yrs old, killed when two rockets hit his residence building.
- Sept. 29, 2004 - Dorit Inso, 2 yrs old, killed when two rockets hit her residence building
- July 15, 2005 - Dana Gelkowitz, 22 yrs old, killed by a Qassam that strikes a home

Physical torture uses well known methods to inflict pain on the body. In contrast, psychological torture is directed at the psyche with calculated violations of psychological needs, along with deep damage to psychological structures and the breakage of beliefs underpinning normal sanity. Many forms of psychological torture methods attempt to destroy the subject's normal self-image by removing them from any kind of control over their environment, creating a state of learned helplessness, psychological regression and depersonalization. These rocket & mortar attacks inflict an unseen toxic corrosion to the psycho-social community as a whole. Thus fragmenting the bonds and community structure which maintains the overall homeostasis. A heavy cloud of depression permeates the social fabric composed of impending loss of loved ones, death, maiming and destruction. In a 2002 study to investigate the impact of physical and psychological torture, Metin Basoglu of King's College London, UK, and colleagues surveyed 279 survivors of torture from the former Yugoslavia, including both soldiers and civilians from the previously war-torn region. Between 2000 and 2002 the survivors answered questions about the nature of the torture they endured. The majority of them had endured beating and other forms of physical torture, including electric shocks, tooth extractions and suffocation. But about 20 of the survivors experienced purely psychological manipulations, such as sham executions or the torturing of family members and threats of rape. The researchers collected medical assessments of whether the torture survivors showed signs of PTSD - a form of lasting anxiety. They found no difference in the prevalence of this disorder between the two groups. They concluded, psychological and physical torture have similar mental effects. [87]

85). Peres: Enough with Qassam Hysteria". 20 June 2006 Ynetnews.com

86). List of Deaths Caused by Qassam Rockets and Mortar Fire <http://www.theisraelproject.org/>

Intelligence and Terrorism Information Center at the Israel Intelligence Heritage & Commemoration Center (IICC) Rocket threat from the Gaza Strip, 2000-2007 http://www.terrorism-info.org.il/data/pdf/PDF_07_177_2.pdf

87) Psychological torture as bad as physical torture 05 March 2007 by Roxanne Khamis <http://www.newscientist.com>

As of 2012 Israel's The Home Front Command is active in the settlements under the Qassam threat, and have put a warning system in place.

The system allows 20-30 seconds, some areas almost 90 seconds warning time before a Qassam hit, and is automatically connected to sirens that sound the code. [88]

Israel lives as a nation under siege. Rockets, mortars fly almost daily in or around Israel communities and now major cities such as Jerusalem and Tel Aviv.

Israel is a tiny country and it lacks of strategic depth has without the West Bank (Judea and Samaria), it is a mere nine miles wide at its narrowest point. Yet for much of its history, the majority of the population remained shielded from wars because the Jewish state quickly took the fight to its enemies and pushed the battlefield away from its population centers.

Soon after Israel's withdrawal from the Gaza Strip in 2005 and the takeover of the Iranian backed Hamas, rockets started flying out of that territory which are the main source of rocket attacks today. In Israel's 2006 war with Hezbollah in Lebanon, its strategic depth was peeled away even further, as thousands of rockets were fired at the northern part of the country, including its strategic port city of Haifa. Within a few short years, much of Israel's south was under threat of attack. Even following Israel's Operation Cast Lead in 2008/2009 to curb Arab Palestinian rocket attacks, over one million Israelis remained vulnerable to the threat itself. November 2012 witnessed a major escalation of Hamas rocket capabilities, as the Iranian Fajr-5 artillery rocket & M75 colon were employed for the first time. With a range of about 75 kilometers (46 mi), they have twice the range of rockets previously used by Hamas. Today every inch of Israel is under the threat of rocket attack. [89]



88). Qassam Rockets <http://www.oref.org.il/International/184-1597-en/PAKAR.aspx>

89). Israel's Game Changing War Joshua Gleis "Hamas' firing into the Jerusalem region, which had not been hit by a rocket since 1970, is an ominous sign of things to come" November 17, 2012 yourmiddleeast.com/opinion/

Katyusha Rocket /Grad Missile: The 122mm "Katyusha" is somewhat of a generic term today, covering a wide



variety of small, unguided, solid-fuel rockets produced by a number of countries, including Iran. The Katyushas all have a common origin in the Soviet BM-8 and BM-13 truck-mounted rocket launchers that were used against the German army in 1941. Fired in short-range volleys of as many as 48 rockets at a time, they had an immediate military and psychological impact on German troops. Over time the Katyusha Rocket has evolved. It comes in a variety of types of rockets, with various payloads from high explosive to even chemical warfare agents. Once in the air, the cheaply-made rockets are remarkably difficult to stop. The unguided Katyusha is not intended to strike a specific target. Rather, it is designed to be fired with 16 or more of its kind in a salvo that rains destruction upon a certain area, preferably a troop concentration, massed armor or fortified emplacements. They can be fired singularly, but are designed to be fired in large concentrations and numbers. Thus this makes the grad rocket ideal as a chemical warfare platform, and delivery system.

122mm Grad Rockets -122mm Rocket Artillery

The Grad missile is commonly called a Qassam missile which it is not. Used by over 50 countries, Grad is the world's most widely used rocket artillery system. This is what was known at one time as a Katyusha Rocket.

- ***The grad rockets have little guidance and are not lethal enough to defeat Israel militarily, but are used by terrorist groups such as Hezbollah in Lebanon, Hamas in Gaza and various radical militants groups firing out of the Sinai.***

- The Katyusha was infamous among German troopers in WWII who quickly learned to dread its distinctive scream. They

Grad Missile Advanced Warheads & Designs The standard high explosive (RDX-based) warhead can be enhanced with the ZDB-2 blast fragmentation warhead, comprising high explosive charge, containing reduced RDX-based explosive charge, over 4,000 steel ball matrix liner and prefabricated fragmentation sheath, extending lethal effect over a radius of about 100 meters. A thermobaric warhead is also available, comprising of a 17kg warhead containing 6.2 kg of energetic composition and 1,500 steel balls for dual-purpose effect optimized for urban warfare, and the SZB-1 anti-personnel and anti-armor mines containing submunitions for area denial attack.

named the Katyusha "Stalin's Organ." Soviet Guard's mortar units were equipped with multiple rocket launchers, the famous katyushas, named after the title of a popular song of the time. The rocket consists of a warhead containing the explosive material, a body containing the fuel powering the rocket's flight, and a tail in which the engine is located, which also stabilizes the rocket during its flight. Rockets can be launched by operators who are near the rocket launcher when it is fired, or by means of a delayed timer (which doesn't require an operator being near the position when it is fired). The devices are easy to move and to conceal, and can be assembled on the back of a vehicle in order to make it quicker to move them to the launch site and take them away after firing. References now to the Katyusha mean not just one type of rocket, but a whole range of different artillery rockets, whether from old Soviet or other-nation stock, but most frequently the 122mm rocket. [90]

90).BM 21 Grad Missile http://www.militaryfactory.com/armor/detail.asp?armor_id=398

90a). 122 mm BM-21 Grad-series rockets (Russian Federation) <http://articles.janes.com/articles/Janes-Ammunition-Handbook/122-mm-BM-21-Grad-series-rockets-Russian-Federation.html>



Chemical Warfare Agent Payloads Grad Missile

Other types of warheads for the BM-21 Grad 9K51 series of 122 mm rockets, can be installed in place of the HE frag, *including chemical (VX or GB nerve agent - see under Equivalent projectiles) HE-Incendiary and Smoke*. The rocket motor consists of 20.5 kg of RSI-12M double-base solid propellant, although single-base propellants have been used in the past. The total weight of the 9M22 at launch is 66 kg. Lengths of the rockets vary between models. The basic 9M22 and the essentially similar 9M22M are 2.87 m long. The 122 mm 9M22U/DB-1B is 3.226 m long and is heavier, at 77.5 kg. All have a maximum range of about 45 KM. (27 miles) [91]

Since 2006, Hamas and other armed organizations in the Gaza Strip have made use of 122mm Grad rockets and 122mm Grad-style copies made in Iran, and others have been former Soviet Union Eastern-bloc editions modified to expand their range and lethality. The rockets were believed to be smuggled into the Gaza Strip via tunnels from Egypt. Some of the rockets were of a Chinese Grad variant. Hamas sources said they were pleased by the performance of the Chinese variants of the BM-21 Grad rocket, which demonstrated a far greater range and blast impact than Palestinian made rockets, as well as Russian-origin Grads or Katyushas. Hamas have used small man-portable single-tube launchers for rocket attacks against Israel, designated 122 mm 9P132/BM-21-P. The 122 mm Grad rockets used by these groups in Gaza have a range of about 40 km (25 mi), [92]

The Katyusha has figured prominently as the main weapon being fired at Israel by Arab Palestinian and Hezbollah at the end of the 1990's a new version of the Grad entered service. The rocket could be loaded with all kind of warheads: cluster, fragmentation, antipersonnel mines, and antitank mines. Two disposable sealed transport-launch containers, each with 20 rockets, replaced the cluster of metal launch tubes. Launchers could be reloaded within 5 minutes. Other systems using multiple rocket launchers of unguided rockets developed by the Soviet Union included the 220mm Uragan (10 to 35 kilometer range) and the 300mm Smerch (20 to 75 kilometer range). The Iranians developed the Fahr-3, with a range of 45 kilometers, and this was widely deployed by Hezbollah and other militant groups. [93] Israel's Air Force is using drones is able to identify the point from where rockets are launched from Gaza. But it takes only half a minute to move wheeled rocket launchers out of the way, and to a new location. How to defend against Qassams, grads and other rockets in the hands of highly trained terrorists is proving a dilemma for the Israel Defense Forces and probably for any army in the free world. *For the time being there does not seem to be any practical solution.* [94]

The base model of the BM-21 Grad 9K51 series of 122 mm rockets is the 9M22, a High-Explosive Fragmentation (HE frag) fin-stabilized rocket with a steel-tube body, and HE frag warhead in the pointed nose section and an electrically-ignited rocket motor in the tail. Stabilization during flight is provided by four spring-out stabilizer vanes at the tail, mounted at an angle of 1° to the longitudinal. When fully open, the fins have a span of 226 mm. On the base model 122 mm 9M22, the warhead is the M-21-OF, containing 6.4 kg of TGAF explosive detonated by a 9A210 or an MPB Point-Detonating (PD) fuse, which is inertial armed only after travelling some 150 to 400 m from the launch point. [95]

91). 122 mm BM-21 Grad-series rockets (Russian Federation), Artillery rockets <http://www.janes.com/articles/Janes-Ammunition-Handbook/122-mm-BM-21-Grad-series-rockets-Russian-Federation.html>

92). "Terror in Gaza: Twelve months since the Hamas takeover", 16 June 2008. <http://www.mfa.gov.il>

93). Katyusha <http://www.astronautix.com/lvs/katyusha.htm>

94). The Katyusha War, Israel High Tech Investment Report Joseph Morgenstern, Publisher Aug-Sep 2006 Vol. XXI Issue No. 8 & 9

95). The Rocket Artillery Reference Book Ove Dullum Norwegian Defence Research Establishment (FFI) 30 June 2010 <http://rapporter.ffi.no/rapporter/2009/00179.pdf>

Types of Rocket Artillery: *The concept of rocket artillery is comparatively simple, both with respect to the projectile, the rocket, and the launcher platform, whether the system is a self propelled vehicle or a tubular device put on a simple tripod.*

Portable systems: This is the most primitive of all artillery and can be made out of a single tube attached to a tripod along with aiming devices and an umbilical system for remote triggering or ignition. The tube and tripod may have a mass of some 20 kg., Rockets up to 122 mm caliber and 45 kg rocket mass can be fired in this way. A squad of 4 – 5 men can carry the launcher and three rockets. However, the mass of the different units prevents long tactical movements without access to a vehicle of some kind. Twin tubular launchers on a tripod have also been seen. Such systems are particularly favored by Hamas, Hezbollah and insurgency forces.

Vehicle Mounted Systems: When a tube rack is mounted on the back of a truck or on a specially designed vehicle, we have a fully fledged multiple rocket launcher (MRL) or multiple rocket launch system (MLRS). This class covers a wide spectrum in vehicle size, rocket caliber and number of tubes/rails. Smaller systems may be placed on an ordinary truck, or small vehicle. Larger systems may require a specially designed carrier vehicle. With some few exceptions, an MRL system carry only the ammunition that is ready to fire and loaded in the tubes or at the rails. Additional rockets have to be carried by support vehicles. Vehicle mounted systems requires a crew consisting of 3 – 8 soldiers. Highly automated systems, like the MLRS, have the lowest crew requirement. Systems based on manual loading, like the BM-21 Grad, have a crew of 7 soldiers. The BM-21 Grad has 40 launching tubes for 122-mm rockets. The standard rocket with a HE-FRAG warhead is 2.87 m long and weights 66.6 kg. Warhead itself weights 18.4 kg. It also fires rockets fitted with incendiary, chemical, smoke, illumination or cluster warheads. Cluster warheads contain anti-tank or anti-personnel submunitions. A number of specialized warheads were developed for this vehicle. A full salvo of the BM-21 Grad covers area of 0.8 -1 hectares. Vehicle is prepared to fire in three minutes. The BM-21 can launch rockets directly from the cab or remotely from the vehicle. It is possible to launch rockets without preparing the firing position. This feature ensures brief reaction time. The Grad can be packed up and ready to move in two minutes.

Guidance systems: *The majority of artillery rockets are unguided (free rockets). However, guided rockets are becoming more common. The guidance systems are usually based on either inertial navigation (INS) or GPS.*

Inertial Navigations Systems (INS) Inertial navigation is a well proven principle. The system is based on accelerometers and gyros that register the linear and angular movements in each direction. The inputs are then integrated to find to position relative the initial position of the unit. INS thus requires the initial position and orientation as input.



Hamas Garbage Trucks rocket launchers. This is a captured Gaza "garbage truck" by Israeli troops. The truck is designed to fire nine grad rockets and then drive off innocently. The note pasted on the driver's door says - "In case of traffic violations, please contact The Palestinian Authority." The Israelis have evidence of ambulances and emergency vehicles set up the same way. From: Israel Ministry of Foreign Affairs, Hamas war against Israel <http://www.mfa.gov.il/>



96). 122 mm BM-21 Grad-series rockets (Russian Federation), Artillery rockets <http://www.janes.com/articles/Janes-Ammunition-Handbook/122-mm-BM-21-Grad-series-rockets-Russian-Federation.html>

Global Positioning System (GPS): A GPS receiver calculates its position by carefully timing the signals sent by the GPS satellites high above the Earth. Each satellite continually transmits messages containing the time the message was sent, precise orbital information, and the general system health and rough orbits of all GPS satellites

There are basically three ways of launching a rocket – by a rail, by a tube, or by the so-called zero length launches. In the latter mode the rocket is just held stable during the initial launch, but has no devices that keep the direction once it is free.

Rate of fire: Many rocket artillery systems have a rate of fire far exceeding both conventional artillery and mortars. While manually loaded conventional artillery may reach 5 shells per minute in short salvos, and hardly more than 3 per minute in sustained fire, multiple rockets systems may fire the whole load of 40 rockets in as little as 20 seconds. Consequently a battery of MRLs can fire hundreds of rockets onto a limited area within a short interval. Currently such radical militant organizations such as Hamas and Hezbollah use this volley fire to overcome missile defense systems. Also allows the element firing too quickly leave the area thereby avoiding a counter strike from aircraft or artillery.

A major drawback with rocket systems is their inability to deliver sustained fire. When the whole load has been fired, it may take many minutes, even as long as 20 minutes or more to reload the system.

Submunitions: Submunitions payload is quite common for rocket artillery munitions. There is a wide variety of submunitions. The main reason for using submunitions is to spread the deadly effect of the payload over an area. There are a number of different types of warheads available for 122mm rockets. The most common is a basic unitary high explosive type, which contains approximately 6.4 kilograms of high explosive and is designed to produce 3,150 fragments which can kill or injure for a radius of twenty-eight meters. The rockets can also be fitted with cluster munition warheads that scatter between 39 and 98 explosive submunitions. The submunitions are usually “dual purpose,” meaning they have both anti-materiel (blast) and anti-personnel (fragmentation) effects. Additionally, enhanced fragmentation warheads on some types of 122mm rockets contain between 2,700 and 9,800 steel balls or ball bearings. Cluster munitions endanger civilians in two ways. First, they spread submunitions over a broad area, virtually guaranteeing civilian casualties when fired into populated areas. Second, they leave a large number of duds that become de facto landmines, killing or maiming people well after the conflict.

Cluster Munitions

Cluster munitions are inaccurate and unreliable weapons that by their very nature pose unacceptable dangers to civilians. They pose an immediate threat during conflict by randomly scattering thousands of submunitions or “bomblets” over a vast area, and they continue to take even more civilian lives and limbs long after a conflict has ended, as hundreds of submunitions may fail to explode upon impact, littering the landscape with landmine-like “duds.” Governments responded to this humanitarian threat by creating the 2008 Convention on Cluster Munitions, an international treaty prohibiting the use, production, stockpiling, and transfer of cluster munitions. The treaty requires destruction of stockpiles of the weapon within eight years and clearance of affected areas within 10 years, and also establishes a strong framework for assistance to cluster munition victims. More than 110 states have joined the Convention on Cluster Munitions and are working to implement its provisions. Human Rights Watch is campaigning to ensure that more states join the Convention on Cluster Munitions and that it is implemented strongly and without delay.

Cluster Munitions Human Rights
Watch www.hrw.org/

97). Katyusha <http://www.astronautix.com/lvs/katyusha.htm>

98). The Katyusha War, Israel High Tech Investment Report Joseph Morgenstern, Publisher Aug-Sep 2006 Vol. XXI Issue No. 8 & 9

99). The Rocket Artillery Reference Book Ove Dullum Norwegian Defence Research Establishment (FFI) 30 June 2010 <http://rapporter.ffi.no/rapporter/2009/00179.pdf>

Submunition Payloads-Types

Submunition payloads are also known as cargo payload and even as cluster warhead. The first type of submunition was probably mines, either of the anti-personnel or the anti-tank type. Later many other types have been deployed including:

Explosive and fragmenting bomblets (ICM – Improved Conventional Munition)

Explosive and fragmenting bomblets with a shaped charge (DPICM – Dual Purpose Improved Conventional Munition)

Incendiary bomblets, subunits generating electromagnetic noise (ECM – Electronic Countermeasure)

Anti-tank mines

Anti-personnel mines

Advanced anti-armor submunitions



Bonnie Docherty/Human Rights Watch

A wall of the elementary school “HaMiflasim” in Kiryat Yam, damaged by steel spheres from a rocket that hit an adjacent classroom on August 13, 2006.

Submunitions are normally ejected from the carrier at a certain altitude, ensuring an adequate dispersion of the bomblets without compromising the precision of the delivery. In some systems, the time of ejection is controlled by the fire control system specifying or actively setting the timing of the fuse. [100]

Fuel-Air Explosives (FAE) in military munitions are based on the same principles that cause many accidental explosions in buildings, silos and industries – deflagration or detonation reactions of highly combustible materials in mixture with air. Military FAE however use these principles intentionally for generating intensive air blast and heat impulses for destruction of ground forces (personnel and vehicles), infrastructure, and to set off mines in a mine field.

Thermobaric Explosives FAE may be called a two stage explosive, involving dispersion and detonation. Its relative, the thermobaric explosive (TBX) is more of a one stage explosive like conventional ones. Thermobaric explosions involve a conventional detonation followed by rapid burning of detonation products with the surrounding air in a deflagration regime close to the detonation. The initial detonation disperses detonation products and unreacted fuel into the air where detonation products, the fuel and the ambient oxygen continue to burn. The reactions of detonation products reinforce the pressure wave from the initial detonation and create a long-lasting moderate wave that will travel down streets and corridors and around corners. Some experts regard thermobaric explosives as several times more powerful (pound for pound) than conventional high explosives like Comp B; perhaps up to six times as powerful. One reason: because thermobarics draw their oxygen from the air; they don't have to carry an oxidizer in the warhead, so all the filler can be given over to energetics like volatile liquid fuels and aluminum particles. This technology has been implemented in Russian munitions for around two decades. Some Western countries are also in the process of acquiring this technology.

Incendiary Payload Some warheads may have the ability to burn and to create fire as its primary effect. It is well known that white phosphorus (WP) has this ability in addition to creating smoke screens.

100).The Katyusha War, Israel High Tech Investment Report Joseph Morgenstern, Publisher Aug-Sep 2006 Vol. XXI Issue No. 8 & 9
101). The Rocket Artillery Reference Book Ove Dullum Norwegian Defence Research Establishment (FFI) 30 June 2010
<http://rapporter.ffi.no/rapporter/2009/00179.pdf>

Chemical Payloads, in 1998, U N inspectors found 122 mm rockets with nerve gas in Iraq. It is probable that such ammunition was used during the attack on the Kurdish village of Halabja in 1988 killing more than 5000 civilians.

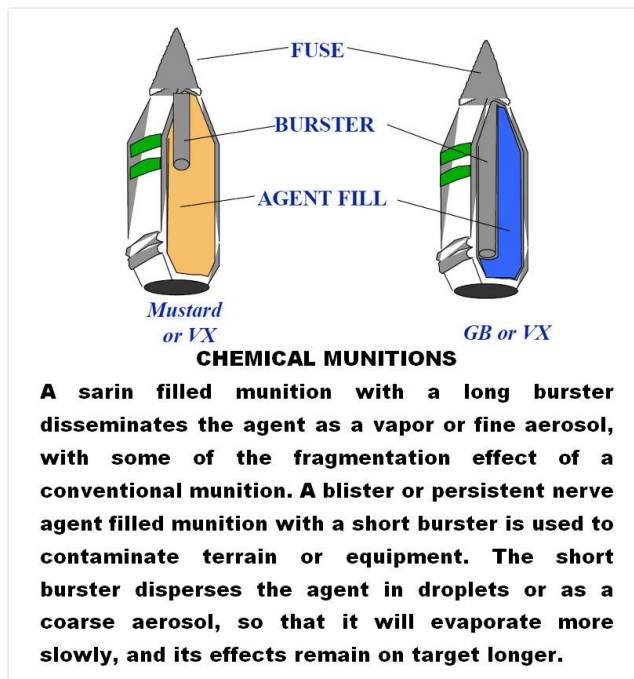
Immediately following the end of Operation Desert Storm, US Army units occupied an area in southeastern Iraq that encompassed Khamisiyah (also known then as the Tall al Lahm Ammunition Storage Area). Soldiers of the Army's XVIII Airborne Corps conducted two large-scale demolition operations to destroy the munitions and facilities around Khamisiyah:

- March 4, 1991. Soldiers destroyed 37 large ammunition bunkers. Later, Iraq declared that one of these, Bunker 73, had contained 2,160 chemical warfare agent-filled rockets.
- March 10, 1991. Soldiers destroyed approximately 40 additional ammunition bunkers and 45 warehouses. In an open-air location outside the Khamisiyah Ammunition Supply Point (ASP) now known as "the Pit," soldiers also set

charges to approximately 1,250 rockets, many of which UNSCOM later found had contained chemical warfare agent. [102] To Note Syria's Assad was a longtime ally of the late Saddam Hussein, and they shared CBRN, missile, cruise missile technology. After the fall of Saddam Assad allied himself with Tehran. Again there was and is an exchange of this kind of knowledge and technology. More likely than not the IRI has 122mm chemical rockets and it is only a matter of time before Tehran disperses such to its militant proxies like Hamas and Hezbollah. [103]

2006 Israeli Hezbollah War Lebanon and 122mm cluster munition rockets

Hezbollah fired Chinese-made Type-81 122mm cluster munition rockets into Israel. Each of these rockets has 39 Type-90 dual-purpose submunitions, which resemble small cylindrical bells with a ribbon at one end. The submunitions, sometimes designated MZD, contain an armor-piercing shaped charge and a large number of 3.5mm steel spheres. The rockets release the submunitions in mid-air, and the submunitions are designed to explode on impact (blast effect) and to spray the steel spheres over a wide area (fragmentation effect). The failure rate of the Type-90 submunitions is not known. This was the first known use of the Type-81 cluster munition rocket anywhere in the world by any armed force. Almost of all of the rockets fired by Hezbollah into Israel during the conflict were unguided surface-to-surface artillery rockets. Several types were used, with 122mm rockets being the most common. The types mainly differed in size (diameter), which influenced range and payload amount. *Attacking civilian areas indiscriminately is a serious violation of international humanitarian law and constitutes a war crime.* [104] Hezbollah launched thousands of rockets on cities, towns, and villages in northern Israel. These rockets killed 39 Israeli civilians and injured hundreds more. At least 113 such cluster rockets hit Israel; the rockets also caused damage to civilian homes, businesses, the natural environment, and the economy. [105]



102). United States Military Operations at Khamisiyah http://www.un.org/depts/unmovic/new/documents/technical_documents/s-2004-160-cbw_munitions.pdf

103) Saddam Hussein's Iraq Prepared by the U.S. Department of State Released September 13, 1999 (updated 2/23/00)

104). Human Rights Watch Q & A: 122mm Cluster Munition Rockets OCTOBER 20, 2006 <http://www.hrw.org/news/2006/10/19/q-122mm-cluster-munition-rockets>

105). Lebanon Hezbollah Rocket Attacks on Haifa Designed to Kill Civilians Anti-personnel Ball Bearings Meant to Harm "Soft" Targets JULY 18, 2006 [hrw.org/en/news/2006/07/17/lebanon-hezbollah-rocket-attacks-haifa-designed-kill-civilians](http://www.hrw.org/en/news/2006/07/17/lebanon-hezbollah-rocket-attacks-haifa-designed-kill-civilians)

The Quds-3 (Al Quds-3)

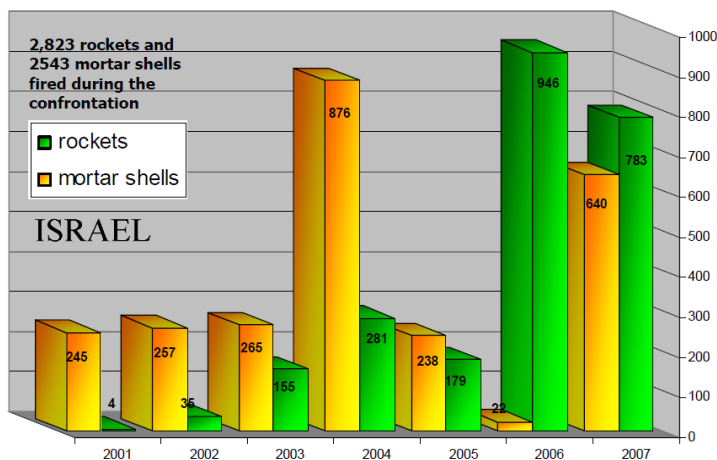
is a rocket is based on the Russian Grad and BM21 rocket. This rocket was test-fired against Ashkelon, Israel on March 28, 2006, weighs 66

kilograms and an explosive payload of 17 kilograms (37.4 lbs). It was developed in the Gaza Strip, funded from Tehran and built with the assistance Iranian operatives. In April 2006, media reports indicated that Palestinian terrorists were manufacturing the Quds-3 along with a multiple-rocket launcher system. The Quds-3, developed in the Gaza Strip with the aid of PA funding and Iranian operatives, is based on the Russian Grad and BM21 Katyusha. The Quds-3 was test-fired against Ashkelon on March 28 and weighs 66 kilos. In July 2006, Hamas deployed the Al Quds-3 a new 122mm Grad, fired (on July 18) at Kibbutz Sdot Bror Hayil approximately 19 kilometers (11.8 mi) from the Gaza Strip. The rocket traveled 24 kilometers (14.9 mi), exceeding the 20 kilometer range of a standard 122mm rocket. The 122mm launcher fires 10 rockets simultaneously to a distance of 18-30 kilometers. The system is capable of firing 40 rockets within 20 seconds, weighs 13 tons and enables Hamas in the Gaza Strip to strike Ashkelon, Ashdod, Netivot and Ofakim. The rockets are launched by a crew that pulls back approximately 60 meters (65yds) from the launcher and releases the rockets by pulling a wire. [106]

Since 2001 the tiny state of Israel has become the most continuous rocketed /mortared country in the world. It is also the only country in the world that has had to employ active anti-missile defense systems to protect its communities seven days a week 365 days a year.

Rocket Attacks on Israel From Gaza <http://www.idfblog.com/facts-figures/rocket-attacks-toward-israel/>

Rocket attacks began in Israel around 2001; the confrontation gradually became one of primary threats coming from Gaza. At the end of November 2007, there had been a total of 2,383 identified rocket hits in and around the western Negev settlements, with the southern city of Sderot as a priority and drawing 45% of the rockets which landed on inhabited areas. The period from 2001 to 2007 rocket fire was directly responsible for the deaths of ten Israeli civilians, nine of them Sderot residents. In addition, 433 individuals have been wounded, the overwhelming majority of them civilians, and during the past year and a half more than 1,600 instances of stress were reported. Mortar fire was responsible for the deaths of ten individuals, eight civilians and two IDF soldiers. Of the 150 wounded, 80 were civilians and 70 soldiers. Rockets are launched from open spaces or from urban areas (such as yards, alleys, ruins of buildings, etc.). That turns Palestinian civilians into human shields with the intent of increasing the survival potential for the launchers themselves. In most cases the squads drive to the launch sites, i.e., most of the rockets are launched close to roads for easy access and escape. [107]



- **Hamas's most deadly rocket appeared in 2012, the Fajr-5, which has a 45-mile range and can carry a 200-pound warhead, it is produced by Iran's Aerospace Industries Organization. The 335 mm rocket, are acquired for export and sent either to Lebanon, for Hezbollah, or Sudan the first step in a smuggling route on the way to Gaza. [108]**

106). Rocket Attacks on Israel From Gaza <http://www.idfblog.com/facts-figures/rocket-attacks-toward-israel/>

107). Intelligence and Terrorism Information Center at the Israel Intelligence Heritage & Commemoration Center (IICC) Rocket threat from the Gaza Strip, 2000-2007 Houses Dec 2007 <http://www.terrorism-info.org.il/en/index.aspx>

108). From sewage pipes with wings to sophisticated missiles How Hamas acquired its 10,000-rocket arsenal

By Mitch Ginsburg November 21, 2012, www.timesofisrael.com/hamas-arsenal-from-sewage-pipes-to-sophisticated-rockets/

The Type 63 is a towed, 12-tube, 107-mm multiple rocket launcher system produced in China in the early 1960s, based on the Soviet BM-12 MRLS and using similar rockets. The Type 63 is mounted on a rubber-tire two-wheel split pole type carriage. The weapon can provide short-range, intensive area firepower. The Type 63-2 Rocket is an 18.8-kilogram (41.5-pound) rocket containing a main charge of TNT weighing 1.3 kilograms (2.9 pounds). Range is 8,500 meters (5.2 miles). The launcher has 12 tubes arranged in three banks of four tubes each. All the tubes are parallel to each other and mounted co-axially on a cradle. The launcher is manually operated for horizontal and elevation movements. The Type 63 originally fires electrically initiated 19 kilogram unguided rocket 107mm caliber with a 1.3 kilogram HE- Fragmentation warhead. Ammunition for the Type 63 was improved in 1975, although the overall weight of the rocket remained the same. The Type 63-2 ammunition introduced in 1975 is a 18.8kg rocket containing a 8.3kg TNT warhead, which can produce a 12.5meter radius blast when detonated. The maximum firing range is 8.5km. The Chinese Defense Industry has also developed an incendiary rocket fitted with a warhead containing White phosphorous (WP) and Aluminum. Firing rate is 12 rockets in 10 to 12 seconds from the vehicle or 12 rockets are 6 to 9 seconds when deployed on the ground.



■ **107 mm spin stabilized rockets are, despite their limited range, very popular for improvised systems, as seen with Hamas, Hezbollah, in Iraq and Afghanistan against US Forces. Iran mass produces this rocket and it finds its way into insurgency groups from the Middle East to Africa and Afghanistan.**

The rocket is light (less than 20 kg), but with a powerful warhead. It is very robust, as it can be handled very roughly without losing performance. Many times an insurgent just lays the rocket against a hill or mound and fires it. This is especially in the Middle-East, Africa and Afghanistan and adjacent areas. Sadly the primary target of these radical militants are not large infantry units, but civilians, community infrastructural nodes point to urban areas. Their goal is apparently is not to hit a specific target but just to hit something in order to inflict economic damage, destruction, havoc and fear. In this role, medium sized and grad rockets to improvised, inaccurate rockets serve the purpose. Unfortunately, rocket artillery is an almost ideal terror weapon for this purpose. Spin stabilized rockets like the 107 mm draw their spin from themselves and are thus in less need for launcher quality. It can easily be carried by one man and is easy to hide. Moreover, spin stabilized rockets are less in need of accurate and sophisticated launchers than fin stabilized rockets. [109]

The advantage of unguided rocket artillery is its ability to deliver a massive amount of firepower at short, medium and long range with a relatively cheap unsophisticated technology. It is a comparatively uncomplicated system, has longer ranges and may cover an area exceeding any other system having a comparative degree of sophistication. The main drawbacks of ordinary rocket artillery, is its lack of precision delivery, it is more like a shotgun. With new emerging technology, the 122mm Grad rocket may be eventually fitted with some kind of guidance system. More nations and mostly third world nations are acquiring various types of rocket artillery. This recent decade has seen the use of rocket artillery by insurgency like the Taliban, Iranian proxies such as Hezbollah, Hamas and in Iraq among various fighting radical factions. There is ample reason to believe that the difference between improvised systems and conventional systems will close as the expertise and experience of radical militant warfare manufacturers and operators improve.

109). 107 mm Norinco rockets (China), Artillery rockets, Janes <http://articles.janes.com/articles/Janes-Ammunition-Handbook/107-mm-Norinco-rockets-China.html>

Defence against rocket artillery is a challenge. Locating the launch site and attacking the launch crew have to be made before any rockets are fired.

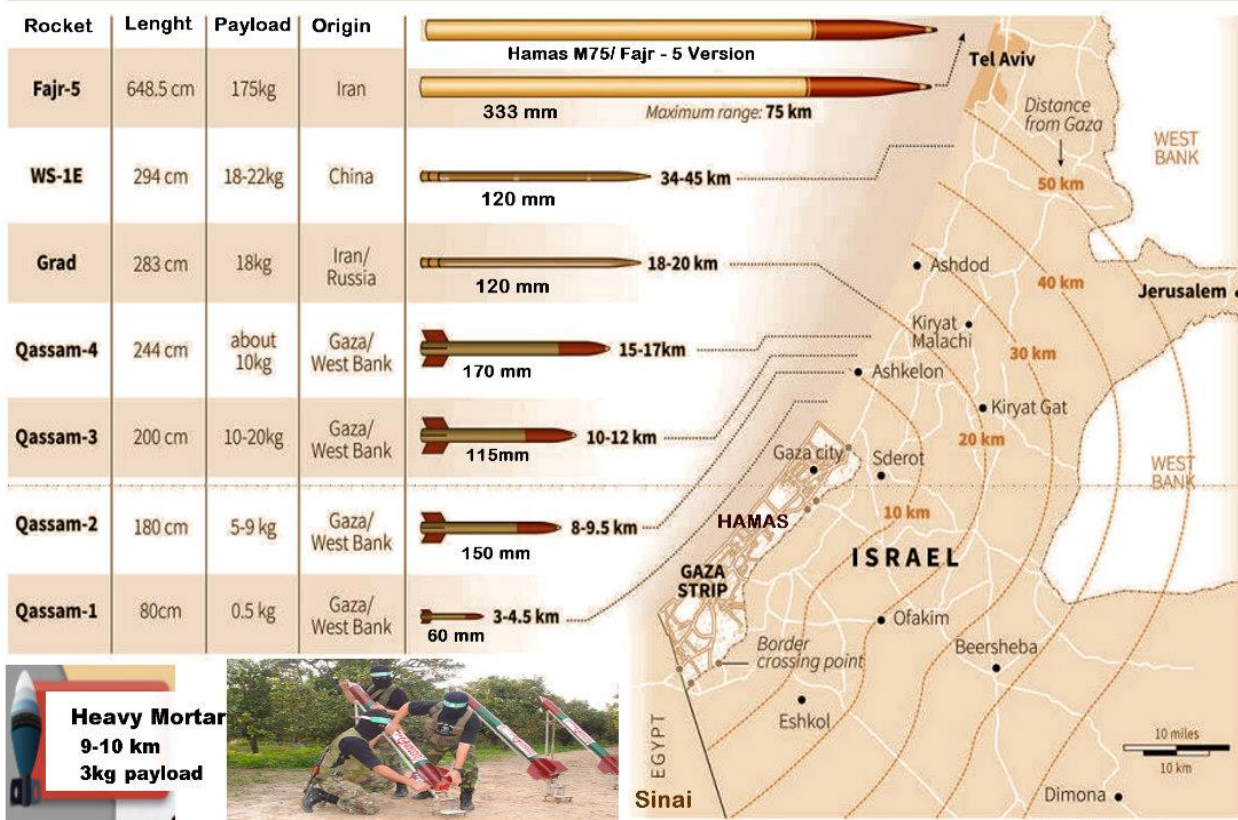
This is a fire-and-forget weapon and the launch site may be abandoned before the rocket hits the target. The only realistic alternative is then to destroy or neutralize the rocket before impact. Although this aspect is beyond the scope of this report, but the aspects of simplicity and robustness, as mentioned above, adds to that problem.

Rocket Artillery Has Several Properties That Are Attractive To Non-State Party Forces and Insurgency Groups:

- the technology is simple, robust, inexpensive and can be made without strict tolerances
- it can be made in primitive workshop
- it can be handled by a poorly educated crew
- it is light and mobile
- there is an easy access to launchers and ammunition in many areas

- *There is an entire international spectrum of rocket artillery as each country has its own make and models. For this report, I will mainly confine myself to what is commonly found in the Middle East and region.*

Hamas & Other Radical Militants Rockets being fired from Gaza and the Sinai into Israel



Israel & Asymmetrical Rocket Warfare

Israel a tiny country is about the size of New Jersey. (Israel size 8,000 sq miles 263 miles long – North to South Width: between 9 and 71 miles wide (East to West). Unfortunately here we find the introduction and evolution of asymmetrical rocket warfare;

We have already seen the impact of the 1991 Desert Storm. Mostly unknown Israel was the first country in the world to be attacked by Scud missiles. This Scud missile attack which took place in the midst of the 1973 Yom Kippur War was the first operational use of Scud missiles in the world. It witnessed Egypt launch three Scud missiles against Israeli targets. One of the missiles was fired at El Arish and the others at the Israeli bridgehead on the western bank of the Suez Canal, near Deversoir. As a result of the knowledge about the Egyptian Scuds, able to hit deep inside Israel, Israel avoided attacking strategic targets deep inside Egypt throughout the entire war. [110]

- ***To fully understand the 1973 Yom Kippur war and the evolution of missile warfare in the Middle East we must start with the 1967 Arab – Israeli War.***

The Six Day Arab –Israeli War took place in June 1967, fought between June 5th and June 10th. Israeli intelligence concluded that it was only a matter of time before three Arab states with support of other Arab countries would coordinate a large scale attack on Israel. Also, the Soviet Union oversaw a massive build up of the Egyptian military. Egypt was conducting a naval blockade of the Straits of Tiran, heavily deploying forces in Sinai Peninsula and Syrian, falsely accusing Israel of massing troops on its border and support for Fedayeen incursions into Israel (the short list). Simply put Israel conducted a defensive preemptive strike. The war was fought against Syria, Jordan, Egypt and Iraq Armored Division, limited Iraq air force. Libya provided pilots and 30 top of French Mirage fighter jets. The nations of Saudi Arabia, Kuwait, and Algeria also contributed troops and arms to the Arab forces. At the war's end, Israel had gained control of the Sinai Peninsula, the Gaza Strip, the West Bank, eastern Jerusalem, and the Golan Heights. The results of the war affect the geopolitics of the region to this day. To the surprise, shock of the world and the Soviet Union the tiny military of Israel decimated the Arab forces with lightning strikes lead by its Air Force. The hard learned lessons by Egypt following the Six Day War was the need of armament able to hit deep inside Israel, destroy Israeli Air and Armored Forces. Emerging new rocket warfare filled these needs. The weapons systems would interrupt any Israeli attack maneuvers, and would also serve as a deterring weapon. As a result of this need, Egypt armed itself with six types of weapons from the Soviet Union.

- Heavy bombers that could strike deep inside Israel.
- Cruise missiles that would be able to overcome the Israeli missile defense systems.
- Air Defense Missile Batteries, needed against the Israeli Air Force (known as "SAM", surface to air missile)
- Long range Surface-to-surface missiles that would be able to strike deep inside Israel and that would be launched from deep inside Egypt, defended by Egypt's air defense networks.
- Anti-Tank Missiles, a secret new weapon designed by the Soviets to be used against Israeli Armored Forces.
- Scud Missiles [111]

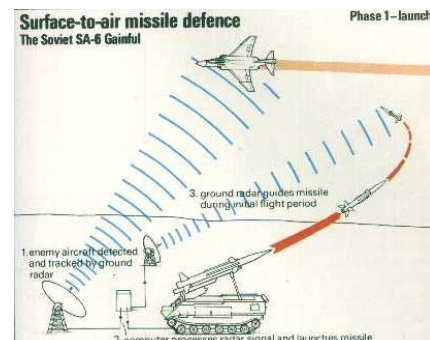
110). Egypt Country Profile Missiles Nuclear Threat Initiative www.nti.org/country-profiles/egypt/delivery-systems/

111). Six Days of War: June 1967 and the Making of the Modern Middle East Michael B. Oren Presidio Press (June 3, 2003) 3) National War College Anwar Al-Sadat's Grand Strategy in the Yom Kippur War James W. Bean and Craig S. Girard 2001 Approved for public release; distribution unlimited

The Soviet Union Lights the Fire for the 1967 Arab –Israeli War

In April, 1967, The Soviets in the UN accused Israel of mounting a massive military build-up on the Syrian border. Israel denied the accusation and invited the USSR to send observers to verify the truth. The USSR refused. But the UN, under Secretary General U-Thant of Burma, sent a commission to investigate. It quickly ascertained that the Soviets were lying. There was no Israeli military massing at Syria's gates. The reason for the Soviet deception is a matter of speculation. Most historians assume that the USSR wanted to spark a war that they were sure the Arabs would win, thanks to the armaments that the USSR had provided them. Such an outcome would cement Soviet relationships with the Arab world and push the US onto the sidelines in the Middle East.

Six Days of War: June 1967 and the Making of the Modern Middle East Michael B. Oren, 2003



The 1967 Arab- Israeli War Continued: Soviet Union's build up of Egyptian Military Forces for the 1973 Yom Kipper War The Soviet Union supplied Egypt with a variety of missile weapon systems for deep strike capacities to engaging Israeli armored and air force elements.

Tu-16 BADGER (TUPOLEV): The Tu-16 was designed as a high-speed jet bomber for operations in theaters close to the Soviet Union. Intended to replace the propeller-driven TU-4, the greatest challenge during development was to doubling the speed to improve survivability in the face of enemy fighters. Tupolev Tu-16s twin-engine jet bomber, Tu-16 began as a high-altitude, free-fall bomber, it was also equipped to carry early Soviet cruise missiles used by the Soviet Union. [113]



A KSR-2 / Cruise Missile being released from a Tu-16

Tactical Air Defense Umbrella: This was deployed during the war over the Suez Canal and extended fifteen kilometers into the Sinai. Based on an interlocking surface-to-air missile (SAM) system, it was comprised in part of state of the art mobile SAM-6 air aircraft system and portable infantry shoulder fired SA-7 missiles these anti-aircraft missiles against which the Israelis had no experience. As long as Egyptian forces operated under cover of the SAM network, the Israeli Air Force (IAF) would find it extremely difficult, if not prohibitively expensive, to attack them. The extent of this constraint and the vulnerability of forces operating beyond it would be displayed graphically on October 13, when Egyptian forces attempted to advance beyond the SAM cover and lost over 500 armored vehicles at the hands of the IDF and IAF as a result. [114]

Scud Missiles: Two brigades of Scud B missiles (some sources site a division size) to Egypt. Egypt possessed at least 18 Scud missiles and nine launchers with Egyptian crews trained to operate them. According to Victor Aisralian, a high-ranking officer in the Soviet Foreign Ministry, the Scud element was under Soviet control, and fully staffed by Soviet personnel. [115]

R-17 'Scud B' SS - 1 The R-17 'Scud B' is an upgrade over the 'Scud A' that became operational in 1962. The missile is 11.25 m long, 0.88 m in diameter, and has a launch weight of 5,900 kg. It has a range of 300 km (186 mi) with accuracy of 450 m CEP. *Several different warheads were developed for the 'Scud B' missiles including nuclear war head with yields between 5 to 7 kilotons, chemical warfare agents including thickened VX nerve agent, and conventional high explosive.* A typical 'Scud B' takes approximately one hour to finish a single launch sequence. It uses an inertial guidance system and a single-stage liquid propellant engine. [116]

Cruise missiles: Soviet Union supplied Egypt with KSR-2 Surface-to-surface cruise missile. Raduga KSR-2 (NATO reporting name: AS-5 "Kelt") air to surface cruise missile. It was developed in 1958 and entered service in 1962. The missile was normally armed with a conventional high explosive warhead, *although it could be fitted with a one megaton nuclear warhead.* [117]

Sagger anti-tank missile: The Sagger was the first of its kind it was small, carried in an average size suit case. Thousands were provided to the Egyptian Army, Israeli Intelligence believed these suit cases only carried personal items. However it was entire method of anti-armor warfare never before seen on the battlefield. It was a small wire guided rocket and the in 1973 Yom Kippur War decimated Israeli armored forces in the opening round. (Note, anti-tank missiles are a whole different subject; however its importance in the Yom Kippur War must be noted). [118]

The AT-3 Sagger (Russian name 9K11 Malyutka), is a Russian made wire-guided anti-tank missile equipped with a shaped-charge high explosive anti-tank (HEAT) warhead. The missile is fired from a portable suitcase launcher (9P111). The missile takes about 5 minutes to deploy from its 9P111 fiberglass suitcase, which also serves as the launching platform. The missile weighs 10.9 kg, is 860 mm long, and has a body diameter of 125 mm and a wing span of 393 mm. The operator uses a joystick to guide the missile to its target. The operator's instructions are passed to the missile via a trailing wire. [119]

114). Tu - 16 BADGER (TUPOLEV) Federation American Scientists /www.fas.org/nuke/guide/russia/bomber/tu-16.htm

115). Escalation and Intrawar Deterrence During Limited Wars In The Middle East W. Andrew Terrill September 2009 Strategic Studies Institute, U.S. Army War College <http://www.StrategicStudiesInstitute.army.mil/>

116). IBID 2

117). Missile Threat R-11/-17 (SS-1 SCUD A/B/C/D) <http://missilethreat.com/missiles/r-11-17-ss-1-scud/>

118). IBID 2 119). IBID 2

119). AT-3 Sagger 9K11 Malyutka <http://www.armyrecognition.com/>

At 2:00 pm on October 6, 1973 Egypt's Operation Badr begins, with a large airstrike. More than 200 Egyptian aircraft conducted simultaneous strikes against three airbases, Hawk missile batteries, three command centers, artillery positions, and several radar installations.¹ Airfields at Refidim and Bir Tamada were temporarily put out of service, and damage was inflicted on a Hawk battery at Ophir. The aerial assault was coupled with a barrage from more than 2,000 artillery pieces for a period of 53 minutes against the Bar Lev Line and rear area command posts and concentration bases. 14 Tupolev Tu-16s took off and made a bold flight toward key targets on the Sinai Peninsula. Using the stand-off launch capabilities of their Soviet-supplied cruise missiles, the Tu-16s launched and returned to their bases without loss, most of their missiles struck their targets and inflicted heavy damage, though one of the cruise missiles was intercepted and shot down before it reached its target by an F-4E Phantom flown by Israeli pilot Moshe Melnik (with Zvi Tal Aloni in back seat). [120]

- ***Egypt's long-range bombers (which were older Soviet supplied systems) penetrated Israeli air defenses through the use of their air launched cruise missiles.***

Meanwhile, an additional two Tu-16s took off and flew out over the Mediterranean before turning directly toward Israel and launching their cruise missiles. Though they were targeting an IAF early warning radar site in central Israel, the IAF did not know that. Israeli pilot Eitan Carmi, flying an older French Mirage IIICJ, a veteran of the 1967 Six-Day War, chanced across one of the cruise missiles as it was speeding along toward Israel. He swooped down to intercept it and shot it down. Luckily, the second missile fell harmlessly into the sea. [121]

Scud Missiles: Egypt possessed a payload for the Scuds that would allow them to be utilized as strategic weapons able to inflict mass casualties. Prior to the war, the Egyptians attempted to indicate this by claiming a biological warfare (BW) capability. In the early 1970s, Sadat announced that Egypt possessed a BW option which it would use against Israel in response to an Israeli BW attack, but the nature of the Egyptian biological agent that would be used in such circumstances was never clarified. Documents issued within the Egyptian army throughout the 1960s and captured in the Yom Kippur War indicate that a considerable momentum had been generated during the 1960s, in relation to the Egyptian military concept concerning BW. It is reflected in the variety of documents pertaining to the strategic, as well as operational and tactical usability of Bio-Warfare Agents. [122]

Egypt was the first country in the Middle East to obtain chemical weapons and the first to use them. It reportedly employed phosgene and mustard gas against Yemeni royalist forces in the mid-1960s. It is believed to still have a research program and has never reported the destruction of any of its chemical agents or weapons. Like Egypt, Syria has not signed the Chemical Weapons Convention . [123]



— R-65 unguided rocket on TEL vehicle.
Jane's Strategic Weapon Systems

FROG-7 Syrian Missile: Syria had also requested Scuds from the Soviet Union but did not receive them until after the war. The Syrians did have short-range battlefield systems known as Free Rocket Over Ground 7s (FROG- 7s), but these systems could not be used as a strategic threat due to their limited range and the conventional warheads supplied to the Syrians. Meeting the FROG-7s was of only a short-range weapon. Syria's missile program began in November 1970, when President Hafez al-Assad assumed power and immediately sought closer military ties with the Soviet Union. This resulted in Syrian purchase of the R- 65, a rudimentary battlefield short-range ballistic missiles (BSRBM), which was first delivered in early 1973.

[124] **The R-65 or FROG-7** is a short-range, road-mobile, solid propellant unguided rocket designed for use on the battlefield. The name "FROG" comes from NATO, which designated it early on as the Free-Rocket-Over-Ground. It has a range of 68 km (42 miles) and deploys a single warhead with at least six alternative payloads. *It is also capable of carrying HE, submunitions, and chemical warheads (with up to 216 kg of VX nerve gas).* The FROG-7 missile is 9.4 m long with a diameter of 0.54 m. Its launch weight varies depending on the payload, ranging from 2,450 kg to 2,485 kg. [125]

122). Escalation and Intrawar Deterrence During Limited Wars In The Middle East W. Andrew Terrill September 2009 Strategic Studies

121). No Victor, The Vanquished, The Yon Kipper War Edgar O' Ballance 1978 page 33

122). Escalation and Intrawar Deterrence During Limited Wars In The Middle East W. Andrew Terrill September 2009

123a). Chemical and Biological Weapons in the Middle East <http://www.carnegieendowment.org/>

124). IBID 122 | 125). The R-65 or FROG-7 missilethreat.com

During the Yom Kippur War at least one unit of the Egyptian Air Force was on alert in the event that a decision would be taken to use nerve gas. [126]

The Agranat Commission

Was an Israeli national inquiry commission established on November 21st 1973 to investigate the IDF's function during the Yom Kippur War. Even with some 1500 pages that was released most of which is classified. Over the years bits and pieces are still being released, even as late as 2012 have surfaced. [127] The Commission later referred to the Scud missiles and saw them as a factor that could have changed the balance of power on the battlefield. Even though Egypt only fired three Scud missiles, it did have FROG -7s which it put to go effect at the opening round of the 1973 War. FROG missiles were fire into the Israeli Bar Lev Defensive Line in the Sinai. Frog missiles were fired at the various Israeli command posts there. Rocket launchers were aimed as so to explode on the forward slopes of the Bar Lev line to detonate any Israeli mines placed there. [128] On the northern front Syrian Forces fired about twenty FROG Missiles into the Jezreel and Huleh valleys. From Lebanon Arab Palestinian Fedayeen Forces fired about 30 rockets into Israel. [129] There reports Israeli troops captured stockpiles of Syrian chemical weapons support the view that Syrian combat troops received these weapons during the Yom Kippur war. [130]

***"The War was a near disaster, a nightmare",
Premier Golda Meir***

The age of missile warfare had come crashing into the world. With the cold war on, NATO to the Soviet Union were stunned from the amount of carnage in just a few short days. The Yom Kippur War from October 6 to 25th, incredible amount of destruction is still highly classified, but it is estimated some 500 aircraft was shot down, 2,500 tanks were destroyed, together with an untold number of artillery guns and other equipment. This caused American and NATO along with Soviet Union strategists to completely revise warfare strategy and tactics for the cold war. In a few short days, the entire modern military warfare was obsolete.

For five solid years (1963-1967) the Egyptian Air Force used Chemical Warfare Agents in Yemen

Significantly, happened to be soon after Egypt's first CW facility, in Abu-Za'abal, near Cairo, had began to operate. This facility was named Military Plant No. 801, operating under the semblance of a factory manufacturing chemicals and pesticides (As became apparent over time however, the facility was run by the Egyptian Ministry of Defense and was in fact engaged in the production of chemical warfare agents, in addition to the pesticides and sprays it manufactured for local, domestic use. The chemical agents used by the Egyptian Air Force in Yemen between 1963 and 1967 included CN tear gas, mustard blistering gas and phosgene asphyxiant. Throughout the 1960s, high-ranking Egyptian officers were trained at the Red Army's Academy of Chemical Defense in Moscow, gaining through this channel technical knowledge useful for offensive purposes as well. German missile scientists who worked in Egypt in the 1960s, German specialists in biological and chemical weapons also assisted Egypt. Seemingly, this involvement included an effort to develop missiles in conjunction with CB as well as radiological warheads, yet it was an abortive effort. It appears that during the 1970s, and on the basis of this accumulating techno-scientific knowledge, Military Plant No. 801 was manufacturing these two varieties of chemical warfare agents. Egypt, it can be assumed that the nerve agent first developed was sarin (which Egypt indeed supplied to the Syrians in 1972 – see below). This agent is typically non persistent, whereas at a later stage Egypt began manufacturing the persistent nerve gas VX. Deductively, the hallucinogenic agent developed by the Egyptians was of the glycolates group of agents. These new additions to Egypt's arsenal of chemical warfare agents supplemented the already existing ones (mustard gas and phosgene) and were installed, as were the first, in aerial bombs, artillery shells, rockets and mortar bombs; some of these agents were also installed in mines

**ACPR Policy Paper No. 46, 1998 The Evolution of Chemical and Biological Weapons in Egypt
Dany Shoham1**

126). ACPR Policy Paper No. 46, 1998 The Evolution of Chemical and Biological Weapons in Egypt Dany Shoham

127). Yom Kippur War revelations underline gravity of Iran dilemma facing Israel today By Mitch Ginsburg September 21, 2012, 2 timesofisrael.com Testimonies from 1973 declassified

128). No Victor, The Vanquished, The Yom Kippur War Edgar O' Ballance 1978 page 71

129). IBID page 144 5). Syria Country Profile NTI <http://www.nti.org/country-profiles/syria/chemical/>

130). IBID 2 pages, 331-332, 340



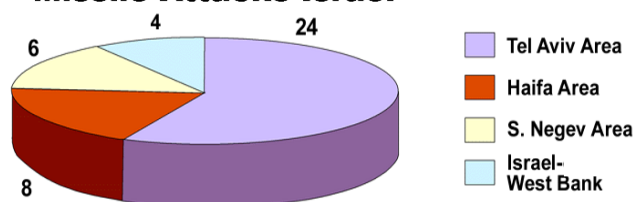
Saddam Hussein vs. Israel 1991 Gulf Persian War: Saddam Hussein fired forty-two missiles against Israel during the 1991 Gulf War. Although thousands of houses and apartments were damaged by the strikes, only two people died directly as consequence of the impacts. Another 12 lost their lives from indirect causes (suffocation while wearing gas-masks and heart attacks). Almost all of these Scuds were Iraqi Al Hussein models. The first Patriot battery did not become operational in Israel until after 12 Scuds had already fallen. In addition, any damage prevented by successful intercepts must be weighed against the damage caused by the at least four Patriot missiles that struck the ground and exploded in Israel. Finally, debris from Patriots that detonated above cities or from intercepted Scuds may have caused some damage. [131] *This was true of my experiences in the 1991 Gulf War in the Port of Dammam Saudi Arab, many times the Scud missile was intercepted directly above buildings showering the area with debris causing damage.* -author



Saddam Hussein did not launch a nuclear weapon at Israel, but he did attempt to cause a nuclear disaster.

Scuds missile attacks began on Israel January 18, 1991. Iraq launched these missiles from Western Iraq against three general target areas ' Tel Aviv, Haifa, and the Negev Desert in Southern Israel, specifically, Dimona where Israel had a nuclear facility in attempt cause a nuclear reactor breach. Experts say that an attack on a nuclear power plant, couldn't lead to a nuclear explosion. The danger, they say, is that attackers could cause a meltdown or a fire or set off a major conventional explosion, all of which could spew radiation into nearby cities and towns. Israel is a tiny country; in short it would have been a disaster. [132]

1991 Gulf War 42 SCUD Missile Attacks Israel



SOURCE: Wisconsin Project Iraq Watch DOD Information Paper Iraq's Scud Ballistic Missiles Released July 25, 2000

<http://www.iraqwatch.org/government/US/Pentagon/dodscud.htm>

All nuclear power plants are operated at very high heat, relying on nuclear fission to boil water that produces steam to drive the turbines that generate electricity. Critically, the nuclear fuel is prevented from melting down through the steady circulation of coolants which are pushed through the cooling system using very high powered electric pumps. If the electric pumps stop, the coolant stops flowing and the fuel rods go critical (and then melt down). This is what happened in Fukushima, where the melted fuel rods dropped through the concrete floor of the containment vessels, unleashing enormous quantities of ionizing radiation into the surrounding environment. The full extent of the Fukushima contamination is not even known yet, as the facility is still emitting radiation. When the generators fail and the coolant pumps stop pumping, nuclear fuel rods begin to melt through their containment rods, unleashing ungodly amounts of life-destroying radiation directly into the atmosphere. This is precisely why Japanese engineers worked so hard to reconnect the local power grid to the Fukushima facility after the tidal wave they needed to bring power back to the generators to run the pumps that circulate the coolant. This effort failed, of course, which is why Fukushima became such a nuclear disaster and released countless becquerels of radiation into the environment (with no end in sight). As of February 2012, the crippled Fukushima nuclear plant was still leaking radioactivity and areas surrounding it could remain uninhabitable for decades due to high radiation. It could take "more than 20 years before residents could safely return to areas with current radiation readings of 200 millisieverts per year, and a decade for areas at 100 millisieverts per year". Approximately 150,000 people were evacuated in response to the accident. Others were forced to move multiple times, resulting in increased stress and health risks, including deaths among seriously ill patients. Residents in the affected area are still struggling from the effects of the accident. They continue to face grave concerns, including the health effects of radiation exposure, displacement, the dissolution of families, disruption of their lives and lifestyles and the contamination of vast areas of the environment. There is no foreseeable end to the decontamination and restoration activities that are essential for rebuilding communities. The commission concludes that the government and the regulators are not fully committed to protecting public health and safety. An estimated 167 workers were exposed to more than 100 millisieverts of radiation while dealing with the accident. As much as 1,800 square kilometers of land in Fukushima Prefecture has now been contaminated by a cumulative radiation dose of 5 millisieverts or higher per year. -From: The official report of the Fukushima.

Nuclear Accident Independent Investigation Commission http://naic.go.jp/wp-content/uploads/2012/07/NAIC_report_lo_res.pdf

131). Department of Defense Information Paper Release Wisconsin Project Iraq Watch

Iraq's Scud Ballistic Missiles Released July 25, 2000 <http://www.iraqwatch.org/government/US/Pentagon/dodscud.htm>

132). Casualties and Damage from Scud Attacks In The 1991 Gulf War March 1993 George N. Lewis Defense and Arms Control Studies Program, M.I.T Steve Fetter University of Maryland Lisbeth Gronlund Union of Concerned Scientists, Cambridge, Mass. Defense and Arms Control Studies Program



Today Israel is the only nation in the world where every man, woman and child is issued a gas mask (aka protective mask). [133]

Saddam Hussein fired over 40 Iraqi scud missiles into Israel, in the 1991 Gulf War, forcing millions of Israeli citizens to hunker down create sealed rooms in the event of a chemical warfare assault, every man woman and child donned gas masks. The fear of the poisonous chemical warfare events during the Iran /Iraq War of the 1980's gripped the state of Israel. In the Iran-Iraq War the two countries fired more than 600 Scuds and modified Scuds at each other's cities. The heaviest of these exchanges, the so called War of the Cities, took place between February and April 1988, during which Iraq fired a total of 189 modified Scuds at Iranian cities. Iranian sources reported that 1,150 people had died and 4,000 had been injured from the missile attacks. However, some foreign analysts believe that Iran underestimated casualties to minimize civilian panic. The psychological effect of the Iraqi missile attacks was a major factor in Iran's acceptance of the ceasefire. [134]

- ***Most of Israel's population went around with gas masks and took shelter in sealed rooms or underground shelters during those five weeks, as every day or so Saddam fired scud missiles.***

The Iraqi-modified Scud missile (the al-Hussein) used against Israel was apparently the same as that used against Iran, and it appears that essentially all of the missiles launched by Iraq during the 1991 Gulf War broke up on reentry making it difficult for Patriot anti-missile batteries to discern which incoming object was the missile warhead.[135] In 1991 Theodore A. Postol of the Massachusetts Institute of Technology reported from a review of information provided by Israeli officials showed that the Patriot might not have provided any additional security for Israel after Iraq began firing Soviet-made Scud missiles on Jan. 18. "During the period of Patriot defense there were 15 percent fewer Scud attacks relative to the period when there was no defense," Professor Postol said, "yet the number of apartments reported damaged almost tripled, and the number of injuries from attacks increased by almost 50 percent." The Patriot was originally built nearly 40 years ago to shoot down aircraft. But just before the 1991 Gulf War, its manufacturer, Raytheon, modified the Patriot to shoot down tactical ballistic missiles. [136]

In 1991 Saddam Hussein's Iraq changed the face of war, simply by firing relatively obsolete Scud missiles into Israel and Saudi Arabia. The paradox for America's formidable military war machine, it was rendered helpless by an out dated weapon. Repeatedly there were unsuccessful efforts of the air campaign to locate and destroy this obsolete mobile threat. This did not go unnoticed by "Tehran's IRGC intelligence agencies". Today the Islamic Republic not only has the largest cruise missile and missile arsenal in the Middle East region, but has the largest mobile scud / cruise missile forces in addition. Washington and Tehran learned lessons about the limitations of air power as a means of neutralizing a mobile target. Despite massive aerial bombing in WWII against the Nazis V2 mobile missile launchers, the Allies stopped the mobile launchers only when ground troops overran the launching areas. In the Gulf War, satellites, air supremacy, and Patriot interceptor missiles failed to eliminate the Scud threat, a task completed by the ground offensive, forcing Saddam to capitulate. [137]

Saddam Hussein's rocket forces had four Scud versions:

Scud itself 180-km (111 mi) range, longer-range Scud (half warhead weight, extra range attained by burning all propellant immediately rather than steadily through the flight of the missile), Al Hussein 650-km (403 mi) , attained by reducing warhead weight to 250 kg (551 lbs) and increasing the fuel load by 15 percent), and Al Abbas 800-km (497 mi), achieved by reducing warhead weight to 125 kg, (275 lbs)with 30 percent more fuel). Al Abbas could be fired only from static launchers; all of the others could be fired from mobile or static sites.

Final Report to Congress
Conduct Of The Persian Gulf War Pursuant To Title V Of The Persian Gulf Conflict Supplemental Authorization And Personnel Benefits Act Of 1991 (Public Law 102-25) April 1992
Www.Ndu.Edu/library/epubs/cpgw.pdf

134). Homefront Command Israel <http://dover.idf.il/IDF/English/units/pikudim/homefront/default.htm>

135) Department of Defense Information Paper Release Wisconsin Project Iraq Watch

Iraq's Scud Ballistic Missiles Released July 25, 2000 <http://www.iraqwatch.org/government/US/Pentagon/dodscud.htm>

136). Defense Working Paper No. 2 Missile Defense and American Security A Sensible National Policy May 1996 Peter D.

Zimmerman Robert A. Manning, Editor <http://www.dlc.org/documents/ACFDOBEjf4Tc.pdf> 4). Missiles of Terror: Hitler's And

Hussein's Use Of Ballistic Missiles A Thesis by Edward Scott Martin B.S., University of South Carolina, December, 2002

http://etd.lsu.edu/docs/available/etd-0905102-111038/unrestricted/Martin_thesis.pdf

137). Lessons of the Gulf War Experience with Patriot Theodore A. Postol From: International Security Volume 16, Number 3, Winter 1991/92 pp. 119-171 5). Missiles Of Terror: Hitler's And Hussein's Use of Ballistic Missiles by Edward Scott Martin

B.S., University of South Carolina, December, 2002 [http://etd.lsu.edu/docs/available/etd-0905102-](http://etd.lsu.edu/docs/available/etd-0905102-111038/unrestricted/Martin_thesis.pdf)

[111038/unrestricted/Martin_thesis.pdf](http://etd.lsu.edu/docs/available/etd-0905102-111038/unrestricted/Martin_thesis.pdf)

WMD IRAQ KUWAIT THEATER OF OPERATIONS (KTO) Desert Storm CIA Declassified Report

File:062596_cia_73925_68275_01.txt Subject: IRAQ'S CBW CAPABILITY IN
THE KTO



IRAQ CAN DELIVER CHEMICAL WEAPONS TO DEEPER TARGETS USING EITHER AIRCRAFT OR BALLISTIC MISSILES. THE SUCCESS OF AIRCRAFT ATTACKS IS DEPENDENT ON IRAQ'S CAPABILITY TO PENETRATE AIR DEFENSES. IRAQ HAS SOME CHEMICAL WARHEADS FOR ITS BALLISTIC MISSILES, BUT THEIR EFFECTIVENESS IS LIMITED BY POOR ACCURACY AND RELATIVELY SMALL CHEMICAL PAYLOADS. IRAQ MAINTAINS THE MOST EXTENSIVE CHEMICAL AND BIOLOGICAL WARFARE (CW AND BW) CAPABILITY IN THE THIRD WORLD. BAGHDAD'S FORCES HAVE A RANGE OF CHEMICAL AGENT AND DELIVERY MEANS, AS WELL AS THE EXPERIENCE AND TRAINING NEEDED TO USE CHEMICAL WEAPONS EFFECTIVELY. BIOLOGICAL WEAPONS HAVE ONLY BEEN DEVELOPED RECENTLY. *The last sentence was proven wrong and could have been disastrous.*

The above declassified CIA Gulf War Report demonstrates how much in the dark American intelligence agencies were concerning Saddam Hussein's chemical and biological warfare capabilities. However the most startling factor was the CIA even stating Saddam Hussein had the largest extensive CW & BW in the third world, they were still totally ignorant of its size and depth.

The same can be said of the Islamic Republic of Iran, Syria, and much of the Middle East region today. The advancements in cruise missile and missile warfare in the Middle East has always had a concealed agenda, CBRN warfare. Much of what we know about Saddam's programs only came to light after the 1991 war and United Nations inspectors arrived and began opening Iraq's Pandora's Box. In accepting United Nations Security Council Resolution 687 of April 3, 1991, Iraq agreed to a cease-fire, intrusive inspections, and elimination of their weapons of mass destruction and related materiel including Scuds. To perform the inspections and monitor Iraq's compliance with the agreement, the United Nations created the United Nations Special Commission (UNSCOM). Inspectors found that Iraq had the resources and infrastructure to launch a crash program in December 1990 to field weapons with BW & CW agents to include artillery shells and Al Hussein Scud missiles.

UNSCOM Uncovered that Iraqi dictator Saddam Hussein had massed an Offensive Bio-Warfare Scud Missile Arsenal for the 1991 Gulf War. Al Hussein missile warheads, sixteen with botulinum toxin, sixteen were loaded with anthrax and five with botulinum toxin. The Al Hussein missile was the mainstream weapon used by Saddam during the Gulf War. In the months leading up to the 1991 war, the Iraqi BW program produced 8,445 liters of Bacillus anthracis which causes anthrax and 20,000 liters of Clostridium botulinum toxin. They also produced 2,200 liters of aflatoxin, a long-term carcinogen which would be inconsequential on the battlefield. It is not clear why the Iraqis viewed the third agent as promising.

- **For the Gulf war Saddam produced 166 400-pound aerial bombs that were filled with anthrax, botulinum, or aflatoxin.**
- Armed 155 mm artillery shells and 122 mm rockets with biological agents.
- Conducted field trials, weaponization tests, and live firings of 122 mm rockets armed with Anthrax and Botulinum toxin from March 1988 to May 1990.
- Tested Ricin, a deadly protein toxin, for use in artillery shells.

Initiated during the Iran-Iraq war, Baghdad began multi - BW research programs. The Iraqis were clearly contemplating an escalation to BW use should the war with Tehran if Iranian troops were able to expand their offensive into Iraq and threaten the survival of Saddam regime. After the cease-fire with Iran, this research was continued and expanded. The biological agents that Iraqi scientists found the most promising were anthrax and botulinum toxin which they later produced in bulk. Anthrax is one of the hardest biological weapons known to science. Botulinum toxin is drawn from a living organism and is therefore classified as a biological weapon despite the fact that it is not a bacteria or virus. In many respects, toxins are more akin to chemical weapons than they are to other forms of biological weapons, but botulinum toxin is staggeringly more toxic than any known chemical weapon.

138). Lessons of the Gulf War Experience with Patriot Theodore A. Postol From: International Security Volume 16, Number 3, Winter 1991/92 pp. 119-171 5). Missiles Of Terror: Hitler's And Hussein's Use of Ballistic Missiles by Edward Scott Martin B.S., University of South Carolina, December, 2002 http://etd.lsu.edu/docs/available/etd-0905102-111038/unrestricted/Martin_thesis.pdf

Developed and deployed 250 pound aluminum bombs coverage in fiberglass. Bombs were designed so they could be mounted on both Soviet and French-made aircraft. They were rigged with parachutes for low altitudes drops to allow efficient slow delivery and aircraft to fly under radar coverage. Some debate over whether bombs had cluster munitions or simply dispersed agent like LD-400 chemical bomb.

- Held trials as late as January 13, 1991. The Mirages were chosen because they have large 2,200 liter belly tanks and could be refueled by air, giving them a longer endurance and greater strike range. The tanks had electric valves to allow the agent to be released and the system was tested by releasing simulated agent into desert areas with scattered petri dishes to detect the biological agent.
- Deployed at least 166 R-400 bombs with 85 liters of biological agents each during the Gulf War. These deployed at two sites. One was near an abandoned runway where it could fly in aircraft, arm them quickly, and disperse Iraqi Mirages were given spray tanks to disperse biological agents. Bombs dropped from aircraft can be used to disseminate large quantities of chemical or biological agents. They are typically compatible with either impact or airburst fusing (proximity or time delay) and can be configured as either bulk (single mass of agent) or cluster (multiple sub-munitions) munitions. Although bombs are an efficient means to disseminate most chemical agents, bulk bombs are an inefficient means to disseminate biological agents. Bombs are also compatible with the production of certain chemical agents in-flight via the reaction of binary components, i.e., binary bombs. Chemical and biological bombs are typically configured to disseminate their agent fill via explosive aerosolization. Alternatively, chemical bombs can rely on a frangible body and the forces of impact to scatter their agent fill. Lastly, bombs can be configured to rapidly release their contents during flight. Among 1,550 R-400 aerial bombs produced by Iraq, more than 1,000 bombs were declared as destroyed unilaterally by Iraq, including 157 bombs stated as filled with biological warfare agents. The accounting for about 500 bombs unilaterally destroyed was not possible owing to the state and extent of destruction. In order to bridge the gap, UNSCOM requested Iraq to provide the documentation on the disposition of the tail parachute sections of R-400 bombs. The accounting for these components would enable the Commission to verify the maximum number of R-400 bombs, which Iraq could have produced. Iraq presented the information sought on the disposition of tail sections but field inspection activities are still required.

139). Iraq's Proscribed Weapons Programs 6 March 2003 UNMOVIC Working document
<http://www.un.org/Depts/unmovic/documents/UNMOVIC%20UDI%20Working%20Document%206%20March%2003.pdf>



The start of Iraq's CBRN programs may in fact be traced to the late 1960s or early 1970s. Thus the CW program was initiated in 1968 or 1969, the first identifiable BW program in about 1974 and the first SCUD missile contract was signed in 1972.

Of Saddam's entire proscribed weapons program, Iraq's biological warfare (BW) program was perhaps the most secretive.

Iraq has stated that knowledge of the program was kept to a select few officials and that, to maintain secrecy, special measures were taken. This secrecy was maintained after the Gulf War when Iraq went to considerable lengths, including the destruction of documents and the forging of other documents, to conceal its BW efforts from UNSCOM. Baghdad's efforts to conceal the program, particularly the destruction of documentation and its declared unilateral destruction of BW weapons and agents, have complicated UN Inspectors task of piecing together a coherent and accurate account of its BW program. In fact, there are indications that, at various times, there was more than one program. For example, in 1985, there was a BW program under the Ministry of Defence and, overlapping this, was another BW program under the control of the State Security Apparatus. What the connections, if any, between these two programs may have been, other than through government direction and leadership, is unclear.

Iraq's Proscribed Weapons Programs 6 March 2003 UNMOVIC Working document
<http://www.un.org/Depts/unmovic/documents/UNMOVIC%20UDI%20Working%20Document%206%20March%2003.pdf>



Chemical warfare Agents Iraq

Of the total of 3,950 tons of CW agents declared produced during the period 1982 to 1990, 2,850 tons were Sulphur Mustard. According to Iraq, 2,443 tons of this Mustard was weaponized in artillery projectiles and aerial bombs. Iraq did not provide complete documentation on the production and disposition of Mustard for the entire period of its production, weaponization and consumption, which is what would be required to assess the accuracy of the declared remaining quantities in 1999

- ***Iraqi Scientists developed 155-mm artillery shells projectiles with Mustard agent that could be stored for decades***

Chemical Warfare Rocket Warheads: Iraq declared the procurement or indigenous production of more than 100,000 122-mm rocket chemical warheads from 1985 to 1990, making it the most numerous of Iraq's chemical munitions. At least seven distinct models of warheads were procured or produced. In excess of 36,000 warheads were declared as having been filled with nerve agents.

- In all, over 1000 R-400 bombs and 50 Al Hussein warheads were said to have been filled with chemical warfare agent. The agents said to be selected were Sarin and Cyclosarin, either as the agent or in binary form (i.e. the alcohol only was placed in the munition and the precursor was stored alongside in containers). UN Inspectors could not be certain of the fill for these weapons but notes that, on some destroyed warheads recovered by UNSCOM, degradation products of VX were found, implying that at least some of these weapons were filled with that agent. In addition to these weapons, Iraq stated that it filled many thousands of other CW munitions in 1990. For example, in that year, 12,500 artillery shells were filled with Mustard and 8,500 rockets were filled with Sarin.
- Of the total of 3,950 tons of CW agents declared produced during the period 1982 to 1990, 2,850 tons were Sulphur Mustard. According to Iraq, 2,443 tons of this Mustard was weaponized in artillery projectiles and aerial bombs. Iraq did not provide complete documentation on the production and disposition of Mustard for the entire period of its production, weaponization and consumption, which is what would be required to assess the accuracy of the declared remaining quantities in 1999.
- 210 tons of Tabun, 795 tons of sarin and Cyclosarin, and 3.9 tons of VX.
- From Iraqi declarations to the UN after the Gulf War we know that by 1991 Iraq had produced a variety of delivery means for chemical and biological agents including over 16,000 free-fall bombs and over 200,000 artillery rockets and shells. Iraq also admitted to the UN Special Commission (UNSCOM) that it had 50 chemical and 25 biological warheads available for its ballistic missiles.

- ***And this is the short list; there is more missing material for CBRN and military technology from Saddam's deadly arsenals.***

Dual-Use Chemical and Biological Facilities, Dual-Use Technology

Almost all components and supplies used in weapons of mass destruction and ballistic missile program are dual-use. For example, any major petrochemical or biotech industry, as well as public health organizations, will have legitimate need for most materials and equipment required to manufacture chemical and biological weapons. Without UN weapons inspectors it is very difficult therefore to be sure about the true nature of many of Saddam Hussein's Iraq's facilities. This is also true of any country of suspect such as Syria, Tehran and etc.. This underscores the problem with proliferation of CBRN, missile and cruise missile arsenals.

Iraq's Weapons of Mass Destruction the Assessment of the British Government
<http://www.gwu.edu/~nsaarchiv/NSAEBB/NSAEBB254/doc05.pdf>

140). Iraq's Proscribed Weapons Programs 6 March 2003 UNMOVIC Working document
<http://www.un.org/Depts/unmovic/documents/UNMOVIC%20UDI%20Working%20Document%206%20March%202003.pdf>
141). UNSCOM and Iraqi Chemical Weapons <http://www.fas.org/nuke/guide/iraq/cw/unscom.htm>

VX Nerve Agent: Saddam's security apparatus' succeeded in concealing the existence of a biological weapons program for four years after the Gulf war was over and during massive UN inspection efforts in Iraq. He also succeeded in concealing a substantial VX nerve weaponization program until 1997-1998, some seven years from inspectors. Soon after United Nations teams discovered the existence of an advanced VX Nerve Agent warfare program Saddam forced them out of Iraq. VX is the most toxic chemical warfare agent in the world.

■ **Based on the UNSCOM report to the UN Security Council in January 1999 and earlier UNSCOM reports, we assess that when the UN inspectors left Iraq they were unable to account for:**

- Up to 360 tons of bulk chemical warfare agent, including 1.5 tons of VX nerve agent;
- Up to 3,000 tons of precursor chemicals, including approximately 300 tons which, in the Iraqi chemical warfare program, were unique to the production of VX;

It is clear, however, that the VX program began at least as early as May 1985 and continued without interruption until December 1990. [[S/1995/864](#)] According to Iraq, 3.9 tons of VX were produced in total: some 2.4 tons in 1988, the remainder in 1990. a US laboratory reported to UNSCOM that it had detected the presence of degradation products of VX and a stabilizer in some samples of missile warhead pieces recovered by UNSCOM inspectors. [142]

Binary Weapons and Saddam Hussein: During the late 1980's binary weapons were very difficult to make and manufacture, even for super power Nations such as America and the Soviet Union. Binary chemical weapons or munitions are chemical weapons wherein the toxic agent is not contained within the weapon in its active state, but in the form of two chemical precursors, physically separated within the weapon. The precursors are designed to be significantly less toxic than the agent they make when mixed, and this allows the weapon to be transported and stored more safely than otherwise. The safety provided by binary chemical weapons is especially important for people who live near ammunition dumps. The chemical reaction takes place while the weapon is in flight. Firing the munition ruptures the capsules. The munition spins rapidly in flight, which thoroughly mixes the two precursors, so they can react with one another. Finally, a bursting charge aerosolizes and distributes the chemical agent. Saddam's military doctrine, training and tactics were built by the Soviet Union. Another meaning for binary weapon in soviet doctrine was two to three lethal chemical or biological agents that are in single munition and are released together upon delivery. [143]

■ **NOTE IMPORTANT TIME LINE : Saddam's invasion of Kuwait started on August 2, 1990, The Persian Gulf War August 2, 1990 – February 28, 1991**

After coming to power in 1968 and onward, Iraqi Dictator Saddam Hussein and his military officers frequently pledged to eliminate the state of Israel. Saddam in a lengthy speech on April 1, 1990: *"We do not need an atomic bomb. We have the binary chemical. Let them (Israel) take note of this. We have the binary chemical. According to our information, only the United States and the Soviet Union have it"*. This may have coincided with a missile test which may have had a binary weapons capability. Then on April 2, 1990, speech he threatened to "burn" half of Israel, Israeli leadership was concerned that the expression "burn" meant bacteriological contamination of some Israeli population centers, rendering them uninhabitable. Beginning in mid-April 1990, Saddam openly committed Iraq to retaliate against Israel "with everything we have," not only in the case of an Israeli attack against Iraq, but also in the case of such an attack against "any Arab state" requesting Iraqi protection. [144]

142). UNSCOM and Iraqi Chemical Weapons <http://www.fas.org/nuke/guide/iraq/cw/unscm.htm>

143). Binary Weapons Federation of American Scientists <http://www.fas.org/programs/bio/index.html> Dual-Use Biological Research
144). Iraq Poisonous Weapons The Continuing Storm Iraq Poisonous Weapons and Deterrence Avigdor Haselkorn Yale University Press; (February 8, 1999) pages 17-24

Sarin – “Nerve Agent: is a clear, colorless, and tasteless liquid that has no odor in its pure form. However, sarin can evaporate into a vapor (gas) and spread into the environment. Sarin is also known as GB. Iraq adopted the binary” method of weaponization, in which the components of sarin gas were stored separately until use, when they are mixed. The Iraqi components of sarin are DF 2 and the alcohols cyclohexanol and isopropanol. Iraq manufactured DF 2 with a purity of 95%, and imported alcohols of 100% purity, so the detonation of its munitions could be expected to yield relatively pure sarin.” UNSCOM [145]

Iraqi scientists’ binary weapons used crude by effective technology for storing alcohol in nerve gas bombs used in the Iran-Iraq war. These were not binary weaponry as related to American weapons. The bombs were filled with suitable alcohols (such as isopropyl alcohol) and then just a few days before use manually added another precursor such as difluoromethylphosphonate (DF). Producing DF is less complex than manufacturing chemical warfare agent itself because of lower toxicity. Thus they could produce Sarin (GB) without having to handle the chemical unstable itself. The shelf life of DF is longer than that of GB and its storage is safer plus less complicated. The resulting GB is potentially purer and more stable than GB produced by other means. This Iraqi binary method allowed sustained levels of GB production and other binary weapons. This was due to the fact some of the binary precursors such as isopropyl alcohol could be purchased commercially.

In the Iran-Iraq war Saddam’s chemical weapons were of a low quality. Iraq mustard and nerve agents did not produce the type of battlefield casualties Saddam was seeking. For example Iraq’s nerve munitions contained significant impurities and thus underwent rapid hydrolysis. As a result shelf life could only be expected to be 4 to 6 weeks. Iraqi scientists refined and improved on this concept. Saddam soon had deadly munitions with a combination of mixed agents. Visible gaseous signs of mustard gas were removed with this deadly cocktail brew. In the Iran –Iraq War in made it almost impossible for Iranians to treat the wounded, even decontamination was next to impossible. [146]

Janbazan Affairs Organization, Tehran Medical Report, Iran / Iraq War

“The exact number of injured persons during the eight years of Iraq-Iran conflict is not available, but according to JAO report, 398,587 individuals sustained injuries that required prolonged medical and health care following primary treatment. Of them, 52,195 (13%) were injured due to the exposure to chemical warfare agents such as mustard gas or nerve agents. Due to delayed manifestation of symptoms in chemical agent exposure, the number of Iranian chemical warfare victims will increase in the future. In addition, 218,867 Iranians died due to war injuries and it number included 56,575 army forces personnel (25.8%), 41,040 Islamic Revolutionary Guards Corps (IRGC) (18.8%), and 87,822 volunteers (40.1%). Meanwhile, civilians (mostly women and children) account for 15.3% (N=33,430) of total deaths. The mean age of martyrs was 23 years old. A major consequence of these deaths was that it left more than 144,000 children orphaned. Prisoners of war comprise 42,875 Iranian victims. They were captured and kept in Iraqi detention centers for many years after the war was over (from 2.5 to more than 15 years). Finally, we should point out that the number of untraceable individuals is not precisely known.”

Iranian Casualties During The, Eight Years Of Iraq-Iran Conflict

Tehran, August 2nd 2007 Rev Saúde Pública 2007 page 41 <http://www.scielosp.org/pdf/rsp/v41n6/6852.pdf>

145). UNSCOM and Iraqi Chemical Weapons <http://www.fas.org/nuke/guide/iraq/cw/unscom.htm>

146). Iraq Poisonous Weapons The Continuing Storm Iraq Poisonous Weapons and Deterrence Avigdor Haselkorn Yale University Press; (February 8, 1999) pages 17-24

CBRN: Chemical, Biological, Radiological and Nuclear

“CBRN” is a term that covers four distinct groups of hazards

Chemical. Poisoning or injury caused by chemical substances, Biological. Illnesses caused by the deliberate release of dangerous bacteria, viruses or fungi, or biological toxins (e.g. ricin, a natural toxin occurring in plants).

Radiological (radioactive). Illness caused by exposure to harmful radioactive materials contaminating the environment.

Nuclear. Death and injury caused from caused from the effects of an explosion that includes blinding light, intense heat (thermal radiation), initial nuclear radiation, blast, fires started by the heat pulse, and secondary fires caused by the destruction.

CBRN :

<http://www.nationalterroralert.com/cbrn/>

Arms Race, the Iran Iraq War

22 November 1988 Professor Anthony Cordesman of the Center of Strategic International Studies reported Iran and Iraq were rushing into a chemical weapons arms race. He states that both countries are working to assemble larger and deadlier chemical weapons stockpiles. *"Behind the scenes, there is an absolutely massive effort in chemical weapons. Both sides are arming for war."* [147]

"The Middle East is one of the most unstable, violent regions in the world. Religious strife, ethnic tensions, and strategic competition between both countries in the region and those abroad, combined with modern military capabilities that are somewhat lacking in other conflict-prone regions; make the Middle East quite dangerous. Many countries in the region have at least a minor weapons of mass destruction (WMDs) capability, be it nuclear, biological, chemical, or some combination thereof, and some have in the past shown a willingness to use them. As a result, the issue of WMDs in the Middle East is an important one in the realm of international security."

ODUMUNC 2009 Issue Brief Security Council Weapons of Mass Destruction In The Middle East Cody Zimmerman
http://al.odu.edu/mun/conference/wmd_middle_east.PDF

The Gulf War has triggered a race in strategic technology, based in part on lessons drawn from the rapid US dominance of Iraq and the revolution in military affairs. On the missile side, the proliferation of ICBM, cruise missile and UAVs designs and technology has raised the threat to the US from CBRN delivery systems to a critical threshold. Countries with CW and BW capabilities are acquiring sophisticated delivery systems including cruise and ballistic missiles. We have seen an exodus of scientists with experience in CW and BW production from former Warsaw pact countries and the former Soviet Union. Countries are using the natural overlap between weapons and civilian applications of chemical and biological materials to conceal CW and BW production; controlling exports of dual-use technology is ever more difficult. [148]

Developments in biotechnology, including genetic engineering, may produce a wide variety of live agents and toxins that are difficult to detect and counter; and new CW agents and mixtures of CW and BW agents are being developed. Various Mid-East and regional countries such as Iran, Syria, Egypt, and Sudan have become self-sufficient in producing CW and BW agents and less dependent on imports. Because much of the material and equipment used to produce BW has legitimate medical, agricultural, or industrial purposes, and because BW could be produced covertly in a relatively small facility, other countries or groups may have undetected BW programs. [149]

- Genetic engineering, generational change capability to weaponize new weapons, defeat vaccines, detection, and protection systems. Genetic engineering can be used to broaden the classical bioweapons arsenal. Through genetic engineering, bacteria can not only be made resistant to antibiotics or vaccines, they can also be made even more toxic, harder to detect, or more stable in the environment. By using genetic methods that are standard procedures in thousands of labs worldwide, bioweapons can be made more virulent, easier to handle, and harder to fight. In short, more deadly effective. [150]

NOTE FOR THE READER: There was a complex mixture of interactions between Saddam Hussein, Syria and the Islamic Republic of Iran. Originally Iraq's Saddam Hussein and Syria under Hafez al-Assad, 1970–2000 were bitter rivals, when his son Bashar al-Assad took his place, he and Saddam became allies. Assad supported Saddam during the UNSCOM & sanction period. At this time, there was bewildering covert black-marketing and proliferation of CBRN technology cooperation between Iraq and Syria. Saddam Hussein even sent family members to Syria when US conducted Operation Iraqi Freedom in 2003. Syria was a fallback position for Saddam; he even deposited several billion dollars in Assad's accounts. In the end, Assad doubled crossed Saddam, kicked out Saddam's family. Assad became a new ally of Tehran. Saddam's research, CBRN industrial expertise which he placed in the hands of Bashar al-Assad was handed to the Islamic Republic of Iran. This and more is covered in-depth in **CHAPTER 9: "CBRN Capabilities, What is not being asked, What is not being Investigated,"** author.

147). Chemical Arms Race Speeds up in Gulf, Warren Richey, Christian Science Monitor, 22 November 1988, p. 9

148). ODUMUNC 2009 Issue Brief Security Council Weapons of Mass Destruction In The Middle East Cody Zimmerman http://al.odu.edu/mun/conference/wmd_middle_east.PDF

149). Genetic engineering is regularly used to produce lethal bacteria <http://www.sunshine-project.org/bwintro/gebw.htm>

150). IBID 3

On May 14, 1948, the British Mandate ended, and the State of Israel was established. Less than 24 hours later, Israel was invaded by the armies of five Arab nations: Egypt, Syria, Transjordan, Lebanon and Iraq. The newly formed Israel Defense Forces (IDF) managed to defeat the invasion in 15 months of war that claimed over 6,000 Israeli lives, roughly 1 percent of the total population. Since the creation of the state of Israel in 1948, it has been under continuous siege, which can best be understood in the terms of Irregular Warfare or more definitive as Hybrid War.

"The categories of warfare are blurring and no longer fit into neat, tidy boxes. One can expect to see more tools and tactics of destruction, from the sophisticated to the simple being employed simultaneously in hybrid and more complex forms of warfare".

Robert M. Gates, U.S. Secretary of Defense, from 2006 to 2011. [151]

Hybrid Threat: "Any adversary that simultaneously and adaptively employs a tailored mix of conventional weapons, irregular tactics, terrorism, cyberwarfare and criminal behavior to obtain their political objectives."

Twenty-First Century Warfare Will Be Hybrid, Colonel Leslie F. Brown United States Army 2011 U.S. Army War College, Carlisle Barracks <http://www.dtic.mil>

Hybrid warfare will be the dominant form of warfare in the twenty-first century due to the prevalence of hybrid threats that currently exist throughout the world. A combination of conventional and irregular warfighting capabilities, hybrid warfare is the twenty-first century kind of warfare with its own limiting conditions and its own peculiar preconceptions.

Hybrid threats are characterized by the combination of regular forces governed by international law, military tradition, and custom with irregular forces that are unregulated and as a result act with no restrictions on violence or targets for violence. This could include militias, terrorists, guerrillas, and criminals. Such forces combine their abilities to use and transition between regular and irregular tactics and weapons. These tactics and weapons enable hybrid threats to capitalize on perceived vulnerabilities making them particularly effective. An adversary that simultaneously and adaptively employs some combination of (1) political, military, economic, social, and information means, and (2) conventional, irregular, catastrophic, terrorism, and disruptive/criminal warfare methods. It may include a combination of state and non-state actors.

- ***CBRN Warfare, Martyrdom Ops (suicidal attacks), Employment Improvised Explosive Devices (IEDS), rocket and mortar attacks.***
- ***Non-Military Targets, direct targeting of civilians, and communities. [152]***

The start of Iraq's WMD programs may in fact be traced to the late 1960s or early 1970s. Thus the CW program was initiated in 1968 or 1969, the first identifiable BW program in about 1974 and the first SCUD missile contract was signed in 1972.

The war had a major influence on Iraq's WMD program. The chemical program underwent a major reorganization in June 1981 when emphasis was placed on bulk production of agent and its weaponization. Bomb casings for mustard and Tabun were ordered in 1982 and by 1983, bombs were filled with mustard and ready for use. Five months later, larger bombs filled with mustard and Tabun were also ready. In the mid-1980s, Iraq embarked on a SCUD modification program to increase the range of these missiles to enable them to reach Tehran. The first successful test firings of a modified SCUD, the 650 km Al Hussein missile, took place in August 1987. As the war ground on, Iraq considered that it was in a fight for survival. The mass counter-offensives by Iranian troops, "human wave attacks", caused particular concern. One senior government Iraqi official told UNSCOM. The first media reports of the use of chemical weapons by Iraq against Iranian forces was in 1983. According to a UN investigation team, the first attacks employed mustard gas. In the following years more sophisticated chemicals were also reported, notably, the nerve agent Tabun. Iran also used chemical weapons against Iraq.

**Unresolved Disarmament Issues
Iraq's Proscribed Weapons
Programmes 6 March 2003
<http://www.un.org/Depts/unmo vic/documents/cluster6mar.pdf>**

151). Robert M. Gates, A Balanced Strategy: Reprogramming the Pentagon for a New Age,|| Foreign Affairs (January/February 2009), <http://www.foreignaffairs.org/20090101faessay88103-p20/robert-m-gates/a-balanced-strategy.html>,
152). Twenty-First Century Warfare Will Be Hybrid By Colonel Leslie F. Brown United States Army 2011 U.S. Army War College <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA553122>

Israel, no other country in the world issues protective (gas) masks to its entire population, where new homes and apartments are built with protective rooms in the event of a chemical or biological warfare attack. Since 1948 no other country in the world has suffered such continuous and unrelentless conventional, irregular wars, rocket and mortar onslaughts. It was in 1993 that the Islamic Republic of Iran sent its first Arab Palestinian suicide bomber converts. Under the auspices of Hezbollah and the Islamic Revolutionary Guards, Arab Palestinian Hamas and PIJ members learned the functional elements of suicide attacks and matured their understanding of martyrdom operations. Hamas and PIJ attacked Israel with suicide bombers eight times during 1993 alone. From this point onwards it became part of the religious dogma of the Arab Palestinians. [153] There have been some 12,000 rocket and mortars have fallen in and around Israeli communities. These attacks are much year round, day in day out. [154]

Stability-instability paradox and nuclear arms: The term “stability-instability paradox” was coined by Glenn Snyder in 1965 in a meditation on the effects of nuclear weapons on international peace. He remarked:

“The point is often made in the strategic literature that the greater the stability of the ‘strategic’ balance of terror, the lower the stability of the overall balance at its lower levels of violence.”

In other words, though it was becoming widely accepted among strategists at the time that nuclear weapons made large-scale invasions virtually impossible, it was nevertheless also possible that the “security” of knowing foreign invasion was highly unlikely made lower-level conflict or more precisely irregular wars more likely. His hypothesis seemed to be borne out by the Cold War’s proxy conflicts in Korea, Vietnam, and elsewhere. [155]

Stability-instability paradox & Saddam Hussein: For Saddam Hussein a Nuclear arsenal would allow Baghdad to wage wars of attrition against Israel, culminating to convention strike into the heartland of Jerusalem. Much like Tehran today, throughout his time in power, Saddam viewed Israel through a prism of intense hatred and hostility. Saddam’s public statements, his discussions with foreign leaders and his private comments were colored references to the destruction of Israel, and the deep enmity between Iraq and the Jewish state. *“Our worst enemy is Zionism”*. From captured Iraqi documents during the 2003 Operation Iraqi Freedom, transcripts of top-level meetings between Saddam and his advisers: In meetings and discussions with Saddam Hussein’s top military and civilian advisers between 1978 and 1982, Saddam repeatedly returned to the subject of how an Iraqi nuclear capability could be used against Israel. This was a critical strategic nuclear protective umbrella issue for Saddam. The Iraqi dictator repeatedly returned to the subject of how an Iraqi nuclear capability could be used against Israel. This was a critical strategic and identity issue for Saddam. As Saddam put it, nuclear weapons would allow Iraq to “guarantee the long war that is destructive to our enemy, and take at our leisure each meter of land and drown the enemy with rivers of blood.” Saddam envisioned that this war would cost Iraq some 50,000 casualties, to say nothing of Israeli losses. Fundamentally, though, Saddam feared that as long as Israel possessed a nuclear monopoly in the Middle East, it could respond to any Arab military strike in devastating fashion. *“When the Arabs start the deployment,”* Saddam told a group of military officials in 1978, *“Israel is going to say, ‘We will hit you with the Atomic bomb’*. The Iraqi dictator believed that nuclear weapons would provide the deterrent power necessary to wage a conventional war against Israel. ’ [156]



153). The Suicide Bomber as Sunni-Shi'a Hybrid by Benjamin T. Acosta Middle East Quarterly Summer 2010, pp. 13-20

154). News of Terrorism and the Israeli- Palestinian Conflict November 7-13, 2012 The Meir Amit Intelligence and Terrorism Information Center (at the Israeli Intelligence and Heritage Commemoration Center) http://www.terrorism-info.org.il/Data/articles/Art_20423/E_227_12_1187224720.pdf

155). The Stability-Instability Paradox By Krepon | 2 November 2010 <http://krepon.armscontrolwonk.com/archive/2911/the-stability-instability-paradox>

156). Saddam, Israel, and the Bomb Hal Brands and David Palkki Nuclear Alarmism Justified? Brands, Hal, and David Palkki Volume: International Security 36, 1 (summer), Pages: 133-166 2011

The stability-instability paradox holds that nuclear proliferation makes general war less likely, but limited or proxy wars more likely. In a confrontation between two nuclear-armed states, both participants will have a major incentive to prevent any conflict from escalating to general war; for fear that this will result in the use of nuclear weapons. Yet because both states (presumably rational entities) are aware that their competitor seeks to avoid escalation, they may feel free to engage in aggression at lower levels of intensity, via limited war, terrorism, or proxy conflict. Saddam's nuclear logic offers a clear example of how the dynamics of the stability-instability paradox can shape a leader's strategic thinking. Tehran's Oil Umbrella has allowed it to conduct international irregular war not only against the state of Israel through its proxies of Hamas and Hezbollah but also against the EU & America from African to Iraq, to Afghanistan to South America. Tehran is the major source of IEDs that has killed & maimed hundreds of US Service personnel. [157] Yet the fragile global economic situation and current economic meltdown is a continuation of the financial crisis of 2008, when the bankruptcy of Lehman Brothers (then the world's third-largest investment bank) threatened the whole financial system with collapse. Private financial institutions were saved from collapse. The cost of preventing their collapse was increased public debt. Increased public indebtedness has nothing to do with excess public spending. It is the direct result of the 2008 financial crisis. The Islamic Republic of Iran provides the Global community engines with the oil and gas it needs to drive its economy. Tehran has its Oil umbrella to which it wants to add a nuclear layer. Even with all of the noise and tough talk of Iranian sanctions coming from President Obama's, in reality are no more than systematic white washing propagation doctrine. Quietly behind the scenes President Obama provides over 20 countries with exemptions to purchased oil from Tehran. [158]

Today there is no longer any part of Israel that is immune from rocket warfare. Israeli strategy must grapple with serious demographic, economic and political restraints. The IRI irregular - Hybrid warfare has trained and armed its militant proxies who launch their rockets from Lebanon's Hezbollah, to Gaza's Hamas and now the Egyptian Sina peninsula various radical Islamic groups.

It is commonly misunderstood just how vulnerable Israel actually. Some 70 percent of its population and 80 percent of its industrial capacity are concentrated in the narrow coastal strip between the Mediterranean Sea and the West Bank. The adjacent West Bank hills topographically dominate the relatively flat and exposed coastal plain, providing a distinct advantage to an attacker for observation, rocket fire, or other and defense from an Israeli ground response.

"Since its founding in 1948, Israel has suffered from several regional asymmetries in relation to its neighbors that restrict its capacity for self-defense. Israel's population of 7.5 million lives in an area of less than 10,000 square miles including the disputed West Bank, while surrounded by Arab countries with a population of three hundred million and territories 650 times larger than Israel."

Former Director of IDF Intelligence; President of the Jewish People Policy Planning Institute Maj.-Gen. (res.) Aharon Ze'evi Farkash

157). Obama Exempts Japan and 10 European Nations From Iran Sanctions Law
By Steven Lee Myers March 20, 2012

<http://www.nytimes.com/2012/03/21/world/middleeast/obama-exempts-japan-and-10-european-nations-from-iran-sanctions-law.html?src=recg>

158). Iran's Support for Terrorism in the Middle East Matthew Levitt Director, Stein Program on Counterterrorism and Intelligence, The Washington Institute Testimony before the U.S. Senate, Committee on Foreign Relations, Subcommittee on Near Eastern and Central Asian Affairs July 25, 2012 www.washingtoninstitute.org/uploads/Documents/testimony/LevittTestimony20120725.pdf

The beginning of the Second al-Aqsa Intifada (2000–2006) forced the Israeli Army to focus on operations designed to prevent terrorist attacks, suicide bombing inside Israel. As part of the violence perpetrated by the Arab Palestinians during the second intifada, suicide bombings played a particularly prominent role and served as the foremost powerful weapon in the hands of the planners. In 2002, Fatah, which had never before used suicide bombing and whose members were essentially part of the PA security apparatus, joined the dispatchers of the suicide bomber. From the outbreak of the second intifada in late September 2000 until 2009, there had been a total of 146 suicide attacks, and more than 389 suicide attacks had been foiled. Since 2009, there have been no suicide bombings in Israel. September 2000 to 2009, 516 of the 1178 deaths (43.8 percent) were caused by suicide attacks. In addition to the attacks on Israeli civilians, this also resulted in thousands of physical and emotional casualties. The suicide bombing tactics and goals was to instill fear among the Israeli public and create a sense impending death, paranoidism, of danger on the streets, on public transportation, and at places of entertainment. In addition was to cause disruption of the flow of the economic community day to day normal activities. [159]

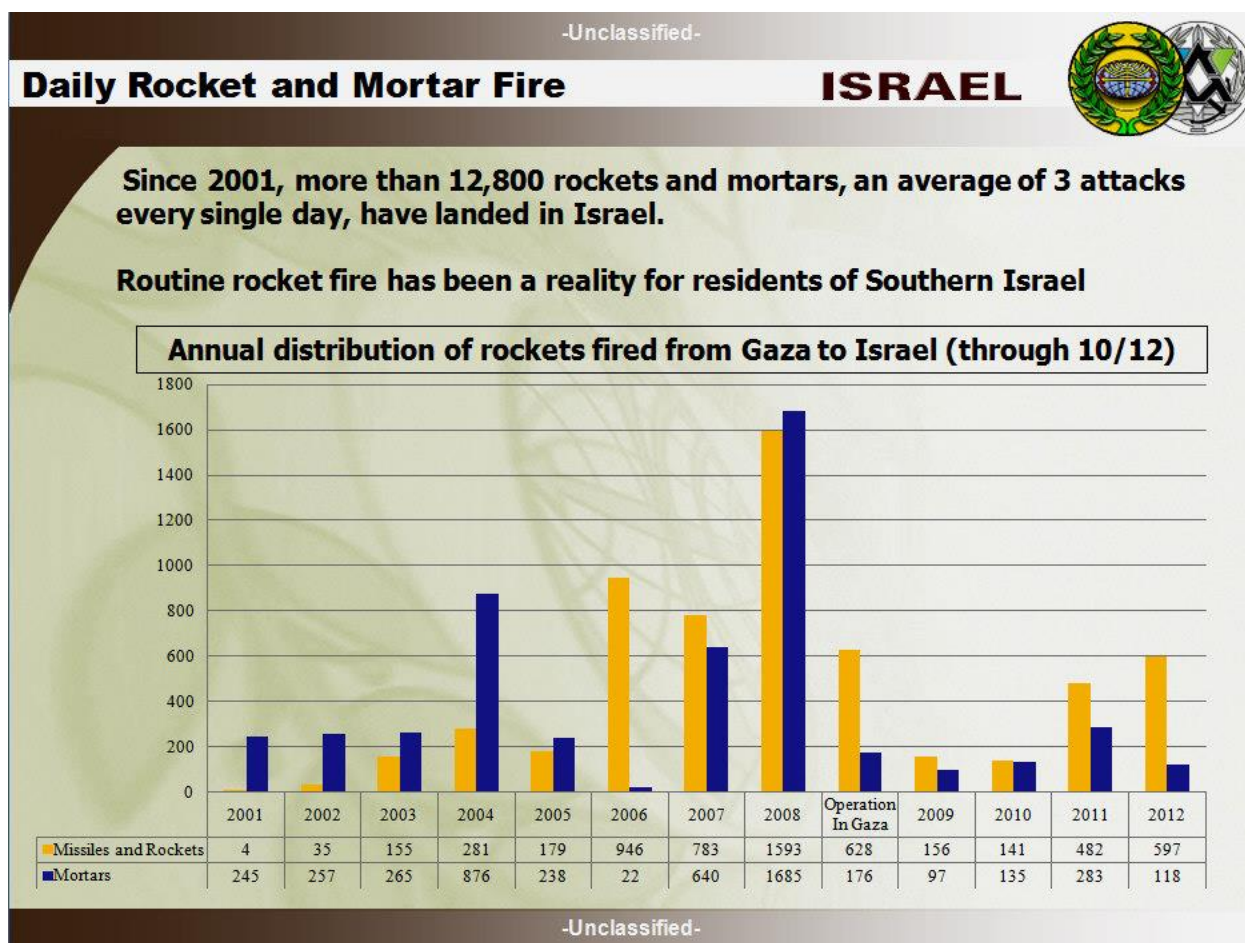
To stop these kinds of attacks Israel has and is spending over a billion of dollars on construction of walls, security barriers, check points and etc in and around Israel and Israeli communities. Although frequently depicted in the media as a wall, Israel's security barrier is, for approximately 95% of its length, a multi-layered fence system. The security fence forms a strip approximately the width of a four-lane highway. At its center is the chain-link fence that supports an intrusion detection system. An anti-vehicle ditch is located on the West Bank side of the fence and a smooth dirt strip on the Israeli side for "intrusion tracking." The combination of detection devices in the fence, along with dirt stretches on either side, works by slowing down a would-be terrorist by about 15 minutes and simultaneously alerting Israeli security forces. [160]

At one time, the Israeli military was able to use its air power capabilities to defend its communities and prevent enemies from reaching into the heartland. Now, the situation has changed. The radical Islamic Militants, Tehran and etc have learned this lesson. The known numbers of rockets and missiles is today over 60,000 in Lebanon and over 30,000 thousand in Gaza, unknown but growing number in the Sina peninsula with a combined range that reaches all of Israel. This is a new phenomenon, a kind of military challenge to protect the Israel. Israel is forced into investing billions of dollars on many types of missile defense systems, such as the Arrow and Iron Dome projects which must be deployed throughout the country. [161] Israel's 2006 war with Hezbollah in Lebanon, its strategic depth and defensible borders were eroded away even further, as thousands of rockets were fired at the northern part of the Israeli country, including its strategic port city of Haifa. Haifa is more than 30km (18 miles) from the Lebanese border and had been thought to be out of Hezbollah's range. The Iranian backed Hezbollah is a Tehran created absolutist institution whose behavior reflects an uncompromising pursuit of aims centered on the destruction of Israel and the establishment of a Khomeinist Islamist theocracy across the region. Jerusalem disengaged from Gaza in 2005, removing every community and army base in the hope that this would improve the chances for peace. The Gaza Strip did not developed to benefit the Arab Palestinians, instead a mini civil war erupted between Hamas and Fatah Hamas seized control and turned it into a terrorist entity. Not long after Israel's withdrawal from the Gaza Strip in 2005, Hamas rockets started flying out of that territory. Within a few short years, much of Israel's south was under threat of attack. Even following Israel's Operation Cast Lead in 2008/2009 to curb Gaza rocket attacks, over one million Israelis remained vulnerable to the threat itself. This only reduced rocket strikes to a handful, as Hamas was able to rebuild its rocket forces mainly through the IRI supply line. As Hamas arsenal grew so did the rocket and mortar barrages into Israeli communities. Once again Jerusalem was forced to employ Protective Defensive Operations, called Operation Pillar of Defensive. In 2012. Years of rocket fire had preceded the operation. No state could be expected to acquiesce to a reality that includes constant terrorist attacks. [162]

161). The Rise and Fall of Suicide Bombings in the Second Intifada Yoram Schweitzer 2010 <http://www.inss.org.il>

162). Hard Fighting Israel in Lebanon and Gaza, by David E. Johnson 2011 RAND Corporation www.rand.org

161). In the Aftermath of Operation Pillar of Defense The Gaza Strip, November 2012 Shlomo Brom, Editor
[http://cdn.www.inss.org.il/reblazecdn.net/upload/\(FILE\)1357119492.pdf](http://cdn.www.inss.org.il/reblazecdn.net/upload/(FILE)1357119492.pdf)



- **A war of attrition works through steady erosion. As you wear down the other side they realize that they are slowly being annihilated and will eventually capitulate.**

Strategic Bombing: is a military strategy used in a total war with the goal of defeating an enemy nation-state by destroying its economic ability and public will to wage war rather than destroying its land or naval forces. It is a systematically organized and executed attack from the air which can utilize strategic bombers, long- or medium-range missiles, or nuclear-armed fighter-bomber aircraft to attack targets deemed vital to an enemy's war-making capacity. One of the aims of war is to demoralize the enemy, so that peace or surrender becomes preferable to continuing the conflict.

- Air attacks on a city that treat it as a single military objective instead of clearly distinguishing military objectives and attacking them individually are an example of area bombardment, often called carpet bombing. Many of the World War II attacks on cities targeted an area rather than individual military objectives. [162]

162). The Strategic Bombing Campaign Against Germany During World War, by Julius A. Rigole B.S, East Tennessee State University, May 2002

Terrorism Asymmetrical war of Attrition: Rocket Warfare

- From Radical Islamists to Saddam Hussein to the Islamic Republic of Iran and their proxies all target Israeli civilian populace. Failing to destroy Israel on the battlefield, Jerusalem's infrastructure, her communities are now the choice and place of their war.

The rocket warfare being conducted against Israel very much reflects a blending of strategic bombing and an overall war of attrition. However there is an unseemly paradox here, it is a systematically organized and executed attack from the air not aimed at physical massive collateral damage, but designed to hemorrhage and atrophy the Israeli economy, gradually exhaust and demoralize the people of Israel. This asymmetrical war of attrition also carries an multi-dimensional international propaganda strategy. Whereas Hamas and Hezbollah fire rockets indiscriminately into Israeli communities they also embed their military forces into a civilian population. Hospitals, schools, Mosques and homes become bunkers from which they launch their rockets. Retaliatory Israeli airstrikes into civilian areas inflame regional and world opinion, placing international political pressure on Israel to relent.

 ***"Hezbollah's use of Lebanese civilians as human shields: the extensive military infrastructure positioned and hidden in populated areas. From within the Lebanese towns and villages deliberate rocket attacks were directed against civilian targets in Israel."***

- **Dr. Reuven Erlich (Lt. Col. Ret.) Intelligence and Terrorism Information Center at the Center for Special Studies (C.S.S) Israel November 2006**

This gross violation of the international law, the use of human shields and the targeting of civilian populations are war crimes. However, Hezbollah does not see itself as bound by such laws, unlike Israel which did and does its utmost to avoid harming civilians. In asymmetric conflicts, democratic states who typically uphold certain moral values are forced to confront non-state actors who do not consider themselves bound by legal or humanitarian obligations. Despite propaganda to the contrary, Israel values human life, while non-state actors, such as Hezbollah, Hamas or al-Qaeda, frequently abuse humanitarian principles as a deliberate strategy, placing both their own civilian population and that of the defending state at greater risk. That terrorist groups such as Hamas and Hezbollah operate from densely populated areas illustrates this fact.

In relation to the extensive depth of Israeli Defense Forces operations has lowest number of civilian casualties in the world. No other nation on the face of the earth has gone to the lengths the state of Israel has in protecting and avoiding civilian casualties. The IDF placed over 165,000 telephone calls to Gaza residents, warning them of IDF military strikes areas. In addition, Israel distributed 2.5 million leaflets instructing Gaza civilians to stay away from terrorists and weapons storage sites. Israel also evacuated 38 Palestinians for medical treatment, including two children. Nevertheless, criticism and the demonization of the IDF and Israel were rife. At the global diplomatic level, Israel failed to counter the negative international reaction to the civilian casualties and the damage to Gaza's infrastructure. [163]

163). Lessons from Israel on Asymmetric Warfare by Shaul Shay *inFocus Quarterly* Summer 2010

While an autocracy can evade a prolonged war by immediate suppression or appeasement, a democracy may suffer lengthy violence because policies toward extremists are ultimately chosen by the electorate, who are less informed about the extremist group's robustness than an autocrat. To draw a policy concession from a democracy, even an weak extremist group may attempt to influence electoral outcomes by means of violence. As the war wages on, citizens who once endorsed a hawkish party become pessimistic about their prospects of the war and elect a dovish party which is ready to compromise with the extremist group.

**Asymmetric War of Attrition on
Terrorism Yasushi Asakoy
Waseda University Keisuke
Nakaoz University of Hawaii at
Hilo December 6, 2012**

Terrorism Asymmetrical war of Attrition: Rocket Warfare continued:

Asymmetrical rocket warfare strategic goal is maximizing the indirect costs of their attacks rather than maximizing the direct costs. This explicitly attack noncombatants the aim is to impose costs on the general population so that the government capitulates to some (or all) of their demands. Radical militant Islam has come to understand that the private and government sectors will undertake expenditures designed to reduce the number, severity and/or consequences of terrorist attacks.

Let's take for example the creation of Homeland Security in the wake of the 9/11 terrorist attacks, in direct costs. The creation of the new cabinet-level Homeland Security agency after 9/11 constituted the largest re-organization in U.S. government since World War II. Federal spending on the missions associated with homeland security (including prevention and disruption of terrorist attacks and responding to and recovering from attacks) was \$17.1 billion in 2001, before 9/11. After 9/11 \$3.6 billion was immediately added as supplemental spending for the homeland security mission in 2001. In Fiscal Year 2011, homeland security spending reached \$69 billion, nearly twice as high as spending in 2001 after taking inflation into account. Total spending from 2001-2011 on Homeland Security has been about \$649 billion. [164] This is 649 billion dollars ripped from the economic fabric of America, just as deadly as being carpet bombed. Private spending is impossible to detail. Businesses do not release such information and do not themselves track different types of security costs.

According to a U.S. Conference of Mayors' survey, in the 15 months following September 11, cities spent \$2.6 billion in additional homeland security costs. A survey of nearly 150 cities found that cities were spending an additional \$21 million per week in additional direct homeland security costs because of the war and threat alerts. The Conference extrapolated the figure to conclude cities nationwide were spending \$70 million per week more on homeland security than they had before 9/11. [165]

Israel shells out almost a fifth of national budget on defense, figures show State spending is more than six times what industrialized nations and Arab countries drop, on average in 2011, and defense cost the Israeli economy about NIS 66.8 billion. Defense costs are divided each year into two parts: labor costs (salaries) and other expenses (net). In 2011, labor costs accounted for more than 50% of total defense spending – NIS 35.7 billion, while the other expenditures amounted to NIS 31.2 billion. Israel also spends proportionally more on defense than any other country in the Middle East. That's according to a Central Bureau of Statistics report published in 2013, surveying Israel's defense expenditure between 1950 and 2011. [166]

The point being made, is terrorism and Asymmetrical rocket warfare necessitates a reallocation of resources across sectors. Also terror-prone sectors shrink as consumers and producers shy away from risky activities and attempt to substitute toward safe activities. The necessary reallocation of resources is facilitated by a price system that appropriately reflects risks attacks can impose other indirect costs by diverting foreign direct investment, tourism, international trade and short term capital flows.

Capitulation: In the caldron of the second intifada, Jerusalem surrendered to the concept of land for peace with the Arab Palestinians. Gaza, formerly Egyptian territory obtained by Israel in the 1967 war was turned over to the PA for a mini state for Arab Palestinians. Over 9,000 Israelis who lived there was forcibly removed by their own government. Instead of a state of stability, a growth of peace process a state of war was created from which thousands of rockets have and are battering the tiny country of Israel. Strange as it may seem Israel is considering another suicide jester, returning to the 67 borders again succumbing to the mantra of land for peace. [167]

164). Homeland Security Budget <http://costsofwar.org/>

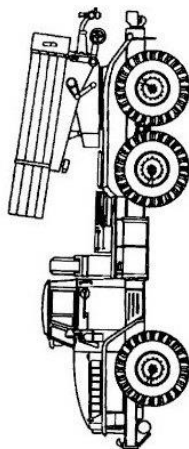
165). U.S. Conference of Mayors, "Survey on Cities' Direct Homeland Security Cost Increases Related to War/High Threat Alert," March 2003

166). Israel shells out almost a fifth of national budget on defense, Feb.14, 2013
<http://www.haaretz.com/>

166a). Israel rejects total pullback to 1967 borders By Jeffrey Heller Tel Aviv May 19, 2011
<http://www.reuters.com/article/2011/05/19/us-obama-mideast-netanyahu-idUSTRE74I7L720110519>

WHO IS REALLY WINNING ?

BM-21 Grad Missile Truck



Made in 1963 / BM-21 Grad Missile Truck, carries can fire forty 122mm Grad Missiles. Rockets can be armed with high explosive/fragmentation, incendiary, or chemical warheads can be fired 20 kilometers (12 mi). Newer high explosive and cargo (used to deliver anti-personnel or antitank mines) rockets have a range of 30 kilometers (19 mi) and more. Warheads weigh around 20 kilograms (44 lb), depending on the type. The relative accuracy of this system and the number of rockets each vehicle is able to quickly bring to bear on an enemy target make it effective, especially at shorter ranges. One battalion of eighteen launchers is able to deliver 720 rockets in a single volley.

CONTAINMENT OF ROCKET ATTACKS IS NOT AN ECONOMIC VIABLE OPTION

**3 TRUCKS , COST A FEW MILLION , FIRES 120 MISSILES INTO ISRAEL
IRONDOME CAN ONLY INTERCEPT 75-90 PERCENT
THIS WOULD OVERWHELM AN IRONDOME BATTERY**

Iron Dome - Israel's Missile Defense System

Stephen Hughes

COST: Each Iron Dome system costs 50 million each. Several Billion Dollars Needed
Each of the 20 rocket interceptors loaded onto every \$50 million Iron Dome battery costs some \$62,000. That's 62 times the cost of the cheap \$1,000 Gazan terrorists spend to fire the rockets in the first place.

**Hundreds of Millions of Dollars Are Needed Just To Keep Iron Dome Running 24-7
Hundreds of Millions of Dollars Are Still Needed For Missile Shelters**

Terrorism Asymmetrical war of Attrition: Rocket Warfare continued:

- *The cost of a rocket used against Israeli communities can be a few hundred dollars to a few thousand dollars. Whereas the cost for a single missile for the Iron Dome defense system is ~\$50,000. [177]*
- *Israel's military estimates that it will need nearly \$4 billion to provide nationwide coverage in terms of rocket and missile defense. [178]*
- *The next needed layer of the Israeli missile system is known as David's Sling, which is supposed to counter faster and longer-range missiles fired from Lebanon or Syria. [179]*
- *Much of Hamas & Hezbollah's rocket arsenal is provided free by the Islam Republic of Iran [180]*

The state of Israel does have a robust economy but the economic burden of being under siege has affected the impact of economic growth of infrastructure spending. Jerusalem is forced pour vast capital resources into defending its communities from the rocket attacks. A case point, would you build new schools or bomb shelters to the existing ones?

The Israeli Social Justice Protests (which are also referred to by various other names in the media), are a series of ongoing demonstrations in Israel which began in July 2011. In 2011 hundreds of thousands of protesters gathered across the cities of Israel. They were from a variety of socio-economic and religious backgrounds who were opposing the continuing rise in the cost of living (particularly housing) the storage of housing and the deterioration of public services such as health and education. A common rallying cry at the demonstrations was the chant; "The people demand social justice!". [181] One in three Israeli families receives welfare aid, 2013 statistics show. The economic situation of families in Israel is declining rapidly, according to a cross comparison of Israeli Central Bureau of Statistics data and Social Affairs Ministry reports. About 28% of Israeli families sought help from welfare bureaus in 2011 marking an increase of 20% from 2009 and about 75% from 1998. In 2011, the average monthly household expenditure on goods and services was NIS 13,967. In a family with three children the monthly expenditure was more than NIS 16,000. The greatest expenditure was for housing, followed by transportation and, in third place, food.[182] 2012 saw Israel's main labor union declared a strike on Wednesday that caused delays at Ben Gurion airport, and affected banks, hospitals, government offices, trains, the stock exchange, and more. Israel which has one the finest medical establishment in the world has had strikes from doctors to nurses, demanding better pay. [183]

A successful terrorist attack will reduce economic activity in the region or country where it takes place, far beyond the actual physical damage inflicted, unlike a natural disaster, which also seriously effects economic activity, but in proportion to the damage caused. The costs of reaction to the incident can be very large and very long-lasting, precisely because of the phenomenon mentioned above of encouragement of repeat attacks in the face of insufficient measures taken by the authorities.

The Economics of Terrorism:
The Obvious Costs and Not-so-hidden Benefits GEO-
ECONOMICS VI: The Annals
of Entropy and the Quest for a
New Global Equilibrium
Norman A. Bailey, Alexander
Mirtchev
<http://igeg.org/BaileyTheEconomicsOfTerr.html>

177). Iron Dome: Behind the hoopla, a familiar story of missile-defense hype, Bulletin of Atomic Scientists By Subrata Ghoshroy | 13 December 2012 <http://www.thebulletin.org>

178). IBID 1

179). David's Sling: Israel's next generation of missile interceptors Monday, November 26, 2012 | Ryan Jones <http://www.israeltoday.co.il>

180). Iran's Support for Terrorism in the Middle East Matthew Levitt Director, Stein Program on Counterterrorism and Intelligence, The Washington Institute Testimony before the U.S. Senate, Committee on Foreign Relations, Subcommittee on Near Eastern and Central Asian Affairs July 25, 2012 www.washingtoninstitute.org/uploads/Documents/testimony/LevittTestimony20120725.pdf

181). Thousands of Israeli protesters block streets in Tel Aviv, clash with police 2012 <http://www.haaretz.com/news/>

182). One in three Israeli families receive welfare aid, statistics show, Feb.07, 2013 By Tali Heruti-Sover and Lior Dattel 2013 <http://www.haaretz.com/news>

183) Israeli workers open general strike, disrupting airport and economy By Haim Bior and Haaretz Feb.08,

2012 <http://www.haaretz.com/news/national/israeli-workers-open-general-strike-disrupting-airport-and-economy-1.411688>

Economic Case Study: Israel's 2006 Hezbollah War

The conflict began when Hezbollah militants fired rockets at Israeli border towns as a diversion for an anti-tank missile attack on two armored Humvees patrolling the Israeli side of the border fence. Of the seven Israeli soldiers in the two jeeps, two were wounded, three were killed, and two were captured and taken to Lebanon. Five more IDF soldiers were killed in a failed Israeli rescue attempt. On July 12, the group crossed the blue line, demarcated by the United Nations (UN) in 2000. Hezbollah snipers in south Lebanon engaged and destroyed surveillance cameras along the border roads. Small groups of fighters also launched a series of diversionary attacks that distracted Israeli quick reaction forces that were mustering along the border. Outraged over the bold attack, Israeli Prime Minister Ehud Olmert authorized a large-scale military retaliation against Hezbollah.

[184]

Economic Losses to Israel:

- **\$1.6 billion:** The estimated cost of damage to the economy
- **\$5.3 billion:** The cost of the war
- **\$335.4 million:** The estimated compensation to be given to the population of northern Israel after the war
- **\$460 million:** The amount of aid that will be given to local governments and emergency services in northern Israel
- **20 percent:** The percentage decrease in tourism in Israel during the war
- **\$27 million:** The amount of money hotels in northern Israel lost in one month of fighting
- **25,000** hotels in Israel were vacant
- **\$222 million:** The total expected loss to the tourism industry
- **630:** The number of factories in northern Israel that were closed
- **\$1.4 billion:** The amount of money businesses lost in northern Israel
- **1.5 percent:** Estimated loss in GDP

Environmental Loss:

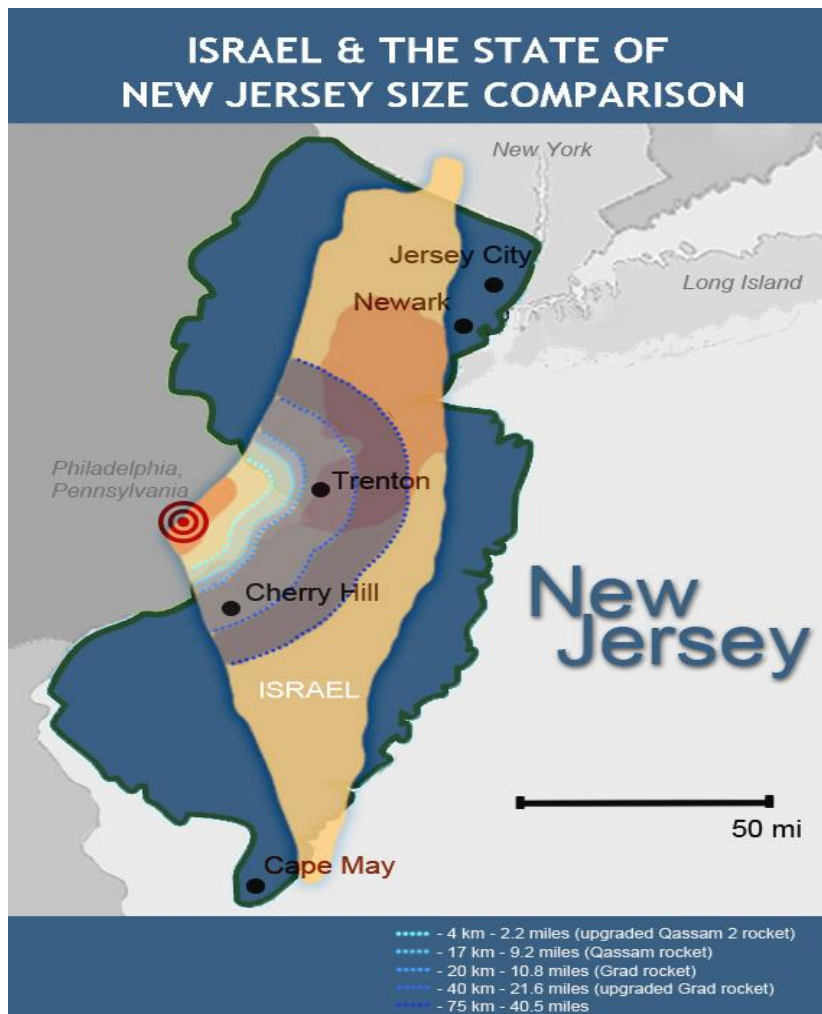
- **50 - 60 years:** Time it will take for forests to recover
- **6,178:** The number of acres of grazing land burned
- **618:** The number of acres of natural or planted forest burned [185]

184). The 2006 Lebanon War: A Short History by Andrew Chadwick Journal Article | September 11, 2012

<http://smallwarsjournal.com/jrnl/art/the-2006-lebanon-war-a-short-history>

185). Hezbollah - Israel Conflict by the numbers

http://www.theisraelproject.org/site/c.hsJPK0PIjPh/b.2904297/k.131A/The_HezbollahIsrael_Conflict_By_the_Numbers.htm



Hybrid Wars incorporate a range of different modes of warfare including conventional capabilities, irregular tactics and formations, terrorist acts including indiscriminate violence and coercion, and criminal disorder

"Hybrid Wars" blend the lethality of state conflict with the fanatical and protracted fervor of irregular warfare. The term "Hybrid" captures both their organization and their means. Organizationally, they may have a hierarchical political structure, coupled with decentralized cells or networked tactical units. Their means will also be hybrid in form and application. In such conflicts, future adversaries (states, state-sponsored groups, or self funded actors) will exploit access to modern military capabilities including encrypted command systems, man-portable air to surface missiles, and other modern lethal systems, as well as promote protracted insurgencies that employ ambushes, improvised explosive devices (IEDs), and coercive assassinations. This could include states blending high-tech capabilities, like anti-satellite weapons, with terrorism and cyber-warfare directed against financial targets. Conflicts will include hybrid organizations like Hezbollah and Hamas, employing a diverse set of capabilities. Additionally, states can shift their conventional units to irregular formations and adopt new tactics, as Iraq's Fedayeen did in 2003. In such conflicts we will face major states capable of supporting covert and indirect means of attack, as well as Thomas Friedman's "super-empowered" fanatics capable of highly lethal attacks undercutting the sinews of global order. Cunning savagery, continuous improvisation and rampant organizational adaptation will mark this form of warfare. Such wars will not be conventional, low in intensity or short—"



Conflict in the 21st Century: The Rise of Hybrid Wars Frank G. Hoffman Potomac Institute for Policy Studies Arlington, Virginia December 2007

"The recent increase in the number and lethality of terrorist attacks likely means that the costs associated with terrorism will continue to increase. For large diversified economies that rely on the price mechanism, such costs are anticipated to be relatively small. This is true even though liberal democracies generally experience more terrorism than smaller and highly specialized economies. Developed countries can rely on the price mechanism to reallocate resources across sectors and they are able to utilize fiscal and monetary policies to mitigate the long-term consequences of large-scale attacks. The macroeconomic growth costs of terrorism are the result of increased counterterrorism policies designed to thwart subsequent attacks. However, this increased government spending acts to crowd out private sector investment. The microeconomic costs of terrorism tend to be concentrated in the tourism, trade, and transportation sectors, and in a nation's net foreign direct investment. Small-open economies tend to be highly concentrated in such sectors. While the costs of possible CBRN attacks are purely speculative, even a small radiological attack in occurring New York City could generate direct costs equal in scale to those of 9/11".

The Economics of Terrorism: The Obvious Costs and Not-so-hidden Benefits GEO-ECONOMICS VI: The Annals of Entropy and the Quest for a New Global Equilibrium Norman A. Bailey, Alexander Mirtchev <http://igeg.org/BaileyTheEconomicsOfTerr.html>

Since 2003 Operation Iraqi Freedom rocket warfare and tactics became a signature weapon used by Tehran's supported radical militant groups such as the Mahdi Army, Asa'ib Ahl al-Haqq, and Kata'ib Hizballah (Brigades of the Party of God), against American forces and the U.S. embassy in Baghdad. The weapons of choice are the 107mm, 122mm, and 240mm rockets, as well as improvised rocket-assisted munitions (IRAMs). [187]

IRAMs: Take some sort of metal canister. Stuff it full of the explosive of your choice. Now strap rockets, typically 107 mm ones, to the apparatus to send it flying. Some use propane tanks full of blast material, weighing hundreds of pounds, and are fired off the backs of flatbed trucks. That's the Improvised Rocket Assisted Munition, or IRAM. [188] They're a signature weapon of Shiite militias in Iraq that operate with the aid of the Islamic Revolutionary Guard Corps. Kata'ib Hizbollah claimed credit for a 2011 June 6 IRAM attack that killed six American troops at Camp Victory, near Baghdad International Airport. That week, three more US Troopers were killed when an IRAM struck.[189]

■ ***Iraq has become a proxy battlefield for the U.S. and Iran.***

U.S. officials in Iraq said the Qods Force is training and arming three primary militias that have in recent months attacked U.S. and Iraqi forces. Kata'ib Hizbollah brigades is viewed as the one most directly taking orders from Revolutionary Guard commanders in Iran. Two others, the Promise Day Brigade and Asa'ib Ahl al-Haqq, are offshoots of the Mahdi Army headed by the anti-American cleric Muqtada al-Sadr, who currently lives in Iran. In 2011 Hearing, at the U.S. Senate, Committee On Armed Services, Admiral Mike Mullen said IRI had shipping weapons to Shi'ite militias operating in Iraq, including roadside bombs called EFPs (explosively formed projectiles) and rocket-propelled munitions known as IRAMs (improvised rocket-assisted munitions). *"They're shipping EFPs and IRAMs. And the IRAMs are getting bigger and bigger. And so, there is a great downside potential for destabilizing particularly southern Iraq, that actually I think Prime Minister Malaki and the Iraqi leadership is concerned about,"* Mullen said. At the 2011 hearing officials stated they have seen clear evidence that the IRGC-QF had transferred longer-range rockets to elements of the Taliban that significantly enhance their ability to target U.S. and other NATO forces. In February 2011, British forces intercepted a shipment of four dozen 122-millimeter rockets moving through Afghanistan's desolate Nimruz Province near the Iranian and Pakistan borders. The rockets have an estimated range of about 13 miles, more than double the distance of the majority of the Taliban's other rockets. Admiral Mike Mullen also stated *"The United States will not 'sit idly by' while its forces are harmed by Iranian-backed militias in Iraq, "*. [190]

It is now 2013 the Obama Administration policies and procedures has made it clear its desire to pull out of Iraq, Afghanistan reducing the Pentagon's role in the Middle East. American foreign policy and military requirements in the second decade of the 21st century, is what some call "Neo- Isolationism," which seeks to withdraw America from regional arenas but without a clear plan on who will fill the void. The Islamic Republic of Iran sees the United States as a fading power and Tehran will be the new rising dominant power in the region. Overall, Iran is likely to be very happy and deem the Islamic Republic's multi-year strategy of proxy wars in Iraq and Afghanistan instrumental for removing the U.S. from the region as a success. [191]

The Middle East Missile Environment 2013

"As recent events have shown—in particular, the launch of more than 1,500 rockets by Hamas and other Palestinian factions in Gaza against Israel during the week-long second Gaza war of November 2012, and the launch of a half dozen SCUD missiles by government forces against Syrian insurgents in early December 2012—the Middle East remains that part of the world where the threat posed by rocket and missile proliferation and use is most acute, and the need for effective rocket and missiles defenses most urgent."

**Michael Eisenstadt Senior Fellow
Director, Military & Security
Studies Program Jan 25, 2013
www.washingtoninstitute.org**

188). The Middle East Missile Environment 2013 Michael Eisenstadt Senior Fellow Director, Jan 25, 2013 www.washingtoninstitute.org

189). Iran's Activities and Influence in Iraq Kenneth Katzman Foreign Affairs, Defense, and Trade Division Order Code RS22323 Updated July 25, 2008 http://www.parstimes.com/history/crs_july_08.pdf

190). Iran's Strategic Offensive in Iraq By Maseh Zarif July 13, 2011 irantracker.org/analysis/irans-strategic-offensive-iraq

191). Hearing To Receive Testimony On The U.S. Strategy In Afghanistan And Iraq Thursday, September 22, 2011 U.S. Senate, Committee On Armed Services, Washington, DC. <http://www.armed-services.senate.gov/Transcripts/2011/09%20September/11-70%20-%2009-22-11.pdf>

191a). Iran Funnels New Weapons to Iraq and Afghanistan By JAY SOLOMON July 2, 2011

Lebanon – Hezbollah or Hizbollah (Party of God)

In an interview in 2009 with *Jane's Defense Weekly*, a senior Israeli defense official stated that Hezbollah should not be viewed as an isolated militia, but rather "a special forces brigade of the Iranian Army.

Khomeini developed a personal relationship with Lebanese Shia during his exile period in the holy Shia city Najaf Iraq 1965- 1978. There in addition to his studies, he taught and gave lectures where a large contingent of Lebanese Shia studied. These were to become the seeds for the Lebanese radical Hezbollah. (Khomeini spent more than 14 years in exile, mostly in the holy Shia city of Najaf, Iraq). South Lebanon's ties to Iran and Khomeini in particular deepened as it became a haven for Iranian dissidents opposed to the Shah, and young Iranians even trained with the Palestinian Liberation Army (PLA) while there. Members of Hezbollah mentioned Khomeini's perception of velayat-e faqih, hatred of Israel and America on numerous occasions and affirmed his spiritual and political authority over them. In this way, Hezbollah was and remains a distinct Shiite Islamic group because of its proclaimed allegiance to Khomeini. Sunni fundamentalist groups, such as Hamas or Islamic Jihad in Palestine, who are at war with Israel, do not believe Khomeini their spiritual leader. Hezbollah's commitment to Khomeini was evident in its 1985 Open Letter to All the Oppressed in Lebanon and the World. In the document, the author refers to the leading jurisprudence or Khomeini's velayat-e faqih on four occasions. [192]

Goals

- The destruction of the State of Israel including "liberating Jerusalem" ;
- The establishment of an Iranian-style Shia theocracy in Lebanon, following the Iranian model;
- The eradication of Western influences in Lebanon and the greater Middle East

The PLO: *"During the monarchy, the Palestinian Liberation Organization (PLO) had close ties with the Iranian opposition. Many Iranian dissidents trained at PLO camps in Lebanon in the 1970s. The PLO also backed the 1979 revolution. Days after the revolution, PLO chief Yasser Arafat led a 58-member delegation to Tehran. Prime Minister Mehdi Bazargan hosted the official welcome ceremony, where the keys to the former Israeli embassy were handed over to the PLO. The road in front of the mission was renamed Palestine Street. Arafat traveled throughout Iran to set up PLO offices, which members of his delegation stayed to manage for more than one year."*

Iran and the Palestinians by Rachel Brandenburg <http://iranprimer.usip.org/resource/iran-and-palestinians>

**No Other Country in the World
but Israel,**

Missile Attack Simulation in All Israeli Schools 2013

The Home Front Command and Education Ministry are carrying out a simulation of a missile attack in the nation's schools this morning (Thursday). The exercise will help authorities assess the level of readiness of each educational institution in the country, including those in both the public and religious sectors. The drill, set to launch at 10:00 a.m., is expected to last till about 12:00 noon, and begins with the wail of the Color Red rocket alert siren to simulate a missile attack during recess. The siren will sound for 90 seconds, and will be heard across the country, officials said. Personnel from Home Front Command, Israel Police, Magen David Adom emergency medical service and local Fire Departments will all participate in the exercise

*Israel National News Posted
on February 14, 2013 by editor
<http://missilethreat.com/missile-attack-simulation-in-all-israeli-schools/>*

192). The Origins of Hizbollah: Lebanon's Islamic Resistance to Israeli Occupation Nicholas Blair Munhofen III History Honors Thesis Academic Year 2009-2010 10 May 2010 <http://aladinrc.wrlc.org/bitstream/handle/1961/8729/MunhofenNBlairThesis.pdf?sequence=1>

Throughout the past decade Hezbollah has focused on using indiscriminate rocket fire to attack Israeli civilians and infrastructure. During the years leading up to the 2006 Second Lebanon War, Hezbollah forces had received extensive training in Lebanon, Syria, and Iran and learned how to blend guerilla tactics with conventional military tactics and weapons. Hezbollah developed rocket units and embedded them throughout the civilian communities in Lebanon. Tehran built up the Hezbollah with several thousand rockets mainly the 122mm type. In October of 2006 Hezbollah openly boasted of having a rocket arsenal of 30,000 missiles. During the interwar years, from 2000 to 2006, Hezbollah conducted at least 19 attacks into Israeli territory. Generally, the Israelis showed restraint in response to the provocations, believing it could contain Hezbollah while it dealt with what it believed were more pressing threats, like instability and violence in the disputed territories or growing Iranian influence in the Middle East. In addition political pressure from the United States bid Israel to limit its military response. On July 12, 2006, Hezbollah operatives ambushed two IDF Vehicles conducting a routine patrol along the border between Israel and Lebanon, taking two soldiers hostage. This action led to the first Israeli military operation in Lebanon since the IDF's withdrawal in 2000. Thus began the 2006 war. [193]

In the 2006 Hezbollah forces in Lebanon fired some 8,000 rockets into Israel, causing civilian casualties and damage to civilian structures. Hezbollah's means of attack relied on unguided weapons that had no capacity to hit military targets with any precision. It repeatedly bombarded cities, towns, and villages without any apparent effort to distinguish between civilians and military objectives. In doing so, Hezbollah, as a party to an armed conflict governed by international humanitarian law, violated fundamental prohibitions against deliberate and indiscriminate attacks against civilians. [194]

Rockets fired by Hezbollah lacked guidance systems. Thus, Hezbollah forces could direct a rocket at a general target, but without precision. Many of those that hit the most densely populated coastal areas—the city of Haifa and the string of its suburbs to the north and east known as HaKrayot were 220mm rockets packed with thousands of 6mm steel spheres (sometimes referred to as steel ball bearings) that sprayed out upon impact with great force. These spheres are devastating anti-personnel weapons: while incapable of inflicting serious damage to hard military structures or materiel, they penetrate human flesh and organs within a wide radius of the rocket blast. Hezbollah also fired an undetermined number of cluster munition rockets loaded with submunitions (i.e., explosives) that, upon impact, dispersed 3mm steel spheres over a wide footprint. [195]

193). The 2006 Lebanon War: A Short History by Andrew Chadwick | September 11, 2012 <http://smallwarsjournal.com/jrnl/art/the-2006-lebanon-war-a-short-history>

194). Volume 19, No. 3(E) Civilians under Assault Hezbollah's Rocket Attacks on Israel in the 2006 War Human Right Watch April 30, 2007 www.hrw.org

195). IBID 2

Understanding Lebanon

Tensions between Israel and Lebanon have been characterized by low intensity conflict, kidnappings and terrorism. During the Lebanese Civil War (1975-1990) the Arab Palestinian Liberation Organization (PLO), which controlled much of the south of the country, used the area to stage attacks against Israel, resulting in the occupation of south Lebanon by Israel's Defense Force (IDF) from 1982 until 2000, with Israel seeking to provide a buffer zone against further attacks. A major source of tension between the two states flows from the presence of a paramilitary organization based in the Lebanon known as Hezbollah. Hezbollah, whose roots stretch back to the Israeli defensive invasion of 1982. The Lebanese Hezbollah is founded upon the religious precepts of Iranian Shia Islam and one of its chief goals is the destruction of Israel. When Israel left Lebanon in 2000, Hezbollah took control, even when some 18,000 UN Troops were and still are in Lebanon to prevent this. It has been estimated that 80% of the attacks carried out in the Palestinian territories and Israel between 2005 and 2007 have been initiated and funded by Hezbollah. For this reason, it is regarded as a terrorist organization by a small number of Western governments, including the United States, Britain, and Israel. Several other governments, including the European Union, are ambiguous in their treatment of Hezbollah, criticizing some of its actions as being of a terrorist nature, but not formally declaring it to be a terrorist group per se. In May 2000, Israel withdrew from southern Lebanon. In 2004, the United Nations Security Council Shmuel Bar, 'Deterring Nonstate Terrorist Groups: The Case of Hizballah', Comparative Strategy, Vol. 26, No. 5 (October 2007), p. 477.

(UNSC) adopted Resolution 1559, which called for the 'disbanding and disarmament of all Lebanese and non-Lebanese Militants' www.un.org/News/Press/docs/2004/sc8181.doc.htm

2006 Lebanon War: Hezbollah fired into Israel at least six types rockets. The 122mm-diameter rocket was the most common. With a range of 20 kilometers and carrying about six kilograms of explosive material, its payload consisted of two layers of scored steel fragmentation, 6mm steel ball bearings, or 39 submunitions, all designed primarily to kill or injure people. The most common type of warhead on these rockets is designed to spray out 3,150 fragments, which can kill or injure for a radius of 28 meters. [196]

- ***The 122mm rockets fired by Hezbollah are frequently and informally referred to as "Katyushas".***

Along with the standard 122mm rockets, Hezbollah fired deadly modern longer -ranged 122mm Chinese-made rockets, 220mm Uragan rockets, and a smaller number of 240mm and 302mm rockets. Hezbollah also fired mortar rounds at towns near the border, especially Kiryat Shmona. The enhanced-range "Grad" rocket increases the range of the standard 122mm rocket to 30 kilometers and is loaded with about 4,100 steel spheres that spray in every direction as far as 200 meters from the point of impact, depending on the type of explosive and the size of the warhead. These spheres injure or kill people in their path and can also damage or penetrate "hard targets." The 220mm rocket has more than double that range and at least ten times the number of steel spheres. The 240mm Falaq-1 and Fajr-3 type rockets, with ranges of 10.5 kilometers (6.8 mi) and 43 kilometers (26.7 mi) ranges, have high-explosive warheads but no special fragmentation. Finally, the 302mm rocket has the longest range, 90 kilometers (55.9 mi). The Israel National Police said these contained small metal blocks that are larger than steel spheres but serve the same purpose. [197]

- ***2006 War saw the first use of sophisticated modern military anti -personnel rockets loaded with steel ball bearings aka steel spheres, against the state of Israel, launched into civilian communities.***
- ***Rockets with scored-steel fragmentation or steel spheres are primarily anti-personnel weapons, meaning soldiers in largely unprotected areas or in light armored vehicles. For example a steel-sphere loaded rocket crashed into the soft roof of a rail yard in Haifa on July 16, 2006 and killed eight workers. [198]***

Each 220mm rockets are densely packed with some 40,000-80,000 anti-personnel steel ball bearings, according to the Israel Police, were particularly deadly. The steel spheres they shoot out with tremendous force easily shred human flesh, and can pierce steel and concrete. These rockets killed people in situations where the same rocket with a conventional payload would have caused fewer casualties. [199] Dr. Yoram Kluger who worked at Rambam hospital in Haifa during the war, a surgeon and expert on steel-sphere injuries observed: Steel spheres present a very different pattern of injury from other types of ammunition. Because of their spherical shape, they actually cause worse injuries than other types of shrapnel and ammunition. If a person is standing next to the explosion, his body will be literally suffering multi-saturation wounds. This he termed medically a "multi-dimensional injury pattern," since you have the impact of the penetration, the burns, and the blast effects all at the same time, on the same person, to his head, vascular system, and orthopedic system. [200]

Hezbollah's stocks of Fajr-3 and Fajr-5 rockets for the 2006 Lebanon war began with Tehran's large-scale delivery of the Fajr-3 in 2000 and the Fajr-5 in 2002, with the approval of Syrian president Bashar al-Assad. Iranian cargo and passenger jets transport the weaponry from the IRI to Damascus International Airport where they were off-loaded by Hezbollah agents and members of the Islamic Revolutionary Guard Corps. The weapons are then trucked to the Bekaa Valley. Other reports suggest some Iranian cargo flights land at Beirut International Airport Lebanon, which provided Hezbollah with a more direct supply route. Today these are some of the main supply routes for the Hezbollah.

*Hezbollah's Strategic Threat to Israel by Patrick Devenny
Middle East Quarterly Winter 2006,
pp. 31-38*

196). Hezbollah's Strategic Rocket Arsenal," *Middle East Intelligence Bulletin*, Nov.-Dec. 2002; Defense News, Dec. 13, 2004.
197). The Rocket Campaign against Israel during the 2006 Lebanon War by Uzi Rubin, June 2007 <http://www.besacenter.org>
198). IBID 196 199). IBID 196
200). Human Rights Watch "Questions and Answers: 122mm Cluster Munition Rockets," October 18, 2006, http://hrw.org/english/docs/2006/10/18/global14408_txt.htm.

***"Yet, when the outbreak of Second Lebanon War on July 12, 2006 elicited the anticipated reaction, Israel's efforts to block the attack, or even to lessen the severity of the damage incurred, proved, on the whole, almost as futile as in the 1980s and 1990s. The 33 day long rocket attack in the summer of 2006 was more extensive, more lethal and reached deeper into Israel than any of its predecessors. Yet, as before, it proved impervious to Israel's response measures, terminating only when a general ceasefire brought the fighting to a halt. The rockets caused suffering, death and destruction in cities, towns and villages hitherto spared from the Hizbullah's rockets, including Israel's third largest city, Haifa. It left scores of people dead and hundreds severely wounded. It damaged and destroyed thousands of homes, triggered massive displacement of the local population and constituted a major disruption to economic activity in Israel's highly industrialized northern districts."* [201]**

For over thirty years, Israel has endured mortar and rocket attacks from southern, the first large scale attacks were initiated by the Palestinian Liberation Organization (PLO) in July of 1981 from Lebanon, with a barrage of rockets targeting Galilee.

- ***Shorter range rockets are smaller, easier to conceal, vastly greater in number, and potentially much less vulnerable to detection and aerial preemption.***

Today Israel remains the only country in the world where its civilian population is openly threatened, targeted with missiles and cruise missiles tipped with chemical and biological warfare agents. This is a public policy of such states as the Islamic Republic of Iran, its ally Syria and their radical militant proxies the Hezbollah, Hamas, Palestinian Islamic Jihad and etc. Tehran and Damascus hold Israel her family hostage in the International political arena. They threaten military action if direct military intervention is committed by Washington and the EU against their states. For Tehran, this is related to its ongoing clandestine nuclear program for the production of an atomic bomb. With Syria, these threats are related to direct external intervention in its ongoing civil war. Syria has even added the threat of biological warfare against Israel. [202]

In 2012 Syrian Foreign Ministry spokesman Jihad Makdissi said the army would not use chemical weapons to crush rebels but could use them against forces from outside the country.

- ***"Any chemical or bacterial weapons will never be used ... during the crisis in Syria regardless of the developments," Makdissi said. "These weapons are stored and secured by Syrian military forces and under its direct supervision and will never be used unless Syria faces external aggression."* [203]**

201). The Rocket Campaign against Israel during the 2006 Lebanon War by Uzi Rubin, June 2007 page 3 <http://www.besacenter.org>

202). Threat And Response: Israeli Missile Defense Aug 16, 2012 - Christopher Harmer <http://www.understandingwar.org/backgrounder/threat-and-response-israeli-missile-defense>

203). Syria threatens to use chemical and biological weapons if faced with 'external aggression' 23 JULY 2012 <http://www.independent.co.uk/> Syria threatens Israel with chemical weapons, Obama pressures Israel

July 24, 2012, by Caroline Glick <http://www.carolineglick.com/e/2012/07/syria-threatens-israel-with-ch.php>

Prior, detailed Military Planning for methodical rocket fire attacks on Israeli on Israeli Communities

During the 2006 conflict, the IDF found in ground operations into Lebanon "range cards" that Hezbollah prepared in December 2005, containing the precise coordinates of different locations within Israel and the formulas for aiming mortar shells to their most modern rockets. For each site in Israel listed, the cards provided a western azimuth, range, sighting angle and firing angle. Two thirds of the targets listed were directly targeting civilians, Israeli towns and communities. For example, villages kibbutzim and moshavs (cooperative villages), including "Adamit," "Kfar Vradim," "central Ma'alot," "southern Ma'alot," and "northern Ma'alot." One is given as "Cultural Center, northern Nahariya." According to an analysis by an IDF-affiliated research center, 56 of the 91 locations whose coordinates appeared on the cards were civilian objects and 27 were IDF posts and bases for their Grad Rockets. The IDF has regularly found these types of range cards from recent operations in Gaza. During the 34 days of fighting of the second Lebanon war about one third of the Israeli population (i.e., about two million people) were within range of the 4,000 rockets launched by Hezbollah. Between 350,000 and 500,000 residents left their homes and became internally displaced persons, while another 1,000,000 were forced to live in bomb shelters.

- 1). The Rocket Campaign against Israel during the 2006 Lebanon War by Uzi Rubin, June 2007 <http://www.besacenter.org>
- 2). In the Aftermath of Operation Pillar of Defense The Gaza Strip, November 2012 Shlomo Brom, Editor Memorandum No. 124 December 2012

Hezbollah One billion dollar annual funding budget from Tehran

In 2007 Ayatollah Khamenei appointed deputy secretary general Sheikh Naim Qassem as the new supreme commander of Hezbollah forces and the personal representative of the Ayatollah in Lebanon. He replaced Sheikh Hassan Nasrallah commander of Hezbollah forces; however Nasrallah remained as secretary general of the organization, in charge of the party's intelligence agency. This was to recover from the 2006 Lebanon war, and consolidate its grip on Lebanon. According to reports Hezbollah received an enormous increase in annual funding budget from Tehran. Hezbollah's funding was elevated from \$400 million US to \$1 billion. [204]This monetary leap enables the organization to crush any opponent inside Lebanon and engage in worldwide operations against Western Democracies and Arab moderates. Since its establishment in Lebanon 30 years ago, Hezbollah has, without interruption, carried out or planned a variety of terrorist attacks around the globe, using different methods. Those terrorist attacks are part of Iranian policy, which uses Hezbollah as its main proxy through the Islamic Revolutionary Guards' Quds Force and other governmental institutions. The targets and emphases change from time to time according to Iranian and Hezbollah considerations and interests. The targets include Israel and the Jewish people, the United States and other Western countries, Hezbollah and Syria's opponents in Lebanon, and Arab regimes hostile to Iran and the "resistance camp" it leads. [205]



204). Hezbollah: Portrait of a Terrorist Organization 29/11/2012 <http://www.terrorism-info.org.il/en/article/20436>

205). Khamenei appoints Qassem as Hezbollah military commander 13 December, 2007 http://yalibnan.com/site/archives/2007/12/khamenei_appoin.php

THE TYPES OF ROCKETS USED BY HEZBOLLAH DURING THE 2006 LEBANON WAR:

A. Rockets Containing Ball Bearings

- 1) 220 mm rockets made in Syria carrying ball bearings 6 mm(1/4") in diameter.
- 2) 122 mm rockets made in China carrying ball bearings 6 mm in diameter (which Hezbollah received from Iran and Syria).
- 3) 122 mm rockets made in China carrying anti-tank/antipersonnel bomblets, which in addition to the shell casing carry ball bearings 3.5 mm (about 1/8") in diameter (which Hezbollah received from Iran and Syria).

B. Rockets Containing Square-Shaped Fragments: 302 mm rockets made in Syria containing 16 mm (about 2/3") square-shaped fragments.

C. Rockets with High-Explosive Warheads: 122 mm rockets made in Russia whose shell casing is made of grooved steel.

D. High Explosive Fragmentation Warheads:

- 1) 240 mm Iranian Falaq-1 rockets
- 2) 240 mm Iranian Fajr-3 rockets



Hezbollah Had Three Types Of Rockets:

a. Made in Iran, including long-range Fajr-3 rockets, which have a range of 43 kilometers (27 miles); Fajr-5 rockets, whose range is 75 kilometers (47 miles); Falaq rockets with intensified warheads with a range of 10-11 kilometers (6 miles); long-range (125-210 kilometers – 78-137 miles) ground-to-ground Zelzal rockets; and Naze'at rockets, with a range of 80-140 kilometers (50-87 miles), which were not used during the war.

b. Made in Syria, including 220 mm rockets with a range of 70 kilometers (43 miles) and 302 mm rockets with a range of over 100 kilometers (62 miles). In our assessment, at least partial payment for the rockets came from Iran.

Cruise Missile: C-802, an Iranian-made variant of the Chinese Silkworm
Hezbollah fired two radar-guided C-802 missiles at the Israeli warship INS Hanit stationed 10 miles off the coast of Lebanon, causing severe damage.

Since 2006 flush with International aid, hundreds of million dollars from its criminal activities the billion dollars in annual revenue funds from Tehran the Hezbollah has built itself into one of the most militarily capable and sophisticated radical militant organizations in the world.

■ Funding Asymmetrical Rocket Warfare through Criminal Enterprises

From International Drug trafficking, to American interstate cigarette smuggling, counterfeiting US currency, to even a 2009 Lebanese-Mexican smuggling network that smuggled 200 illegal Lebanese immigrants in the United States of America, the clandestine criminal nexus of Hezbollah. Recent U.S. intelligence reports indicate that Hezbollah's core now consists of several thousand members, spread out across cells operating in Europe, Africa, and the Americas. [206]

Europe, Hezbollah Is not considered a threat or terrorists entity: Hezbollah, thousands of its members and supporters operate with few restrictions in Europe, raising money that is funneled to the group's leadership in Lebanon. While the group is believed to operate all over the Continent, Germany is a center of activity, with 950 members and supporters last year, up from 900 in 2010, Germany's domestic intelligence agency said in its annual threat report. The European Union's unwillingness to place the group on its list of terrorist organizations is also complicating the West's efforts. The Hezbollah and their covert supporting Iranian operatives uses Europe as a base for fundraising and weapons procurement, readily obtaining vast amounts of money through charity-like methods while using front companies to secure arms for its militants. In one case, German Lebanese dual national Dani Tarraf attempted to procure M4 rifles, antiaircraft/antitank missiles, and other weapons for Hezbollah, with the intention of shipping them to Latakia, Syria, via his company in Slovakia. He was very clear about why he wanted guided and shoulder-fired missiles: to "take down an F-16." According to the FBI, Tarraf's company, Power Express, essentially "operated as a subsidiary of Hezbollah's technical procurement wing." [207] In 2009 Admiral James Stavridis testified before the Senate Armed Services Committee about Hezbollah's drug-related activities in Colombia: "We have seen an increase in a wide level of activity by the Iranian government in this region. That is a concern principally because of the connections between the government of Iran, which is a state sponsor of terrorism, and Hezbollah." The former assistant administrator and chief of operations at the U.S. Drug Enforcement Administration Michael Braun stated that Hezbollah uses "the same criminal weapons smugglers, document traffickers and transportation experts as the drug cartels". They work together. They rely on the same shadow facilitators. One way or another, they are all connected." [208]

206). Hezbollah's strategic shift: A global terrorist threat Roger F. Noriega | Testimony before the House Committee on Foreign Affairs, Subcommittee on Terrorism, Nonproliferation, and Trade March 20, 2013

<http://www.aei.org/speech/foreign-and-defense-policy/regional/middle-east-and-north-africa/hezbollahs-strategic-shift-a-global-terrorist-threat/>

207). Why Doesn't Europe Think Hezbollah Is a Terror Group? Benjamin Weinthal February 18, 2013 <http://nationalinterest.org/commentary/why-doesnt-europe-think-hezbollah-terror-group-8112>

208). House And Senate Armed Services Committees Testimony Of: Admiral James Stavridis, United States Navy Commander, United States European Command Before The 113th Congress, 2013 <http://www.armed-services.senate.gov/statemnt/2013/03%20March/Stavridis%2003-19-13.pdf>

U.S. Aid to Hezbollah? 24th February 2013

Unfortunately, the Washington has failed to address the danger that U.S. assistance to Lebanon is likely to be diverted for Hezbollah's benefit. There are reports that Red Cross and other assistance to southern Lebanon goes to Hezbollah. The problem is how AID works with non-governmental organizations (NGOs) to distribute U.S. aid. Hezbollah dominated regions of the country including southern Lebanon, Beirut's southern suburbs and the Bekaa Valley in eastern Lebanon it is virtually impossible to find NGOs that are not beholden to Hezbollah. According to Walid Phares of the Foundation for the Defense of Democracies, Hezbollah has long controlled money sent to NGOs and Lebanese government agencies, particularly in southern Lebanon. Hezbollah, Mr. Phares adds, has also been able to coerce Beirut into exempting many of the Shi'ite group's supporters from paying taxes, and over the past 15 years has succeeded in diverting "millions" of dollars of international assistance to its supporters (a conservative figure). While Hezbollah and its allies benefit from this arrangement, the big losers are Lebanese Christians and Muslims who want to remain independent of the terrorist group. Groups like UNICEF and Mercy Corps are having trouble trying to help civilians with aiding or going through Hezbollah. Before any more U.S. aid goes to rebuild Lebanon, Congress and the administration need to agree to conditions that will ensure U.S. assistance to Lebanon does not inadvertently get diverted by Hezbollah.

<http://www.defenddemocracy.org/media-hit/us-aid-to-hezbollah/#sthash.bz0UXKGR.dpuf>
<http://www.defenddemocracy.org/media-hit/us-aid-to-hezbollah/>

Hezbollah Funding: Through Human Trafficking, this became evident during a review a 2006 Lebanese-Mexican smuggling network that smuggled 200 illegal Lebanese immigrants in the United States of America. Specifically, after Mahmoud Youssef Kourani, a Lebanese who infiltrated into the United States through the Lebanese-Mexican smuggling network was captured, Mahmoud Youssef Kourani admitted spending part of his time in the United States raising money to support Hezbollah—at least \$40,000, according to an FBI affidavit. A further check of court records indicated that Kourani told the FBI his brother is the group's (Hezbollah) chief of military security in southern Lebanon. A 2006 congressional report on border threats, titled "A Line in the Sand: Confronting the Threat at the Southwest Border" and prepared by the House Committee on Homeland Security Subcommittee on Investigations, indicated that 1.2 million illegal aliens were apprehended in 2005 alone, and 165,000 of those were from countries other than Mexico. Approximately 650 were from "special interest countries," or nations the Border Patrol defines as "designated by the intelligence community as countries that could export individuals that could bring harm to our country in the way of terrorism." In February 2011, Washington uncovered one of Lebanon's famously secretive banks, the Lebanese Canadian Bank, of laundering money for an international cocaine ring with ties to Hezbollah. Acting in February 2011 under the Patriot Act, the U.S. Treasury Department publicly identified the Lebanese Canadian National bank of Beirut, Lebanon's eighth-largest bank, as a "financial institution of primary money laundering concern" linked to Hezbollah. The bank facilitated the financing of Hezbollah by Ayman Joumaa, a 47-year-old businessman who has resided in Colombia. The US Treasury blacklisted the Lebanese narcotics trafficker and Hezbollah member Ayman Joumaa, along with nine people and 19 businesses involved in his drug trafficking and money laundering business. According to the Treasury designation, an extensive DEA investigation revealed that Joumaa laundered as much as USD200 million a month from cocaine sales in Europe and the Middle East to operations located in Colombia, Lebanon, Panama, and West Africa through money exchange houses, bulk cash smuggling, and other schemes. The DEA in 2011 described Joumaa as the hub of a sophisticated operation that has smuggled cocaine from South America to Africa and Europe, and laundered profits via money exchange houses, used-car businesses and other companies in the United States, Latin America, Africa and Southeast Asia. In the wake of the bank's exposure and arranged sale, its ledgers have been opened to reveal deeper secrets: a glimpse at the clandestine methods that Hezbollah uses to finance its operations. The books offer evidence of an intricate global money-laundering apparatus that, with the bank as its hub, appeared to let Hezbollah move huge sums of money into the legitimate financial system, despite sanctions aimed at cutting off its economic lifeblood. At the same time, the investigation that led the United States to the bank, the Lebanese Canadian Bank, provides new insights into the murky sources of Hezbollah's money. While law enforcement agencies around the world have long believed that Hezbollah is a passive beneficiary of contributions from loyalists abroad involved in drug trafficking and a grab bag of other criminal enterprises, intelligence from several countries points to the direct involvement of high-level Hezbollah officials in the South American cocaine trade. In 2012 the US Treasury Department blacklisted four Venezuelan and Lebanese men under the Kingpin Act for supporting an international drug trafficking and money laundering network linked to Hezbollah, revealing some of the group's activities in the Americas. , Abbas Hussein Harb, one of the designees is a Venezuelan and Lebanese dual citizen, runs a Colombia and Venezuela-based organization that has laundered millions of dollars for Lebanese drug lord and previous Kingpin Act designee, the Lebanese drug lord Ayman Joumaa, who was indicted by a US court in late 2011. Another designee reportedly used his position as a bank branch manager in Lebanon to help move money for Harb and Joumaa. Harb's and Saleh's brothers were both also designated under the Kingpin act. In all, hundreds of millions of dollars a year sloshed through the accounts, held mainly by Shiite Muslim businessmen in the drug-smuggling nations of West Africa, many of them known Hezbollah supporters, trading in everything from rough-cut diamonds to cosmetics and frozen chicken.

209). Hezbollah February 24, 2013 <http://topics.nytimes.com/top>

209a). How Hezbollah Profits from U.S. Cocaine Sales Dec 13, 2011 <http://www.theatlanticwire.com/global/2011/12/how-hezbollah-profits-us-cocaine-sales/46159/>

209b). US Treasury Points to Hezbollah Presence in Latin America Written by Christopher Looft 29 June 2012

<http://www.insightcrime.org/news-briefs/us-treasury-points-to-hezbollah-presence-in-latam>

208c). Report: Argentina Anti-Money Laundering Unit Fails to Investigate Overseas Written by Marguerite Cawley February 2013

<http://www.insightcrime.org/news-briefs/argentina-anti-money-laundering-body-fails-to-investigate-overseas-reports>

209d). Europe's Hezbollah Problem (Part 2) Matthew Levitt February 13, 2013 <http://www.washingtoninstitute.org>

208e). Hearing Before The Subcommittee On Counterterrorism And Intelligence Of The Committee On Homeland Security House Of Representatives One Hundred Twelfth Congress First Session July 7, 2011 Serial No. 112-35 <http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg72255/pdf/CHRG-112hhrg72255.pdf>

209f). A Line in the Sand: Confronting the Threat at the Southwest Border Prepared By The Majority Staff Of The House Committee On Homeland Security Subcommittee On Investigations Michael T. McCall, Chairman 2006

http://www.house.gov/sites/members/tx10_mccaul/pdf/Investigaions-Border-Report.pdf

The Growing Hezbollah Militant Asymmetrical Rocket Warfare Capabilities

Would you believe fiber optics? : In 2007 Lebanese uncovered a sophisticated underground fiber-optic military communications network in the heart of Beirut, belonging to the Hezbollah. Hezbollah had a network stretching for more than 200 miles in a nation only about 140 miles long. It had wireless transmitters and redundancies so communications could continue even if part of it was damaged. The Lebanese government reported the network to the United Nations, saying it consisted of "wired and wireless links to the telephone network of the Syrian. Hezbollah secretly expanded it under the guise of postwar reconstruction, burying cables beneath newly paved roads.

The IRI Connection: The fiber optic network was built by Tehran, with the "participation in the field" of the Iranian Headquarters for the Reconstruction of Lebanon, an Iranian agency that has claimed credit for hundreds of rebuilding projects since the 2006. The fiber optic network ran from Beirut to the port of Tyre, to myriad sites in the southern tip of Lebanon, then north through central Bekaa Valley. In 2008 several new branches were noted, reaching toward Christian areas in the north, pro-Syrian Palestinian bases in refugee camps and to areas

east of Beirut controlled by the Druze, another sect. The final line reached to a tiny border town called here the secure network starts to connect with Syria. [210]



Narco-Terrorism

The most potent financial tool in Hezbollah's arsenal of illicit enterprises is its full-fledged entry into drugs trafficking, estimated by United Nations Office on Drugs and Crime (UNODC) officials to be a USD320 billion a year industry. Hezbollah has been in the business since at least the mid-1990s

Hezbollah's illicit activities have become even more critical as Iran and Syria deal with internal financial and political turmoil.

Their illicit activities include document fraud, arms and drugs smuggling, money laundering, and the procurement of dual-use items, among other pursuits.

Many countries are reluctant to participate in counter-terrorism efforts, but their interests in maintaining law and order provide opportunities to curb these activities.

Hizbullah's global illicit financing activities Criminal connections IHS Defense, Risk and Security Consulting / September 2012 <http://www.washingtoninstitute.org/uploads/Documents/opeds/Levitt20120930-Janes.pdf>

Since early 2010, UNIFIL ground radar stations have been picking up rocket launch signals. The radars show the source of fire inside Lebanon, track the trajectory and mark the impact point in Israel. Only there were no rocket launches. It appears Hezbollah has found a way to trick radars by transmitting false launch signals. [211]

210). Islamists Gain After Battle Over Secret Fiber-Optic Network By Cam Simpson May 22, 2008 <http://online.wsj.com/>
211). Israel and Hizbullah's Technology Duel By Gabe Kahn First Publish: 6/27/2011 <http://www.israelnationalnews.com>

- **SIGINT: intelligence information gathered from communications intelligence or electronics intelligence or telemetry intelligence**

Tehran has an extensive and advanced electronics and communications industry to which it incorporates into the Hezbollah has thus placing Hezbollah's state-supported SIGINT capabilities in a comparable league to those of Israel. According to a 2011 report, in terms of specific communications upgrades, Hezbollah's fiber-optic network has expanded since 2006 and now covers almost all the areas in which its forces are deployed. This includes the entire southern half of Lebanon, and the Bekaa Valley up to and including the northern Hermel district. Areas include the southern suburbs of Beirut, the coastal region between Beirut and the south area.

Syrian fiber-optic lines: are also reportedly hooked into a military communications network in Syria that links several signals intelligence (SIGINT) stations manned by Syrian and IRGC intelligence officers. A complex fiber-optic network allows intelligence gathered by the Syrian- IRGC SIGINT bases to be passed to Hezbollah commanders stationed throughout Lebanon. Iran has an extensive and advanced electronics and communications industry to which Hezbollah has access, thus placing Hezbollah's state-supported SIGINT capabilities in a comparable league to those of Israel. Hezbollah SIGINT section is the most secret component of the group, and its technicians are the most thoroughly vetted and trained of all the party's cadres. Most are fluent in Hebrew, for counter Israeli activities. [212]

Hezbollah remains the most technically-capable terrorist group in the world, a shared Iranian-Syrian strategic interest in the Middle East and un-disputably the military superpower in Lebanon. Hezbollah remains a vital ally and a major strategic partner of two state-sponsors of terrorism, Syria and Iran, with a global financial and criminal network that aims to bleed American & Israeli interests in every part of the world.

Since the end of the 2006 war, Hezbollah has undergone the largest recruitment and training drive in its thirty-year history, swelling its ranks with dedicated cadres and reviving its former multi-sectarian reservist units. In terms of weapons procurement, Hezbollah has focused on acquiring long-range rockets fitted with guidance systems to target a list of specific areas in Israel. Estimates vary on how many armed fighters Hezbollah can actually call on at any one time; an open source report stated that Hezbollah has around 25,000 full time fighters and 35,000-40,000 reservists. Other reports cite as many as 20,000 fighters of all types. These include the hundreds of specially trained technicians and engineers needed to service Hezbollah's rocket arsenal. [213]

- ***Iranians exercise more control than ever over Hezbollah. IRGC General Hassan Madavi, Commander of the Lebanon Corps of the Revolutionary Guards, sits in Beirut alongside scores of Iranian officers and experts.***

A 2011 Pentagon official reported Hezbollah had 50,000 rockets and missiles, including 40-50 Fatah 110 missiles and 10 SCUD-C ground-to-ground missiles. Furthermore, some 10,000 Hezbollah fighters have been provided with a broad range of modern weapons, while the Islamic Revolutionary Guards have trained Hezbollah teams to operate these weapons. [214]

212). The Next War: How Another Conflict between Hizballah and Israel Could Look and How Both Sides are Preparing for It Bilal Y. Saab & Nicholas Blanford N u m b e r 2 4 , A u g u s t 2 0 1 1 Brookings Institution

http://www.brookings.edu/~media/research/files/papers/2011/8/hizballah%20israel/08_hizballah_israel.pdf

213) Col. (ret.) Dr. Jacques Neriah, January 10, 2011 Iran Steps Up Arming Hizbullah Against Israel

<http://jcpa.org/article/iran-steps-up-arming-hizbullah-against-israel/#sthash.rXSd7N0w.dpuf>

214). IBID 2

"During a cold winter's day in late January on the Biranit mountain range, which overlooks south Lebanon, I noticed that dozens, if not hundreds of new buildings had been built in Bint Jbeil, Maroun al-Ras, Aita al-Shaab and Barmish. There is almost no remnant of the devastation the region sustained during the Second Lebanon War, and even without binoculars it was evident that the Shiite communities have expanded significantly compared with the few Christian-Maronite villages in the area, which remained the same size, more or less. This expansion was made possible in part by funds allocated by Iran and the Arab states towards the rehabilitation of the Shiite villages in the aftermath of the 2006 war with Israel, but it was mainly the result of Hezbollah's decision to revolutionize its preparedness for a conflict with Israel and move its forces from the open areas to the villages." [215]

Since the Second Lebanon War Hezbollah- Iran- Syrian axis has turned hundreds of Southern Lebanese villages into military bases. In this manner some 180 Shiite villages and small towns situated between the Zaharani River and the border with Israel have been converted into fighting zones in which Hezbollah is preparing above and below ground for the next conflict with Israel. Hezbollah's arsenal stores rockets, military hardware and other various weapons near schools, hospitals, and residential buildings in the village of al-Khiam, which had been used as a rocket launching site during the Second Lebanon War. This tactic of storing weapons near civilian buildings is essentially using the residents as human shields, in gross violation of UN Resolution 1701. During the Second Lebanon war, Hezbollah generally stored its weapons in open areas, enabling the IDF to locate and destroy these stores. Hezbollah has pursued a tactic of moving its weapons into civilian villages, essentially institutionalizing the tactic of using human shields on a large scale. This activity is mirrored in Gaza by Hamas. [216]

In a briefing to the public, IDF Col. Ronen Marley, Commander of the Western Division on the northern border, explained that Hezbollah has been collecting information on IDF activities and events in Israel. *"Every day they are collecting significant intelligence on our forces along the border and every day they are engaged in digging, building and laying communications infrastructure to prepare themselves for war," he said. Hezbollah has been collecting extensive intelligence information, often under the guise of Lebanese civilians approaching the border. Col. Marley estimated that a renewed conflagration between Israel and Hezbollah could happen anytime between today and next year"* [217]

The Shifting Role of State Sponsors and Non-State Actors: Iran, Syria, and Hezbollah

The Israeli-Hezbollah War has highlighted the importance of the interaction among non-state actors, asymmetric warfare, and the role of state actors. Iran and Syria clearly helped shape the conditions that made the war possible. Hezbollah would never have emerged as a major force in Lebanon without the arms transfers, training and advice, and financial support of Iran and Syria. Those countries continued to provide intelligence support during the war and some arms transfers. At least one source reports that they have since helped Hezbollah restore its short-range arsenal to its previous level. Many, if not most, insurgent movements have had the support of outside powers. In this case, Iran and Syria were able to project power in ways that Israel could not directly counter and that did not create the conditions where Israel could use decisive force against Hezbollah's sponsors. Moreover, this form of power projection allowed Iran and Syria to push Israel into a low-level war of attrition while it gradually transformed Hezbollah into a serious threat.

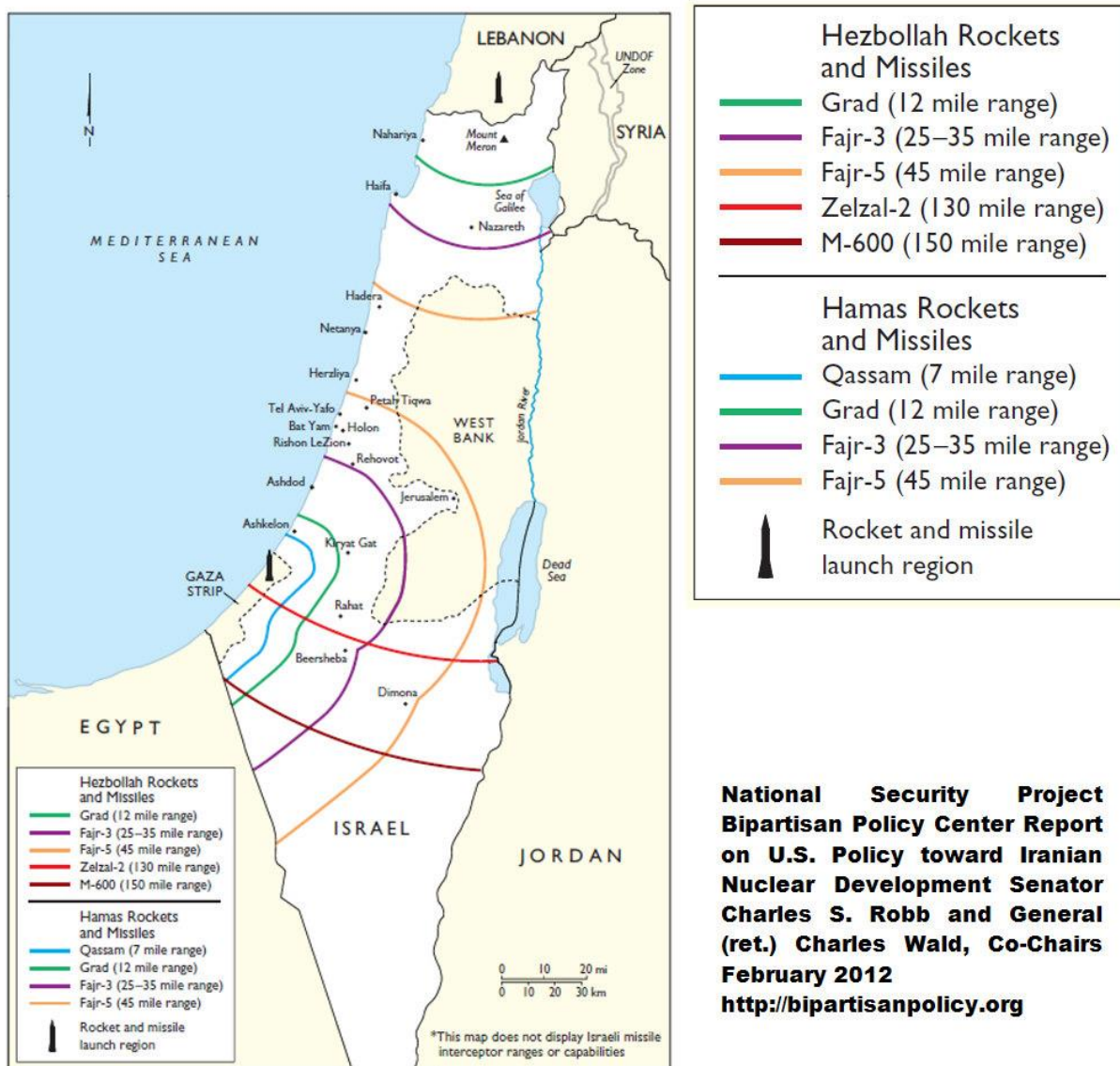
Lessons of the 2006 Israeli-Hezbollah War Anthony H. Cordesman with George Sullivan and William D. Sullivan page 60, The CSIS Press Center for Strategic and International Studies Washington, D.C. Significant Issues Series, Volume 29, Number 4 2007

215). Hezbollah moves into south Lebanon villages Analysis: Terror group storing rockets in private homes it sold to poor Shiite families at bargain prices 02.10.13, Part one of analysis by Ron Ben-Yishai <http://www.ynetnews.com/articles/0,7340,L-4343397,00.html>

216). IBID 1 & Hezbollah's strategy: Rockets on Tel Aviv, raids on Galilee Analysis: Nasrallah hopes to gain moral victory by inflicting heavy casualties on IDF, Israeli home front at onset of next conflict 2/11/13 Part two of Ron Ben-Yishai analysis <http://www.ynetnews.com/articles/0,7340,L-4343662,00.html>

217). Hezbollah Uses Lebanese Villages as Military Bases 17 March 2013 <http://dover.idf.il/IDF/English/News/today/10/07/0801.htm>

Israel: Rocket and Missile Threats



At the onset of the next war Hezbollah will fire its heaviest and most accurate cruise missiles and rockets (including M-600 missiles Hezbollah received from Syria, which are fitted with GPS-aided inertial navigation) on the Tel Aviv metropolitan area, as well as on critical infrastructure installations. A tidal wave will be fired at the fastest pace possible in attempt to overpower Israel's missile defense systems and cause the greatest amount of destruction as possible. The last question will these be armed with chemical or biological warfare agents?

Since the 2006 war with Israel, the Hezbollah has become one of the most powerful radical Islamic armed forces in the world. The Hezbollah has been armed with a vast array of rocket artillery and cruise missile capabilities, including its own UAV air wing. In 2012 Hezbollah sent an unmanned aerial vehicle to gather intelligence and to send Israel a deterrent message, as UAVs could also be used for offensive purposes. On October 6, Israeli fighter jets shot down an Iranian-made Hezbollah UAV that flew over the Negev and was believed to have been sent to gather intelligence. IAF intercepted the UAV, which had penetrated into Israel's airspace from the Mediterranean Sea near the Gaza Strip. Former Lebanese Prime Minister Fouad Siniora claimed that the UAV that flew over Israel was sent at Iran's behest. [218]

Cruise Missiles Hezbollah : The Hezbollah has an unknown number of makes and types of cruise missiles. It does have a number of the Chinese C-802 cruise missile and the Iranian Noor. This is an Iranian version of the Chinese C-802 cruise missile. The C -802 can be launched from airplanes, ships, submarines and land-based vehicles, and is considered along with the US "Harpoon" as among the best anti-ship missiles of the present-day world.[219]

Variants

- **Basic Noor:** Initial reversed engineered missile with a range of 30 km (18.6 mi).
- **Noor Phase 2:** Improved version with 130 km range (80.7 mi).
- **Noor Phase 3:** Further increased the range to 170 km range (105.6 mi).
- **Noor Phase 4:** Better electronics and computer algorithms.
- **Qader:** An upgraded version with the range of 200 km range (124.2 mi).
- **Noor Export Version:** A version with the range of 120 km range, (74.5 mi). [220]

Both Iran and Syria have played key roles in enlarged and upgrading Hezbollah's infrastructure since the Second Lebanon War. Its main military asset is an arsenal of an estimated 60,000 rockets and missiles. In April 2010, there were reports that Syria had transferred Scud ballistic missiles to Hezbollah, and in July 2011, it was reported that a total of ten Scuds-D missiles were now in Hezbollah's possession. In 2013 a senior Israeli official asserted that Hezbollah obtained a number of Scud Ds from Syrian military arsenals. The Scud D has a warhead that separates from the missile's body and is fitted with its own terminal guidance system. The Scud D, produced in Syria with North Korean assistance, could be fitted with a biological or chemical warhead. The Scud-D has a range of up to 750 kilometers (466 miles), meaning it can hit almost anywhere inside Israel, even if launched from north Lebanon. The missile can carry some 1,000 kilos (about 2,200 pounds) of explosives.[221]

"The billions of dollars Iran has invested in Hezbollah over the years (including armaments and intelligence capabilities comparable to a medium-sized European state) are intended first and foremost to deter against the possibility of an attack by the West and/or Israel against Iran's nuclear facilities. Architects of such an attack have to assess Hezbollah's response, certainly a complicating factor in any plan to challenge Iran's nuclear ambitions."

Hezbollah on Offense Nicholas
Blanford, Bilal Y. Saab March 8,
2011
[http://nationalinterest.org/
commentary/hezbollah-offense-
4982](http://nationalinterest.org/commentary/hezbollah-offense-4982)

218). Iran's Support for Terrorism in the Middle East Matthew Levitt Director, Stein Program on Counterterrorism and Intelligence, The Washington Institute Testimony before the U.S. Senate, Committee on Foreign Relations, Subcommittee on Near Eastern and Central Asian Affairs July 25, 2012 www.washingtoninstitute.org/uploads/Documents/testimony/LevittTestimony20120725.pdf

219). Hezbollah: Portrait of a Terrorist Organization ITIC 30 November 2012 <http://www.terrorism-info.org.il/en/article/20436>
219a) The Secret History Part II The C-802 Cruise Missile: How the CIA left the Navy Defenseless against an Iranian Missile By Joseph Trento, on March 10th, 2010 National Security News Service <http://www.dcbureau.org/>

220). Iran Missile technology Feb. 2013 NTI <http://www.nti.org/country-profiles/iran/delivery-systems/>

221) Israel Hizbullah got Scud D missiles from Syria with 700 km range Special to WorldTribune.com February 27th, 2013 | <http://www.worldtribune.com/2013/02/27/israel-hizbullah-got-scud-d-missiles-from-syria-with-700-km-range/>

2012 Operation Pillar of Defense in Gaza: During the operation, Israel dealt heavy blows to the rocket systems of Hamas and the other organizations in the Gaza Strip, including their infrastructure, launch sites, and arsenals and especially to the Fajr-5 rocket System. However the long-range rockets survived and continued until the ceasefire was reached.[222]

2012 Operation Pillar of Defense, Deliberate Targeting of Civilians: A steady pattern emerged as rocket attacks were concentrated in the daytime, with a slight decline around noon. Sunset was period where a higher frequency of Fajr-5 rocket launches occurred. These have a longer range and are capable of hitting Israeli population centers in Tel Aviv and Jerusalem. These launches were timed to coincide with rush hour in and around Tel Aviv, a period that offered Hamas militants an increased chance of inflicting civilian casualties and terrorizing the populace. Relatively little rocket fire occurred at night, likely because fewer people are out in the streets of Gaza at that time.[223]

"The Gaza attacks involved more than 1,500 rockets, more than all the rockets Germany launched at England during World War II. Investigations revealed that many of the rockets were manufactured in Iran, North Korea, and China - especially the longer range ones - and, in part, shipped to the Sudan, and then smuggled through Egypt and the Sinai into Gaza for the use of Hamas and Islamic Jihad."

The New Poisonous Coalition January 4, 2013 By Peter Huessy
http://www.jinsa.org/fellowship-program/peter-huessy/new-poisonous-coalition#.UOeG_OQ8B8F

During the 2012 conflict Hamas militants fired rockets deeper into Israel than ever before. Impacts were near Tel Aviv, Jerusalem and Dimona have. The ability to launch rockets this far into Israel puts the largest population centers, as well as critical facilities such as the Dimona nuclear reactor. Rocket fire into the Jerusalem area caused consider amount of shock in Israel, as the Dome of the rock is located there. The Dome of the Rock is a 7th-century edifice located in Jerusalem. It enshrines the rock from which Muhammad is said to have ascended to heaven. Among Sunni Muslims, the Mount is widely considered to be the third holiest site in Islam. Next to it is Al-Aqsa silver dome mosque; hundreds of Muslims can be the area at any given time in prayers.[224]

- The firing of rockets towards Tel Aviv and Jerusalem demonstrated a harsh new reality for Israel, in the case of war there is no longer a part of Israel that is safe from rocket attacks. With Israel's population and economy centered mainly around the Tel Aviv and Jerusalem areas, future rocket attacks on the Israeli heartland could seriously cripple the country.[225]

In the 2006 Hezbollah war the IAF flew some 15,500 sorties, including some 10,000 fighter sorties, and attacked a total of about 7,000 targets. Nevertheless, airpower had not only failed to prevent the delivery of some 4,000 Hezbollah rockets against targets in northern Israel—the most visible Hezbollah threat and the one of greatest immediate concern to the Israeli people.[226]

"IRGC General Sayed Yahya Rahim Safavi, former commander of the Quds Force and Supreme Leader Ali Khamenei's security advisor, recently said that he regarded Hezbollah leader Hassan Nasrallah as "a soldier in the ranks of Leader" Khamenei. Therefore, he added, it extremely likely that Hezbollah will act against Israel should it seeks to harm Iran. Safavi made similar remarks in 2008, saying that Hassan Nasrallah regarded himself as one of Khamenei's soldiers. He also boasted of the rocket arsenal of "our friends in Hezbollah," which could cause billions of dollars of damages to Israel's cities. Other senior members of the Iranian regime have said that Iran provides Hezbollah with comprehensive support and that the organization is committed to obeying the Iranian leadership. "

Hezbollah As The Strategic Long Arm Of The Iranian Regime:
June 17, 2012
http://www.terrorism-info.org.il/Data/articles/Art_20351/E_115_12_459755210.pdf

223). In the Aftermath of Operation Pillar of Defense The Gaza Strip, November 2012 Shlomo Brom, Editor Institute for National Security Studies 224) Assessing the Gaza Rocket Attacks November 19, 2012 <http://www.stratfor.com/image/assessing-gaza-rocket-attacks> 3). The Temple Mount in Jerusalem <http://www.templemount.org/> 225). Notable Gaza Rocket Impact Sites in Israel November 16, 2012 <http://www.stratfor.com/image/notable-gaza-rocket-impact-sites-israel> 226). Lessons of the 2006 Israeli-Hezbollah War Anthony H. Cordesman with George Sullivan and William D. Sullivan page 121, The CSIS Press Center for Strategic and International Studies Washington, D.C. Significant Issues Series, Volume 29, Number 4 2007

Hezbollah managed to sustain a lethal rocket campaign throughout the entire 2006 war as did Hamas in 2006 and the 2012 Gaza conflicts. Their rocket launchers of the Hezbollah and Hamas fell silent only when Israel ceased its military operations in these conflicts. This marked a clear victory for the Hezbollah and Hamas asymmetrical rocket warfare tactics. This is not a commendation of Israel's military doctrine of strategy and tactics. IDF's failure is also a reflection of the Pentagon's battlefield experiences and failures from Iraq to Afghanistan and Pakistan. America has bankrupted itself in these conflicts, since 2001 spending 3-4 trillion dollars and counting.[227] This is a clear defeat to US & Israeli armed forces and military doctrine in confronting irregular warfare. The harsh reality is Israel along with Western military planners have yet to develop an effective means of carrying out military actions where the enemy embeds itself throughout a civilian population using homes, schools, hospitals and places of worship. An enemy who's tactical operations singles out your population centers with ferocity and with every means at its disposal.

Human - shields: are noncombatants whose presence protects certain objects or areas from attack. The use of human shields is illegal under international humanitarian law.

Human- shields can be voluntary or involuntary. But it is important to recognize how this has become part of the trouble landscape of today's conflict environment. It is a tool of such states as the IRI, Syria, and the late Saddam Hussein of Iraq and many others.

Human - shields does not just refer to a policy of using civilians as cover in firefights, but to deliberately planting military capabilities, within communities, civilians, including children, in locations likely to be targeted in order to manufacture atrocities for no more than propaganda purposes.

Hamas Interior Minister openly boasts of willingness and even eagerness to use children and the elderly as human shields.

- **"For the Palestinian people, death has become an industry, at which women excel, and so do all the people living on this land. The elderly excel at this, and so do the Mujahideen and the children. This is why they have formed human shields of the women, the children, the elderly, and the Mujahideen, in order to challenge the Zionist bombing machine. It is as if they were saying to the Zionist enemy: 'We desire death like you desire life.'"** [228]

The abuse of innocent civilians as cannon fodder has become an abhorrent normality. For example during the past two years the Syrian civil war both sides are sunk deep in a dirty, brutal struggle, which is fought with no moral or legal constraints. As soon as the violence began, Syrian rebels understood that the forces of the regime could easily destroy them so they transferred their activity to the crowded urban and settled areas. As a result, they turned civilians into human shields, unable to having any say in the matter, dragging the cities and the settled neighborhoods into a rebellion. Radicals Islamist flooded into Syria to fight Assad, they embedded themselves too within local populace. [229]

"There is something about a battlefield or an operational environment that confounds accurate assessment. A conventional battle between two opposing armies is certainly complex, but when one side is hidden among the population, the degree of complexity faced by the opposing side (the counterinsurgent) is magnified. The counterinsurgent must locate and separate the insurgents without damaging the population, all the while attempting to address a complex web of root causes. Efforts to assess progress against these confounding requirements often fall short, particularly since complexity is anathema to accuracy."

**Embracing The Fog Of War ,
Assessment And Metrics In
Counterinsurgency By Ben
Connable page 27 2012 RAND
Corporation <http://www.rand.org>**

227). U.S. Costs of Wars Through 2013: \$3.1 Trillion and Counting Summary of Costs for the U.S. Wars in Iraq, Afghanistan and Pakistan 13 March 2013 Professor Neta C. Crawford Boston University
http://costsofwar.org/sites/default/files/Us_Costs_of_Wars.pdf

228). Hamas Interior Minister Boasts of Using Elderly and Children as Human Shields November 18, 2012 By Daniel Greenfield
<http://frontpagemag.com/2012/dgreenfield/hamas-interior-minister-boasts-of-using-elderly-and-children-as-human-shields/>

229). Syria Local Residents Used as Human Shields Reports of Residents Forced to March in Front of Soldiers in Idlib MARCH 25, 2012 <http://www.hrw.org/news/2012/03/25/syria-local-residents-used-human-shields>

229a). The New Strategic Environment March 15, 2013 by Mordechai Kedar
<http://israelagainstterror.blogspot.com/2013/03/mordechai-keidar-new-strategic.html>

Jihadists from all over the Arab and Muslim world poured in, today there are hundreds of different combat groups in Syria from all over the world. The civil war battlefield rages within and around cities, towns and small villages. The greatest advantage that a jihad organization has over Israel and America forces is that a jihad organization does not impose upon itself the legal and moral constraints that international law and conventions require from a regular army. The use and killing of innocent civilians is permissible for their Jihad because they are lead by God. For combat military leaders and their intelligence networks how are they supposed to identify jihadists? According to the type of jeans or T-shirt he's wearing? According to the type of haircut or beard? The problem of identification becomes more difficult regarding vehicles in the service of jihadists, which are ordinary vehicles, indistinguishable from many others.[230]

- ***How to American and Israeli armed forces that follow the laws of warfare and the principles of human rights survive against jihad organizations that do not limit themselves in any way?***

Assad military units force local residents old and young, to walk in front of the army during arrest operations, troop movements, and attacks on towns and villages in northern Syria. Witnesses from the towns of al-Janoudyah, Kafr Nabl, Kafr Rouma, and Ayn Larouz in the Idlib governorate in northern Syria reported Human Rights Watch that they saw the army and pro-government armed men, referred to locally as shabeeha, force people to march in front of the advancing army, the army placed children on top of tanks and in buses during the March 2012 offensive to retake control of areas that had fallen into the hands of the opposition. Sadly this has become a common practice. Tens of thousands of citizens, women, children and elderly, have been brutally murdered , over a million has fled, hundreds of thousands of houses and apartments have been rendered uninhabitable; infrastructures of the country are collapsing; the economy is paralyzed. [231]



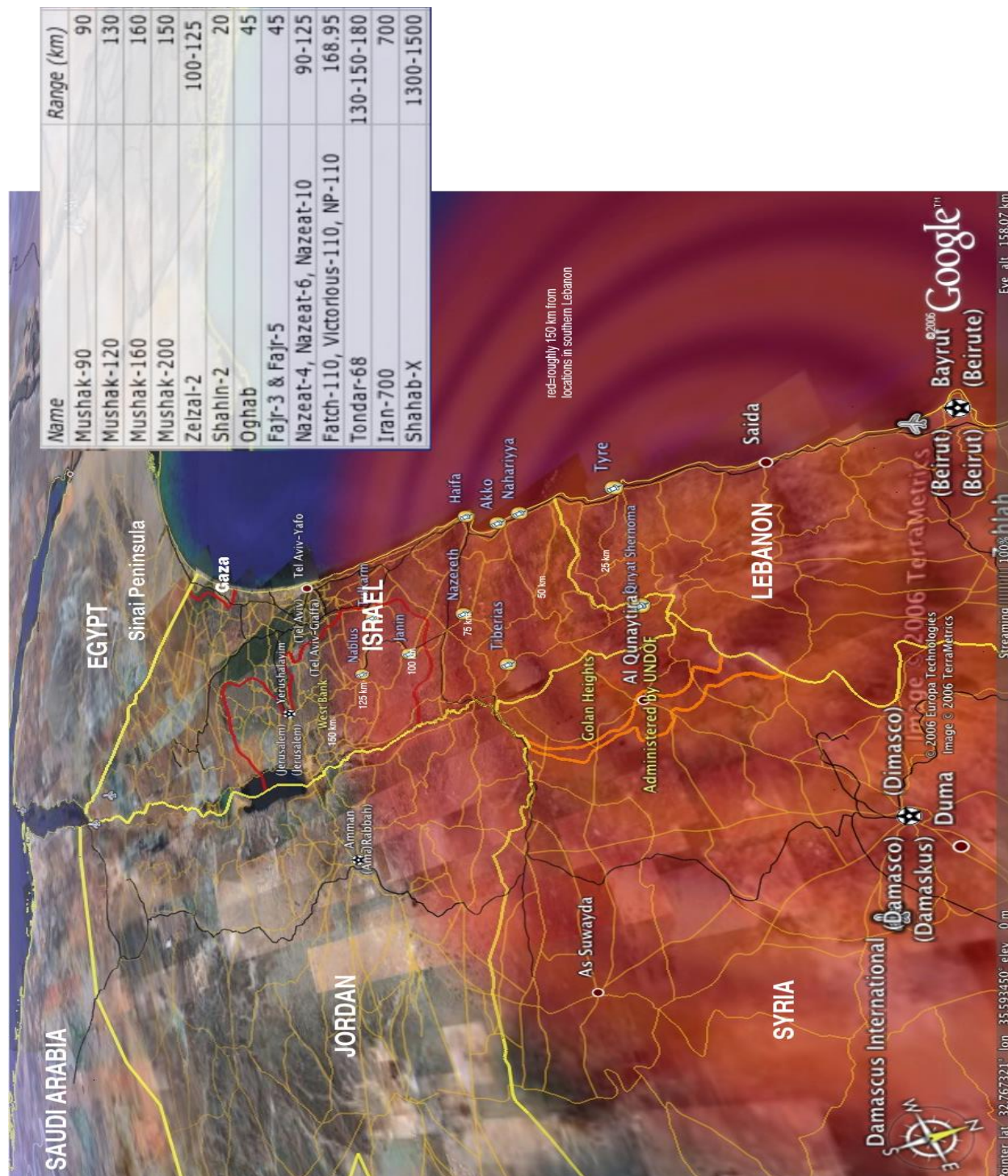
Wikimedia Commons

230). Syria Local Residents Used as Human Shields Reports of Residents Forced to March in Front of Soldiers in Idlib MARCH 25, 2012 <http://www.hrw.org/news/2012/03/25/syria-local-residents-used-human-shields>

231). The New Strategic Environment March 15, 2013 by Mordechai Kedar

<http://israelagainstterror.blogspot.com/2013/03/mordechai-kedar-new-strategic.html>

231a). Hezbollah moves into south Lebanon villages Analysis: Terror group storing rockets in private homes it sold to poor Shiite families at bargain prices 02.10.13, Part one of analysis by Ron Ben-Yishai <http://www.ynetnews.com/articles/0,7340,L-4343397,00.html> 231b). Hezbollah's strategy: Rockets on Tel Aviv, raids on Galilee Analysis: Nasrallah hopes to gain moral victory by inflicting heavy casualties on IDF, Israeli home front at onset of next conflict 2/11/13 Part two of Ron Ben-Yishai analysis <http://www.ynetnews.com/articles/0,7340,L-4343662,00.html>



Hezbollah with the financing of Tehran has launched a major social/real-estate projects that bolstered its political standing: It purchased lands on the outskirts of the villages, built homes on these lands and offered them to poor Shiite families at bargain prices (to rent or buy), one the condition that at least one rocket launcher would be placed in one of the house's rooms or in the basement, along with a number of rockets, which will be fired at predetermined targets in Israel when the order is given.

Hezbollah moves into south Lebanon villages Analysis: Terror group storing rockets in private homes it sold to poor Shiite families at bargain prices 02.10.13, Part one of analysis by Ron Ben-Yishai

<http://www.ynetnews.com/articles/0,7340,L-4343397,00.html>

Sinai, Radical Islam New Rocket Arena: Background: The Sinai Peninsula borders both Israel and Gaza, bridging Africa and Asia. The region was previously under Israeli control following the Six Day War of 1967, but was returned to Egypt as part of the 1978 Camp David accords.

- ***Egyptian authorities have evidently lost effective control over large parts of Sinai and the peninsula has become a no man's land. In the past eighteen months, militant Egyptian and Arab Palestinian groups have attacked dozens of police stations, checkpoints, and government institutions there, killing several policemen, while the Egyptian-Israeli gas pipeline in northern Sinai has been sabotaged 14 times and was final shut down.[232]***

Egyptian's Mubarak's ouster in early 2011 and replacement by a Muslim brotherhood leader Mohamed Morsi created a power vacuum in Sinai that was quickly filled by jihadists who joined local Bedouin. These Bedouin, especially those in the northeast and the mountainous central areas, are well armed and increasingly influenced by extreme Islamist ideology. They cooperate closely with Hamas and other Arab Palestinian terrorist groups from Gaza, which have established a foothold in Sinai by recruiting local tribesmen for various operations. With Hosni Mubarak's February 2011 ouster, the Muslim Brotherhood has emerged as Egypt's most influential political force. It won a significant plurality in the winter 2011–2012 People's Assembly elections and a majority in the January 2012 Shura Council elections thus gaining control over both houses of parliament and the committee that is writing the next constitution. In June 2012, the group successfully campaigned to elect Brotherhood leader Muhammad Morsi as Egypt's first civilian president. [233]

Sinai, a triangular peninsula in Egypt about 60,000 km in area, bordering Israel, the Gaza Strip, the Mediterranean Sea and the Gulfs of Suez and Aqaba, is increasingly unstable, as a consequence of dramatic change. For more than 30 years, the Sinai Peninsula was a stable security backwater, requiring little attention from Egypt and Israel, or from the broader international community including the United States, that is changing.

The Brotherhood sees Israel as a strategic threat. President Mohamed Morsi, speak of Egypt's intentions to abide by its international treaties. On the other hand, these leaders emphasize that they will do so only when the treaties serve Egypt's national interests. They argue that Egypt's treaty with Israel harms the Egyptian national interest. The Muslim Brotherhood was founded in Egypt in 1928 and is the world's largest political Islamic organization. Morsi joined the party in the late 1970s, when opposition to the peace treaty with Israel was a main topic of discussion within the organization. President Anwar El Sadat (15 October 1970 -6 October 1981) was President of Egypt until his assassination by Islamic fundamentalist army officers for signing a peace treaty with Israel. Morsi quickly became the head of the regional committee dedicated to opposing the "Zionist Project," and was later appointed chairman of a similar committee on the national level. He was elected in 2000 to Parliament as an independent representative of the Brotherhood.

- ***The Brotherhood defines Israel as an enemy state and does not officially recognize it. "Palestine" is viewed as holy Islamic land, and Hamas, a Brotherhood-affiliated organization, is seen as the spearhead in the battle to liberate the land and Jerusalem. The Brotherhood acknowledges that this battle must be fought gradually and that it must be patient and careful in trying to achieve this goal.[234]***

In July 2012 Brotherhood Supreme Leader Mohammed Badie referred to Israelis as "rapists" and called on Muslims to liberate Jerusalem through jihad. He defined Palestine and Jerusalem as holy Muslim land and said that any means used to liberate those lands are acceptable. He did permit Jews to live as minority citizens in any other country, as long as they do not have their own state. On November 22, 2012, the day after Morsi brokered a ceasefire between Israel and Hamas, Badie again declared that jihad was "obligatory" for all Muslims and said that Israel "knows nothing but the language of force." [235]

231). Egypt, Gaza and the Sinai Peninsula | Stratfor November 16, 2012 <http://www.stratfor.com>

233). The Muslim Brotherhood in Egypt and its True Intentions to Israel by Dr. Liad Porat BESA Center Perspectives Paper No. 192, December 10, 2012 <http://www.biu.ac.il/SOC/besa/docs/perspectives192.pdf>

234) IBID 233

235). Egypt's Muslim Brotherhood leader: Israelis are rapists of Jerusalem July 9, 2012 www.israelhayom.com/

Following the 2011 revolution, Muslim brotherhood leader Mohammed Morsi granted amnesty to many convicted and imprisoned Radical Islamists, including individuals who had conducted terrorists' attacks in Egypt which killed not only Egyptians but tourists.

Many of these radical Muslims went on to established political parties. These jihadists are radicalizing Egypt's domestic political scene and threatening Israel along with U.S. interests

One of the most noted group granted amnesty and was illegal under the former Egyptian President Mubarak government is the Egyptian Islamic Jihad. The emergence of former EIJ figure Muhammad al-Zawahiri, brother of al-Qaeda leader Ayman, has given these groups a public face. Zawahiri was released from prison in March 2012 and has since promoted the global jihadist worldview through local and international press interviews. Muhammad al-Zawahiri while denying being an al-Qaeda member and only agreeing with its ideological outlook, yet promotes its radical agenda. For example through Twitter, he instigated 2012 September 11 protests outside the U.S. embassy in Cairo that culminated with the breaching of the compound's walls. [236]

Ansar al-Sharia – Al Qaeda by another Name: Ansar al-Sharia began to spread in the wake of the Arab Spring in several Arab and Muslim countries through groups and movements affiliated with Salafist jihadism and al-Qaeda. The idea first emerged in Yemen, then in the Maghreb, Egypt and Mali. It is making powerful moves behind the scenes in Jordan.[237]

Ansar al-Sharia, Egyptian affiliate groups, Gamaat Ansar al-Sharia (ASE) & al-Taliah al-Salafiyah al-Mujahediyah Ansar al-Sharia (TSM) These two Egyptian "Ansar al-Sharia" affiliate groups, (Considered by some intelligence agencies only similar to Al Qaeda's new incarnate Ansar al-Sharia). The ASE which was founded in mid-October 2012 focuses on internal reform based on the application of sharia, compensation for the martyrs of the revolution, purging the judiciary and media, allowing bearded officers. Egyptian Ansar al-Sharia runs local community services such as distributing sheep for ritual slaughter during the Eid al-Adha holiday and providing food for the needy. TSM which was formed in 2012 is more internationally focused. Run by former members of Egyptian Islamic Jihad (EIJ) who post their press releases to al-Qaeda-affiliated online forums, it emphasizes liberating foreign-occupied Muslim lands, supporting foreign mujahedin, resisting the foreign ideologies of liberalism and Capitalism, stopping the implementation of secular laws from the West and stopping the "Christianization" of Egyptian education. (Continued)

Ayman al-Zawahiri Birth place: Egypt

Ayman Mohammed Rabie al-Zawahiri is an Egyptian physician, Islamic theologian and current leader of the militant Islamist organization al-Qaeda. Al-Zawahiri comes from a distinguished Egyptian family. His grandfather, Rabia'a al-Zawahiri, was an Imam at al-Azhar in Cairo. Al-Zawahiri and the Egyptian Islamic Jihad work to overthrow Egyptian President Anwar Sadat and establish an Islamic state.



Egyptian Islamic Jihad (EIJ), a militant Islamist group which emerged in the 1970s, changed its focus in 2001. Originally bent on installing a religious government in Egypt, the group joined forces with Osama bin Laden's al-Qaeda network. EIJ members were once members of the mainstream Egyptian Muslim Brotherhood, and became its covert military wing as the Egyptian Muslim Brotherhood had to renounce violence under the former Egyptian President Mubarak.

Egyptian Islamic Jihad (aka: Al-Jihad, Egyptian al-Jihad; New Jihad; Jihad Group, Al-Qaeda)

Author: Holly Fletcher May 30, 2008

<http://www.cfr.org/egypt/egyptian-islamic-jihad/p16376>

236). Jihadists on the Nile The Return of Old Players Aaron Y. Zelin January 17, 2013 <http://www.washingtoninstitute.org>
237). Ansar al Sharia Al Qaeda's Response to Arab Spring By: Mohammad Abu Rumman, Hassan Abu Haniya January 3, 2013
<http://www.al-monitor.com/pulse/politics/2013/01/history-ansar-al-sharia-arab-spring.html>

This has caused serious conflicts with Egyptian Christians (Coptic's). While it is believed these groups and figures have only small followings based on evidenced by the unimpressive turnout at their occasional Tahrir Square sharia protests, however the fleeing of thousands of Egyptian Christians is the harbinger of the rising tide of radical Islam in Egypt.[238]

Exodus of Coptic Christians Egypt Tens of thousands of Egyptian Coptic Christians are leaving the country in the wake of the Egyptian revolution and subsequent Islamist takeover of politics. Copts are the largest Christian community in the Middle East, and the most prominent religious minority in the region. Christians make up about 10 percent of Egypt's 85 million people numbering roughly 6-10 million. Copts have maintained a continuous presence in Egypt since approximately 43 CE, almost six centuries before the founding of Islam. Sadly for most Coptic Christians flight is not an option as poor as other Egyptians, currently afflicted by the economic crisis. Coptic Christian churches in the United States say they are having to expand to cope with new arrivals, as priests in cities like Cairo and Alexandria talk of a new climate of fear and uncertainty.[239] In 2011 Thousands of Muslims attacked and besieged Copts in elGhorayzat village, population 80,000, killing two Copts and severely wounding others, as well as looting and torching homes and businesses. One of the deadliest attacks against the Copts, killing 23, happened on January 1, 2011, when a suicide bomber detonated a bomb outside the St. Mark's Coptic Orthodox church in Alexandria. Prior to the attack, Al-Qaeda in Iraq announced that all Christians are legitimate targets and an Islamist website called for attacks on specific Egyptian churches, including St. Mark's. The attack in Alexandria occurred exactly two months after an attack on a Syrian Catholic church in Baghdad, in what extremists called a response to the mistreatment of Muslim converts by Egyptian Copts.[240]

In a 2012 report some 100,000 Copts left Egypt in a recent nine-month period. They were coerced, according to Naguib Gabriel, director of the Egyptian Union of Human Rights Organizations, "by threats and intimidation of hard-line Salafists, and the lack of protection they are getting from the Egyptian's Muslim Brother Regime". [241]

238). Jihadists on the Nile The Return of Old Players Aaron Y. Zelin January 17, 2013 <http://www.washingtoninstitute.org/policy-analysis/view/jihadists-on-the-nile-the-return-of-old-players>

239). Egypt's Coptic Christians fleeing country after Islamist takeover By Richard Spencer, Alexandria 13 Jan 2013

<http://www.telegraph.co.uk/news/worldnews/africaandindianocean/egypt/9798777/Egypt-Coptic-Christians-fleeing-country-after-Islamist-takeover.html>

240). In Egypt, the warning signs of genocide JANUARY 25, 2013, by Tamar Pileggi <http://blogs.timesofisrael.com/in-egypt-the-warning-signs-of-genocide/>

241). A timely reminder as historical Christian communities at risk

David Alton Dec 26, 2012 <http://www.thenational.ae/thenationalconversation/comment/a-timely-reminder-as-historical-christian-communities-at-risk>

The Brotherhood's Policy on Sinai and Israel

"According to the Brotherhood, Sinai is Egyptian and Islamic territory upon which the country has not yet exercised its full sovereignty. It believes that the region must be "freed" from international agreements and treaties, specifically the peace deal with Israel that declares Sinai a demilitarized zone. Development of Sinai was a major issue on the Brotherhood political platform during the elections, on a much greater scale than the development of other needy areas in Egypt. The Brotherhood demands that the government develop Sinai in all aspects, including building civilian infrastructure, creating industry, and strengthening its internal and military security. The organization recognizes the importance of securing Egypt's border with Israel and wants to see more troops deployed to the region. In essence, its desire to develop Sinai is only in the context of its conflict with Israel. The Brotherhood defines Israel as an enemy state and does not officially recognize it. "Palestine" is viewed as holy Islamic land, and Hamas, a Brotherhood-affiliated organization, is seen as the spearhead in the battle to liberate the land and Jerusalem. The Brotherhood acknowledges that this battle must be fought gradually and that it must be patient and careful in trying to achieve this goal."

The Muslim Brotherhood in Egypt and its True Intentions Towards Israel, by Dr. Liad Porat BESA Center Perspectives Paper No. 192, December 10, 2012
www.biu.ac.il/SOC/besa/docs/perspectives192.pdf

The Egyptian Islamic Jihad:

The decline in domestic radical Islamic Egyptian attacks beginning in the 1990s was largely due to the Egyptian's Mubarak government, which killed many EIJ members and detained hundreds. EIJ was founded in the 1970s and conducted a number of attacks

on high-level Egyptian officials, including the 1981 assassination of Egyptian President Anwar Sadat. EIJ also has targeted Israeli and U.S. facilities in Egypt and in the wider region. EIJ is suspected of conducting 1998 attacks on U.S. targets in Nairobi, Kenya, and Dar-es Salaam, Tanzania, though precise culpability has never been established. According to the 2007 State Department Country Reports on Terrorism, EIJ has been active worldwide "for several years under the auspices" of al-Qaeda. EIJ is thought to be involved with most of the terrorist attacks on the United States in the last two decades, and its operatives played a key role in both attacks on the World Trade Center. [242]

Arab Spring began in Tunisia 2010- 2011 period .Suffering from grinding poverty and oppression Mohamed Bouazizi drenched himself in gasoline and set himself on fire outside the governor's office. This was the epicenter a firestorm engulfed the Mid-East and Africa. Originally coined as "The Jasmine Revolution" however in the West, it was known as and became the "The Arab Spring".

The Story of Mohamed Bouazizi, the man who toppled Tunisia January 14, 2011
<http://www.ibtimes.com/articles/101313/20110114/the-story-of-mohamed-bouazizi-the-man-who-toppled-tunisia.htm#ixzz1IFIU4KK0>

Al Qaeda in the Arabian Peninsula & Ansar al-Sharia In January 2009, Al Qaeda-affiliated militants based in Yemen announced that Saudi militants had pledged allegiance to their leader and that the group would now operate under the banner of Al Qaeda in the Arabian Peninsula (AQAP). AQAP operates both within the Arabian Peninsula and internationally. AQAP is the most powerful and active branch of al-Qaeda. It has even become more influential than its main branch in Pakistan, since the unification of the Yemeni and Saudi branches. The name "Ansar al-Sharia" first emerged in Yemen, with the beginning of the Arab Spring.

- **The group's name first emerged when an official AQAP operative, Adel bin Abdullah Bin Thabit al-Abab, alias Sheikh Abu Zubair, declared the establishment of Ansar al-Sharia on Apr. 12, 2011.**

The Emergence of Ansar al-Sharia: The concept first emerged in Yemen, from here spread throughout in the Maghreb region, Tunisia, Algeria, Morocco, Libya, and Mauritania. Ansar al-Sharia then began to spread in several Arab and Muslim countries through groups and movements affiliated with Salafist jihadism and al-Qaeda. Salafist jihadist movement in the parts of the Islamic world restructured and repackaged themselves in order to impregnate the Arab Spring International movements. In addition with new designations and titles it allowed them to fly under the radar of local and western intelligence agencies and cloak themselves under the guise of the Arab Spring.

Ansar al-Sharia Brigade (aka Battalion): In March 2011 In Libya, following the collapse of Qaddafi's regime, several Salafist groups emerged under the name of Ansar al-Sharia. One of the main groups affiliated with al-Qaeda in Libya is known by the name of "Ansar al-Sharia Battalion," This group which is the prime suspect in the attacks on the US consulate in Benghazi, which killed Ambassador Christopher Stevens along with three other diplomats.

Prophet said: 'An army of twelve-thousand will come out of Aden-Abyan (Yemen). They will give victory to Allah and His messenger; they are the best between myself and them'." [Musnad Ahmad, (Vol. 1, pg. 333) No. 3079 and Tabarani in Al-Kabeer (Vol. 11, pg. 56) No. 11029

242) Egyptian Islamic Jihad (aka: Al-Jihad, Egyptian al-Jihad; New Jihad; Jihad Group, Al-Qaeda) Author: Holly Fletcher May 30, 2008 <http://www.cfr.org/egypt/egyptian-islamic-jihad/p16376>

242a). Al Qaeda and Affiliates: Historical Perspective, Global Presence, and Implications for U.S. Policy John Rollins, Coordinator Specialist in Terrorism and National Security January 25, 2011 Congressional Research Service 7-5700 www.crs.gov R41070

242b). Jihadists on the Nile The Return of Old Players Aaron Y. Zelin January 17, 2013 <http://www.washingtoninstitute.org/policy-analysis/view/jihadists-on-the-nile-the-return-of-old-players>

242c). Ansar al Sharia Al Qaeda's Response to Arab Spring By: Mohammad Abu Rumman, Hassan Abu Haniya <http://www.al-monitor.com/pulse/politics/2013/01/history-ansar-al-sharia-arab-spring.html#ixzz2OJ68iFs8>

Democratic uprisings toppled former autocratic regimes and brought in new governments by election, as was the case in several Arab countries such as Egypt, Yemen, and Tunisia. This has led to more freedom and fewer restrictions on democracy as seen in Morocco and Jordan among other countries. These radical Islamist groups took advantage of the newly available freedoms and democracy to pressure the local Islamists involved in the political process and pushed them toward the application of militant Sharia and calling for the adoption of Salafist concepts.

One of the main goals of Ansar al-Sharia is to put immense pressure on Islamists who came to power through democratic means, emphasizing the necessity of "imposing Sharia Laws." Al-Qaeda was able and has been taking control of several areas and imposes Sharia Laws due to the lack of full state control. Through Ansar al-Sharia, Salafist jihadism managed to use the option of civil and peaceful change to its advantage while preserving the pillars of its ideology. It continues to seek the establishment of Islamic governance through "legitimate" armed action (jihad).

Ansar al-Sharia Brigade Pentagon Report: (is the Islamist militia linked to the deadly terror attack against the United States diplomatic compound in Benghazi)

- **"Al Qaeda will probably refrain from using the al Qaeda name and instead may use other names, such as Ansar al-Sharia, or simply Mujahedin, "**
- **"Ansar al-Sharia is being used by al Qaeda in the Lands of the Arabian Peninsula in areas of Yemen and by terrorist groups in Tunisia. "[243]**

"Ansar al-Sharia, led by Sufian Ben Qhumu, a former Guantanamo detainee, has increasingly embodied al-Qaeda's presence in Libya, as indicated by its active social-media propaganda, extremist discourse, and hatred of the West, especially the United States. Al-Qaeda has tried to exploit the "Arab Awakening" in North Africa for its own purposes during the past year. Al-Qaeda Senior Leadership (AQSL), based in Pakistan, is likely seeking to build a clandestine network in Libya as it pursues its strategy of reinforcing its presence in North Africa and the Middle East, taking advantage of the "Arab Awakening" that has disrupted existing counterterrorism capabilities. Although AQSL's previous attempt to co-opt the Libyan Islamic Fighting Group (LIFG) was inconclusive, the Libyan Revolution may have created an environment conducive to jihad and empowered the large and active community of Libyan jihadists, which is known to be well connected to international jihad, "

Al-Qaeda In Libya: A Profile Report Prepared by the Federal Research Division, Library of Congress under an Interagency Agreement with the Combating Terrorism Technical Support Office's Irregular Warfare Support Program August 2012 Washington, D.C. <http://freebeacon.com/wp-content/uploads/2012/10/LOC-AQ-Libya.pdf>

**Abu Mundhir Shanqeeti:
Ansar al-Sharia theorist**

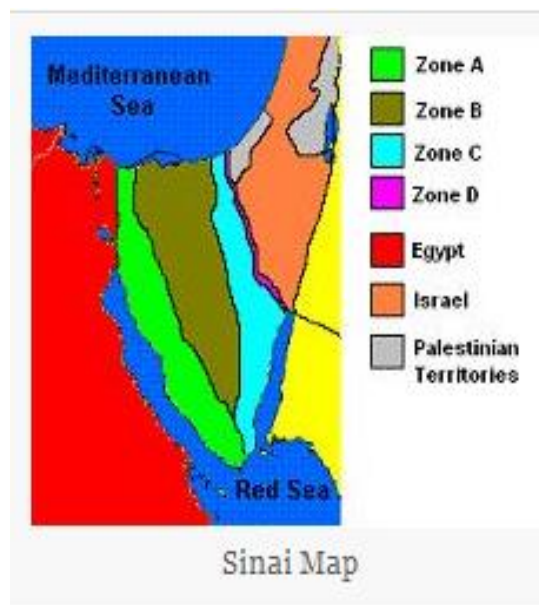
"Abu Mundhir Shanqeeti is one of the most prominent theorists of Ansar al-Sharia. He is a Mauritanian preacher and is active via the website "Minbar of Tawheed and Jihad." On Nov. 29, 2012, Shanqeeti wrote an article titled "We are Ansar al-Sharia," in which he provides a justification for his call to change the name of the Salafist jihadist movement into Ansar al-Sharia. He published this name to become the new banner, which will include the group's adherents across the world,"

**Ansar al Sharia Al
Qaeda's Response to Arab Spring
By: Mohammad Abu Rumman,
Hassan Abu Haniya
<http://www.al-monitor.com/pulse/politics/2013/01/history-ansar-al-sharia-arab-spring.html#ixzz2OJ68iFs8>**

243). Al Qaeda and Affiliates: Historical Perspective, Global Presence, and Implications for U.S. Policy John Rollins, Coordinator Specialist in Terrorism and National Security January 25, 2011 Congressional Research Service 7-5700 www.crs.gov R41070
243a). Jihadists on the Nile The Return of Old Players Aaron Y. Zelin January 17, 2013 <http://www.washingtoninstitute.org/policy-analysis/view/jihadists-on-the-nile-the-return-of-old-players>
243b). Ansar al Sharia Al Qaeda's Response to Arab Spring By: Mohammad Abu Rumman, Hassan Abu Haniya <http://www.al-monitor.com/pulse/politics/2013/01/history-ansar-al-sharia-arab-spring.html#ixzz2OJ68iFs8>

The Sinai Peninsula plays a crucial role in maintaining stability in the region. To the north the Sinai shares a volatile border with Israel and the Gaza Strip, and to the east at a visible distance lay Jordan and Saudi Arabia, countries which are of strategic importance to both Egypt and the rest of the region.

Egypt is one of Israel's most powerful neighbors. Following the 1973 Yom Kippur war, the 1978 Camp David Peace Accords between Israel and Egypt established guidelines for what Egypt could do in the Sinai Peninsula in a bid to keep the peace. Strategically, the peace agreement made the peninsula a buffer between Israel and Egypt. Egypt is permitted only enough forces in Sinai to enforce security. The agreement divided the Sinai Peninsula into four zones of increasing neutrality. Egypt is allowed an entire mechanized or infantry division in Zone A, which abuts the Suez Canal. In Zone B, its armed presence is limited to municipal police and border patrol. 1,600 international peacekeepers are spread out across 32 bases in the east of Zone C, and Israel is allowed a limited presence in Zone D (a narrow strip on the east side of the Egypt-Israel border) has four Israeli infantry battalions, including along the Gaza border. Egypt's new Muslim Brotherhood President Morsi wants to scrap the Camp David accords and the peace treaty with Israel. [244]



"Egyptian Sinai local Bedouin, who now number over 300,000, constitute roughly 70 percent of the total population, the rest being Arab Palestinians (10 percent), immigrants from across the Suez Canal (10 percent), and the descendants of Bosnian, Turkish, and other settlers from the Ottoman period, mainly in al-Arish (10 percent)."

The Washington Institute for Near East Policy • No. 9 • January 2012 Sinai: A New Front By Ehud Yaari <http://www.washingtoninstitute.org/uploads/Documents/pubs/PolicyNote09.pdf>

Throughout history, the Sina Peninsula has been the land bridge between Asia, Africa and the sequential civilizations of the ancient world. Most of the Bedouin tribes of the Sinai are descended from peoples who migrated from the Arabian Peninsula between the 14th and 18th centuries. For decades, the Egyptian authorities and the Bedouins have been at bitter odds over their opposing takes on how to develop and govern the peninsula. With Egypt's economic direr straights, dwindling water and agriculture resources the Sina Peninsula became the easiest to neglect and forget. Less than 10 percent of the Sinai Bedouin has employment. Marginalized from modern Egyptian society Sinai Bedouin most do not even hold national ID cards and are more loyal to their tribal chiefs than the Egyptian state. Many Bedouin began sending their children to schools and seeking jobs in Saudi Arabia, upon returning began promoting radical Salafist in the Sinai. [245]

- ***Parts of the Sinai are beginning to resemble an extension of the Arab Palestinian arena, as various radical militants groups forge close military, political, ideological, and economic ties with the neighboring Iranian backed Hamas in the Gaza Strip.[246]***

Sina Peninsula Sharm el-Sheikh is on a promontory overlooking the Straits of Tiran at the mouth of the Gulf of Aqaba. This is a city situated on the southern tip of the Sinai Peninsula, in South Sinai Governorate, Egypt, on the coastal strip along the Red Sea. Its population is approximately 35,000 (2008). Sharm al-Sheikh is a major tourist destination for scuba divers and sun worshipers because of their consistent sunshine, coral reefs and white sand beaches. This is the only area of Sina Peninsula Egypt has poured hundreds of millions of dollars into and has developed only for tourism, however little benefiting the Sina Peninsula populous.[247]

244). Egypt, Gaza and the Sinai Peninsula November 16, 2012 stratfor.com

244a). MFO Origins <http://mfo.org/info/47>

245). Sinai Peninsula <http://www.britannica.com/EBchecked/topic/545586/Sinai-Peninsula>

246). Egypt's ever-restive Sinai Peninsula Sarah El-Rashidi in Rafah, Sunday 2 Sep 2012

<http://english.ahram.org.eg/NewsContent/1/64/51578/Egypt/Politics-/Egypt-Sinai-Peninsula-Fertile-ground-for-disconte.aspx>

247). Sinai: A New Front The Washington Institute for Near East Policy • No. 9 • January 2012 By Ehud Yaari

Sina Peninsula: The far northern end of the Red Sea is divided into two parts (*gulfs*) by the Sinai Peninsula; in the west the Gulf of Suez, and in the east the Gulf of Aqaba.

The Gulf of Suez, an important shipping route for oil and other products, lies along the edges of the African country of Egypt and the Sinai Peninsula. In the north, the manmade Suez Canal provides access to the Mediterranean Sea. The Gulf of Suez is approximately 195 miles (314 km) in length. The width runs from 12 to 27 miles (19 to 43 km). To the west of the peninsula lies the Suez Canal, a vital waterway for global oil shipments and trade from Asia to Europe and beyond. [248]

The Gulf of Aqaba, is positioned along the southeastern edge of the Sinai Peninsula, and bordered by the countries of Israel, Jordan and Saudi Arabia. The Gulf Aqaba is an critical shipping conduit for both Israel and Jordan. The Gulf of Aqaba measures 24 kilometers (15 mi) at its widest point and stretches some 160 kilometers (99 mi) north from the Straits of Tiran to a point where the border of Israel meets the borders of Egypt and Jordan. The city of Aqaba is the largest on the gulf. At this northern end of the Gulf are three important cities: Taba in Egypt, Eilat in Israel, and Aqaba in Jordan. All three cities serve both as strategically important commercial ports and as popular resort destinations for tourists seeking to enjoy the warm climate of the region. Further south, Haql is the largest Saudi Arabian city on the gulf. On Sinai, Sharm el-Sheikh and Dahab are the major centers. The largest population center on the Gulf of Aqaba is Aqaba, with a population of 108,000 inhabitants (2009), followed by Eilat with a population of 48,000 (2009). [249]



There needs to be a deeper realization of the emerging geo-strategic Islamic militant forces fueled by the Arab Spring fundamentalist frenzy. The deadly threat matrix of these nonaligned militant Islamic extremists' groups is their advocating Islamic solidarity for attacks to destroy their perceived common enemy, Israel, America and the West. The emerging Islamic extremists' groups and their expansion on the Sinai Peninsula with escalating rocket and terrorist attacks into Israel are a harbinger of things to come. The vast international ungoverned coastlines, of the Red sea countries up through the Sinai Peninsula, the Gulf of Aqaba, Gulf of Suez and the Suez Canal could find commercial shipping attacked by anti tank missiles, rockets and even cruise missiles. Advanced missile warfare technology is rapidly falling into the hands of Islamic extremists' groups from rouge states such as Iran, North Korea and etc, and from failed fallen states ungaurded stockpiles.

248). Sinai Peninsula <http://www.britannica.com/EBchecked/topic/545586/Sinai-Peninsula>

249). Egypt's ever-restive Sinai Peninsula Sarah El-Rashidi in Rafah, Sunday 2 Sep 2012 <http://english.ahram.org.eg/NewsContent/1/64/51578/Egypt/Politics-/Egypt's-Sinai-Peninsula-Fertile-ground-for-disconte.aspx>

249a). Sinai: A New Front The Washington Institute for Near East Policy • No. 9 • January 2012 By Ehud Yaari

The 23,500 square miles Sinai desert has long been a sanctuary for militant Islamist groups and smugglers operating along Egypt's porous border with the Israeli security embargo on the Gaza Strip. Police forces are now entirely absent from parts of the Sinai, a loosely organized tribal justice system known as *Urfi* often takes its place. The Sinai is one of the poorest governorates of Egypt where some 80 percent live below the poverty line (40 percent is the mean average of the rest of the country). The Sinai Peninsula is three times the size of Israel and contains two of Egypt's 27 governorates: North Sinai (Janub Sina) and South Sinai (Janub Sina). The South inhabitants are among the poorest in Egypt and are some of the most politically marginalized; accorded a mere four seats each in the Cairo 508-member People's Assembly. Sinai's population is estimated between 500,000 to 600,000 and composed of 30 principal tribes, historically a disenfranchised population. Main Bedouin tribes: Aleygat, Haweitat, Tarabin, Laheiwat, Badara, Muzeina, Jebeliya, and Sawalha. Most of the population inhabits the coastal rim and the northern plains. Almost 400,000 people, most of whom are sedentary, live in the coastal plain of North Sinai province, including 145,000 in or around the provincial capital, El Arish. A further 165,000 maintain a largely nomadic lifestyle in mountainous South Sinai. Divided among some 20 tribes with between 500 and 25,000 men each, the 300,000 Bedouin in the two provinces comprise 70 per cent of the population.

- **Arab Palestinian presence**, about 40,000 strong, in three northern towns near the Gaza border Rafah, Sheikh Zuwayed and El Arish reinforces links to the northeast and the Gaza strip.

Despite the strategic significance of the Sinai Peninsula, it has suffered decades of neglect and economic discrimination by the Egypt's Cairo government. This has built bitter resentment among the Bedouin tribes that account for around 70 percent of the Sinai's 600,000 residents. Bedouin employment estimated at only 10 percent and one out of every four does not even possess a government ID card. Their many grievances including legal obstacles to land ownership, lack of basic public services, job discrimination, and systematic exclusion from military and police academies have reinforced a climate of mutual distrust between Cairo government and the Sina residents. Normal community services that Egyptians can enjoy Bedouins cannot, such as proper healthcare, access to clean water and other socioeconomic rights.

250). Sinai Peninsula
<http://www.britannica.com/EBchecked/topic/545586/Sinai-Peninsula>

251). Egypt's ever-restive Sinai Peninsula Sarah El-Rashidi in Rafah, Sunday 2 Sep 2012 <http://english.ahram.org.eg/NewsContent/1/64/51578/Egypt/Politics-/Egypt-Sinai-Peninsula-Fertile-ground-for-disconte.aspx>

252). Sinai: A New Front The Washington Institute for Near East Policy • No. 9 • January 2012 By Ehud Yaari

Understanding Gaza / Hamas the Gaza Strip, an area of only 146 square miles on Israel's western border with a population of 1.5 million

The Israel-Egypt Armistice Agreement of 24 February 1949 established the separation line between Egyptian and Israeli forces. This became the present boundary between the Gaza Strip and Israel. Both sides declared that the boundary was not to be an international border. The southern border with Egypt continued to be the international border which had been drawn in 1906 between the Ottoman Empire and the British Empire. Egypt continued to occupy the Gaza Strip until 1967 Six-Day War, (Egypt never annexed the Gaza Strip, but instead treated it as a controlled territory and administered it through a military governor). Israel took control the Gaza Strip in June 1967, during the period of Israeli control; Israel created a settlement bloc, Gush Katif, in the southwest corner of the Strip near Rafah and the Egyptian border. In total Israel created 21 settlements in the Gaza Strip, comprising 20% of the total territory. In accordance with the Oslo Accords, the Palestinian Authority took over the administrative authority of the Gaza Strip (other than the settlement blocs and military areas) in 1994. After the complete Israeli withdrawal of Israeli settlers (actually some 10,000 Israelis were forcibly removed by the IDF) and military from the Gaza Strip on 12 September 2005, the Palestinian Authority had complete administrative authority in the Gaza Strip. The Hamas are an Iranian Arab Palestinian group seeking to create a single, Islamic state. Hamas Take-Over Of The Strip: In June 2007, the Arab Palestinian Civil War between Hamas and Fatah (Palestine Liberation Movement) . Hamas routed Fatah after winning the democratic election, and by the 14th of June, controlled the Gaza Strip. Palestinian President Mahmoud Abbas responded by declaring a state of emergency, dissolving the unity government and forming a new government without Hamas participation. Abbas's government received widespread international support. In late June 2008 Egypt, Jordan, and Saudi Arabia said that the West Bank-based Cabinet formed by Abbas was the sole legitimate Palestinian government, and Egypt moved its embassy from Gaza to the West Bank. At that time the Hamas government in the Gaza Strip faces international, diplomatic, and economic isolation.

- 1). A Brief History of the Arab-Israeli Conflict By Jeremy Pressman (May 25, 2005)

<http://anacreon.clas.uconn.edu/~pressman/history.pdf>

- 2). Israel Begins Forced Removal of Jewish Settlers From Gaza as Deadline Expires Aug. 17, 2005

http://www.democracynow.org/2005/8/17/israel_begins_forced_removal_of_jewish

- 3) . Iran-Hamas Relations: The Growing Threat From A Radical Religious Coalition The Henry Jackson Society p.2 <http://www.henryjacksonsociety.org>

Israel Withdrawal From the Gaza Strip, Deadly Ramifications: The Sinai Peninsula has been evolving into a security hotspot in the region; its expanding terrorist infrastructure makes it another front for potential Israeli and the International community confrontations. Events began to rapidly unfold when Israel began its withdrawal from the Gaza Strip in 2004, completed 2005 where Israel turned it over to the Arab Palestinian Leadership. The Gaza erupted in a clash between Arab Palestinian factions Fatah and Hamas with Iranian backed Hamas taking over Gaza. Sinai radical Islamists began orchestrating a number of deadly attacks against tourist resorts in 2004, 2005 and 2006. [253]

- ***Even before Mubarak's downfall, police abandoned their stations in North Sinai's main border towns of Rafah and Sheikh Zuwayed.***

In 2005, Sinai's Sharm el-Sheikh resort was subjected to a series of bombing attacks; these were perpetrated by an extremist Islamist organization Abdullah Azzam Brigades of Al Qaeda and aimed at Egypt's tourist industry. Eighty-eight people were killed and over 200 were wounded, making it the deadliest terrorist action in the country's history (exceeding the Luxor massacre of 1997). Another multiple-explosion attack rocked the coastal vacation resort Dahab in April of 2006. Some two dozen people were killed when bombs exploded at several restaurants, cafes and markets. ² Israel's withdrawal from Gaza Strip in 2005 carried an understanding that Cairo would assume unofficial responsibility for Gaza affairs instead Egypt allowed Hamas to take over and export its influence into the Sinai Peninsula .

- **Since 2006 there has only been an escalation of terrorist and rocket attacks into southern Israel.**

"Terrorism in the Sinai : Since the revolution, security in the Sinai Peninsula has eroded due to a lack of police presence and the military's overall inattention to the region, thereby emboldening Sinai Bedouin and Palestinian militants from the Gaza Strip to increase border smuggling and terrorist operations in the area,"

Egypt in Transition Jeremy M. Sharp Specialist in Middle Eastern Affairs August 23, 2011
Congressional Research Service 7-5700 www.crs.gov RL33003

- **Sinai Peninsula : Has become an explosion of international collection of aligned , loosely affiliated & nonaligned militant Islamic extremists' groups to criminal profit driven syndicates**

There has been a rapid growth of International Islamic extremists within the Sinai Peninsula one official report estimates that there are at least several hundred foreign jihadists groups, some of whom are from militants from Algeria, Libya, Yemen and Somalia, are now operating in the Sinai. Since the beginning of the so-called Arab Spring, a number of Salafi jihadist groups linked to al Qaeda have sprouted up in the throughout Sinai. The terror groups have conducted attacks against the Egyptian military and policemen, Israel, international peacekeepers in the Sinai, and a pipeline transporting natural gas to Israel and Jordan. Israeli intelligence believes that most of the attacks originating in the Sinai have been carried out by Ansar Jerusalem, also known as Ansar Bayt al-Maqdis. Today, all over the peninsula, one finds new Salafi encampments composed of Bedouin who have left their tribes embracing radical Islamist beliefs. One such encampment has existed for more than five years, at Jabal al-Halal in central Sinai. [254] *The Arab Gas Pipeline is a natural gas pipeline in the Middle East. It exports Egyptian natural gas to Jordan, Syria and Lebanon, with a branch underwater pipeline to Israel. It has a total length of 1,200 kilometers (750 mi) at a cost of US\$1.2 billion. As of March 2012, the gas supply to Israel stopped due to 13 separate attacks on GASCO's feeder pipeline to El-Arish that have taken place since the beginning of the 2011 Egyptian revolution. [255]*

253). Security Vacuum in the Sinai Sept 2012 <http://nationalinterest.org/commentary/the-security-vacuum-the-sinai-7317>

254). Death Toll Rises to at Least 90 in Bombings at Egyptian Resort By Greg Myre And Mona El-Naggar

Published: July 24, 2005 http://www.nytimes.com/2005/07/24/international/middleeast/24egypt.html?pagewanted=all&_r=0

255). Rising concerns over foreign militants in the Sinai as more explosives seized By David Barnett January 19, 2013

Read more: http://www.longwarjournal.org/threat-matrix/archives/2013/01/concern_that_militants_from_al.php#ixzz2OtMBMuBa

225a). Insight: In Sinai, militant Islam flourishes – quietly By Tamim Elyan North Sinai, Egypt | Sun Apr 1, 2012

<http://www.reuters.com/article/2012/04/01/us-egypt-sinai-idUSBRE83006120120401>

The Wild Sinai Frontier: Apart from terrorism, the Sinai Peninsula region has become a route and networks for the smuggling of fire arms, military hardware of all kinds, drugs, white slaves, and refugees seeking employment in Israel.

These networks some clandestine, some with significant public profile. White slavery is another criminal pastime, in which teenage girls and young women, primarily from Eastern Europe, are promised work in Israel but are instead forced into prostitution. Tens of thousands are estimated to have been smuggled across the border over the past 20 years. Organized criminal elements to opportunists' torture, kidnap, and extort the migrants for tens of thousands of dollars more, in ransom payments. There are criminal enterprises engaged in organ trafficking, forcibly removing the organs of victims who refuse to give in to their demands.

Rival Bedouin tribes have fought each other for control of the lucrative industry. Connections also exist between Bedouin Rashaida of Eritrea and Sudan, who predominantly engage in human trafficking, and the Tuareg tribes of Libya, who transfer weaponry throughout the Maghreb.[256] The most dominant tribes involved in smuggling on the Sinai Peninsula are the Sawarka, Tihaya, and Tarabin tribes, which have traditional boundaries bordering Israel and/or the Gaza Strip. Bedouin tribes do not have a sense of national loyalty—only to tribe—nor do they ascribe to an ideology that prevents them from dealing with particular groups, even if they are deemed dangerous or radical, as long as they can afford the price. [257]

"Deteriorating security conditions have made the Sinai a magnet for drug and arms dealers. While Egypt's formal economy is in a tailspin, a multi-million dollar black market in trafficked goods ranging from stolen organs to hashish to surface-to-air missiles is quietly thriving in the hundreds of tunnels linking Sinai to Gaza," [258]

Heading west, goods and materials are transferred through the Maghreb and Sahel Regions, taking advantage of porous borders and lax security. From the south, smugglers use a system that goes from Kassala, Sudan to the Egyptian border, then north into Sinai. Toward the east, smugglers use an intricate system of tunnels to deliver materials through Gaza and beyond. Along a 14.5 kilometer (8.6 miles) stretch of Sinai's eastern shoulder, is the border with the Gaza Strip. It is through hundreds of tunnels under this border that Hamas smuggles the rockets to its arsenal. Other Arab Palestinian radicals in Gaza like Islamic Jihad have done so as well. The tunnel industry is considered one of the biggest businesses in the Gaza Strip. According to the Gaza-based think tank Pal-Think for Strategic Studies, it creates around 25,000 jobs in Gaza, which suffers from 45% unemployment. The industry allows a large amount of goods, from food to construction supplies, to flow into the strip. The tunnel industry is considered one of the biggest businesses in the Gaza Strip. [259] At Sinai's eastern border, commonly used routes are the Heth and Philadelphi routes, which go between Gaza from Sinai. Tunnel systems that are known by Egyptian and Israeli law enforcement have been bombed or flooded. However, to keep their trading systems open, Sinai tribesmen will pay up to \$100,000 for the creation of new tunnels. [260]

July 31, 2012: The State Department's annual report on terrorism worldwide was released, stating that the situation in the vast and sparsely populated *Sinai Peninsula* has approached a crisis point.

Chapter2. Country Reports: Middle East and North Africa Overview Office Of The Coordinator For Counterterrorism Report July 31, 2012 www.state.gov/

256). The Israel Project Sinai – Smuggling

http://www.theisraelproject.org/site/c.ewJXKcOUJIaG/b.8023407/k.A017/Sinai_Smuggling.htm#.UVZqwqKgJ8E

257). Understanding Sinai: Smuggling and Radicalism in the Sinai Peninsula March 10, 2013 www.msrisk.com/category/sinai-peninsula/

257a). Imprisoned, Tortured, Killed: Human Trafficking Thrives on Sinai Peninsula By Nicola Abé in North Sinai

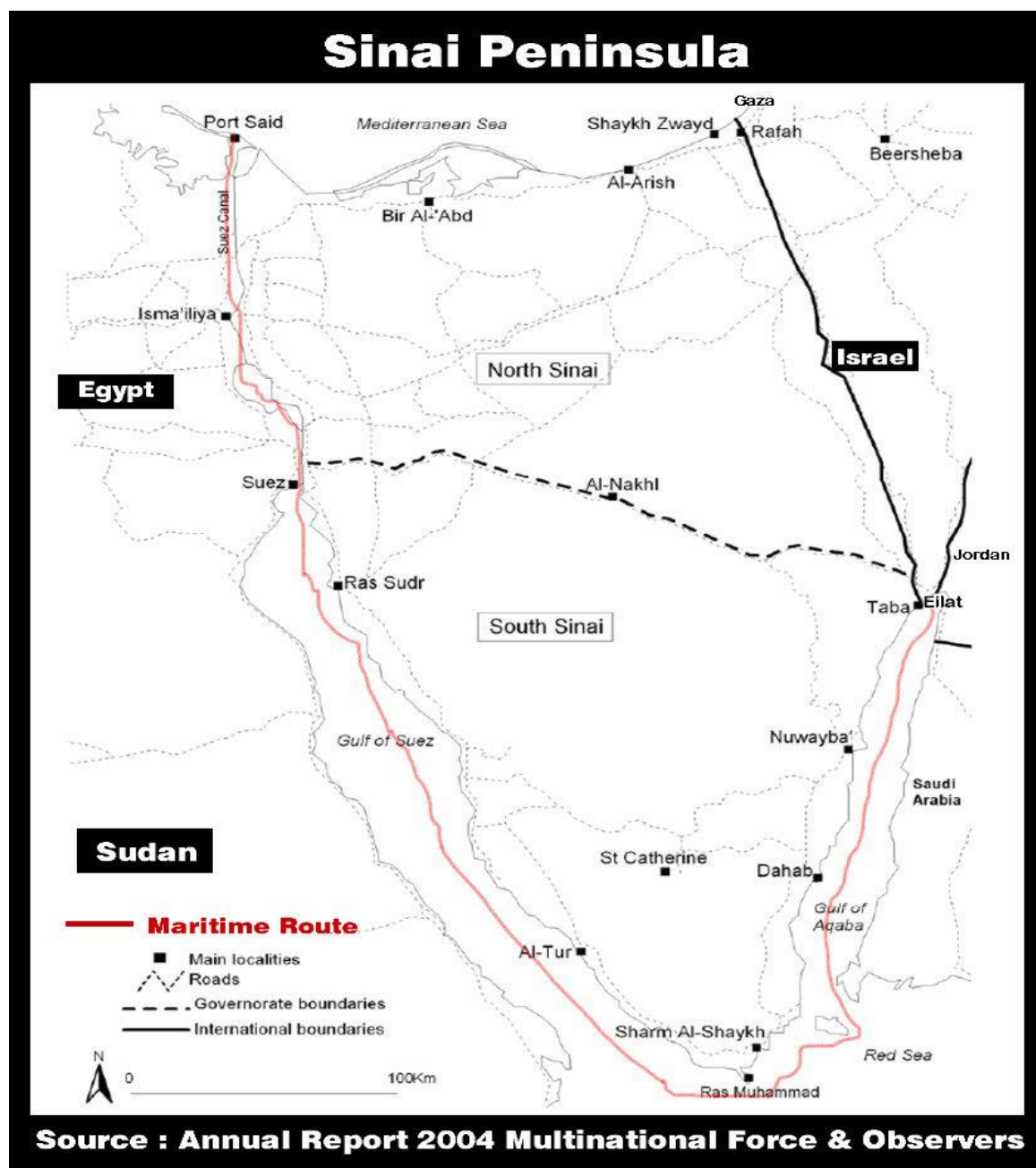
<http://www.spiegel.de/international/world/human-trafficking-thrives-on-sinai-peninsula-a-891585.html>

258) Islamic justice in the Sinai Posted By Mara Revkin January 11, 2013

http://mideast.foreignpolicy.com/posts/2013/01/11/islamic_justice_in_the_sinai

259). IBID 257

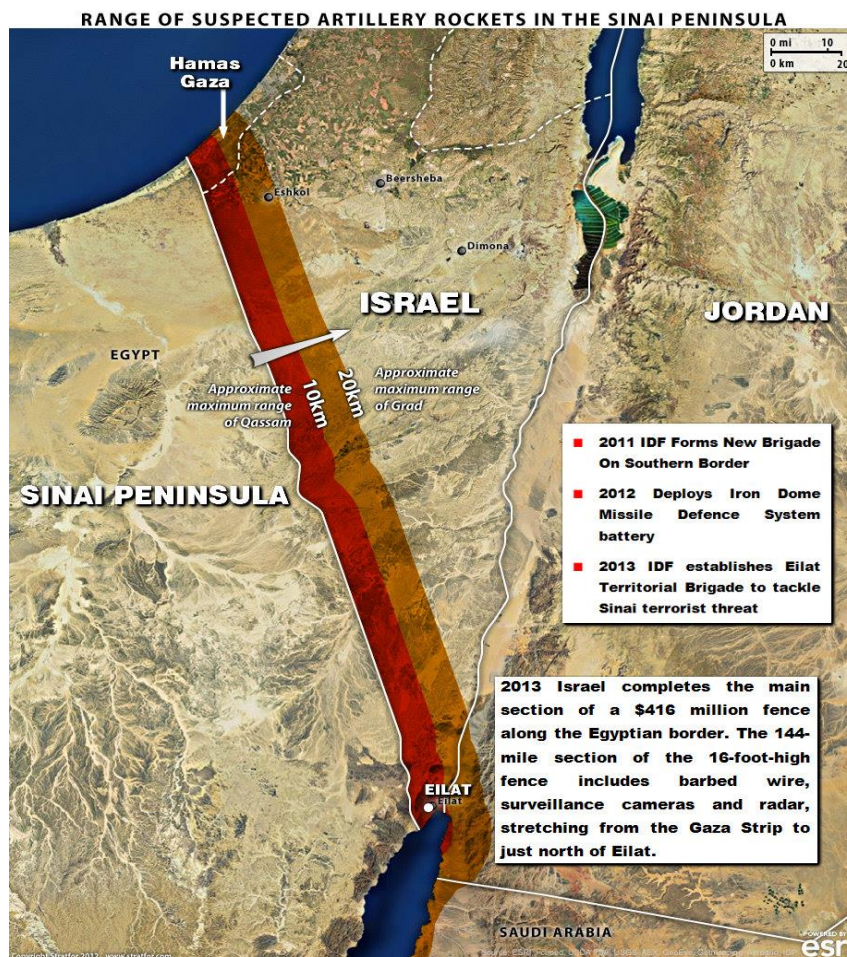
260). Deteriorating Security in Sinai Destroys Trade, Livelihoods <http://www.al-monitor.com/pulse/originals/2012/al-monitor/sinai-trade.html#ixzz2Ozp1bc3Y>



There needs to be a deeper realization of the emerging geo-strategic Islamic militant forces fueled by the Arab Spring fundamentalist frenzy. The deadly threat matrix of these nonaligned militant Islamic extremists' groups is their advocating Islamic solidarity for attacks to destroy their perceived common enemy, Israel, America and the West. The emerging Islamic extremists' groups and their expansion on the Sinai Peninsula with escalating rocket and terrorist attacks into Israel are a harbinger of things to come. The vast international ungoverned coastlines, of the Red sea countries up through the Sinai Peninsula, the Gulf of Aqaba, Gulf of Suez and the Suez Canal could find commercial shipping attacked by anti tank missiles, rockets and even cruise missiles. Advanced missile warfare technology is rapidly falling into the hands of Islamic extremists' groups from rouge states such as Iran, North Korea and etc, and from failed fallen states ungaurded stockpiles.

"Israel's three major commercial ports, Haifa, Ashdod and Eilat handled 37.7 million tons of cargo and 260,000 passengers. According to the Israel Ports Development & Assets Company Ltd, Israel's seaports therefore handle 98% of the country's import and export cargoes"

The Threat of Maritime Terrorism to Israel September 19, 2007 by Akiva maritimeterrorism.com/2007/09/19/the-threat-of-maritime-terrorism-to-israel/



2013 Israel completes the main section of a \$416 million fence along the Egyptian border. The 144-mile section of the 16-foot-high fence includes barbed wire, surveillance cameras and radar, stretching from the Gaza Strip to just north of Eilat. [261]

- 2011 IDF Forms New Brigade On Southern Border [262]
- 2012 Deploys Iron Dome Missile Defence System Battery [263]
- 2013 IDF establishes Eilat Territorial Brigade to tackle Sinai terrorist threat [264]

261). IDF forms new brigade on southern border 2011 By Yaakov Katz 11/27/2011 <http://www.jpost.com/Defense/IDF-forms-new-brigade-on-southern-border>

262). Israel Fortifies Its Southern Desert Borders 2013 Jan. 9, 2013 By Barbara Opall-Rome <http://www.defensenews.com/article/20130109/DEFREG04/301090014/Israel-Fortifies-Its-Southern-Desert-Borders>

263). IDF deploys Iron Dome system in Eilat after rocket attack By Gili Cohen | Aug.20, 2012 <http://www.haaretz.com/news/>

264). New IDF brigade to protect Eilat 2013 <http://www.ynetnews.com/articles/0,7340,L-4325179,00.html>

- 2013 Fifth Iron Dome Deployed Near Eilat 04.03.13 / Israel News A fifth Iron Dome battery was deployed in the Eilat area. The IDF said the deployment is part of the general operational assimilation of the defensive system Over the last few days two other Iron Dome batteries were deployed in northern Israel. (Yoav Zitun) <http://www.ynetnews.com/articles/0,7340,L-4363764,00.html>

Gaza - Sinai Expressway Tunnels: Fajr rockets to cars, trucks, goats and cigarettes

It is estimated there is a labyrinth of over 1,200 tunnels. On the Sinai side the true number of people involved in this underground express way is unknown. International black-markets of goods and military hardware traverses into the Sinai Peninsula to the underground expressway. An average 700-meter-long (756 yd) tunnel costs between \$150,000 and \$250,000 to construct. Most tunnel owners spend roughly \$50,000 upfront to purchase equipment, wood and cement needed to line the tunnel. Laborers and experts in tunnel construction usually get paid with profits from the first few shipments which are delivered through the tunnel. The most elaborate tunnels are well-lit and large enough to stand in while others are big enough to drive a car through. In less ambitious tunnels, smugglers crouch alongside the pulley systems that haul heavy shipments across a sandy floor. [265]

- ***The Sinai – Gaza tunnel industry provides as much as 75 percent of the products sold in the Gaza Strip markets, according to Sameer Abumdallala, head of the economics department at Al Azhar University in Gaza.***
- ***The Iranian backed Hamas consolidated its grip on Gaza through 2004 -2006. From there it moved on to subjugate the Sinai Peninsula. Hamas clash with Fatah over control of Gaza did bring about fighting with various other radical Islamic groups in Gaza and in the Sinai who are supporters of the Arab Palestinian Fatah. Hamas uses these clashes to promote itself as a moderate on the Western media stage claiming it is in a struggle with radical Islam elements. Other times in clashes with various crime syndicates for domination of the black-market trade & revenues are used as similar propaganda ploys.***

The flow of various goods into Gaza has become such a prominent industry these items are even taxed by Hamas. Hamas realized the underground passage ways economic trade's potential and by 2009 began to systematically regulate and tax all items coming through the tunnel industry. Hamas issued tunnel permits, some costing as much as \$2,680. Tunnel permits are required to be paid to the Hamas government per tunnel permit per year. Hamas also created a tunnel committee which distributes a list of prohibited items and goods. Without tunnel committee prior approval these prohibited items and goods cannot be brought into Gaza strip. Many of these prohibited items are luxury goods that Hamas does not see in the Gaza Strip, Hamas wants to keep up the appearance of a poverty stricken Gaza. Hamas has armed security enforcement stationed at every entry point to the tunnel zone. There are black-markets hidden within the black markets, as people struggle to avoid Hamas taxes and permits. Underground passageways have been built that stretch for more than a mile to skirt the watchful eyes of Hamas. The openings are tucked between houses to hide the smugglers as they haul up cigarettes and other contraband. [266]

Smuggling of more sophisticated weaponry was facilitated in part by upheaval in North Africa. The tunnel industry and their main transfer route to the Gaza Strip is via north Sudan and at one time Syria until the civil war broke out there. Tehran uses civilian cargo and civilian flights in order to deliver such shipments even without the knowledge of passengers taking seats on such flights. During the 1980s, North Korea emerged as a significant arms exporter of inexpensive, technically unsophisticated, but reliable weapons. Clients are Third World countries that lack the resources and time to develop these systems. The Middle East has been the major market for North Korean arms with Iran who ships them through its arms black - market, to Syria, Gaza and formerly Libya and Saddam's Iraq. Sales to Tehran peaked in the early 1980s at the height of the Iran-Iraq war. These sales probably constitute about 90 percent of North Korea's arms exports, making this relationship most valuable. Other Middle East clients probably include Egypt and Syria. Through Middle Eastern arms sales, North Korea gains hard currency, alternative oil sources, and access to restricted technology. Precise figures on North Korea's arms trade, economy, and foreign trade balance are not available. Rough estimates indicate North Korea earned over \$4 billion from 1981 through 1989. Arms sales during the peak year 1982 represented nearly 37 percent of North Korea's total exports. The weapons North Korea exports include large quantities of munitions, small arms, artillery, multiple rocket launchers, tanks, armored personnel carriers, air defense artillery, SCUD-B short-range ballistic missiles, and some naval craft. North Korea also has served as a conduit for selected arms shipments from China. [267]

265). Global Economics Twilight of Gaza's Smuggling Tunnel Millionaires By Sarah A. Topol on January 31, 2013

<http://www.businessweek.com/articles/2013-01-31/twilight-of-gazas-smuggling-tunnel-millionaires>

266). The New Silk Route;' Weapons to Gaza and Beyond by Paul Alster *Special to IPT News* February 7, 2013

<http://www.investigativeproject.org/3904/the-new-silk-route-weapons-to-gaza-and-beyond>

267). Islamic justice in the Sinai By Mara Revkin January 11,

2013 http://mideast.foreignpolicy.com/posts/2013/01/11/islamic_justice_in_the_sinai

267a). North Korea: Back on the Terrorism List? Mark E. Manyin Specialist in Asian Affairs June 29, 2010

<http://www.fas.org/sqp/crs/row/RL30613.pdf>

267b). North Korea's Illegal Weapons Pipeline Flows On November 29, 2012

<http://online.wsj.com/article/SB10001424127887323830404578144981537771060.html>

- ***Long before Mubarak's ouster Hamas was already in the process of transferring heavy long-range missiles to secret storage places in the Sina Peninsula, including Fajr and Grad rockets to Hamas produced extended range Qassams.***
- ***In the wake of Israel's 2008-09 Operation Castlead, Hamas leaders sought out the safe refuges in Sinai, and the Qassam Brigades reportedly relocated some of their military assets and production there.***
- ***The Egyptian Sinai is quickly becoming the new missile warfare area, where rockets are launched into Israel.***

The Sinai Strip and its deserts and mountainous terrain developed into safe havens for various military infrastructures and production sites for Hamas. These hidden sites are safe from Israeli attack or air strikes. Sinai is safe from punitive Israeli strikes because any pre-emptive military strikes inside the peninsula would jeopardize the peace treaty with Egypt. Today, a significant number of Hamas military operatives are permanently stationed in the Sinai, serving as recruiters, couriers, and propagators of the Hamas platform. A solid network of the group's contact men, safe houses, and armories covers much of the peninsula. Reeling from the 2012 war with Israel Hamas, Palestinian Islamic Jihad, and other factions have been quietly moving their most critical warfare infrastructure to the peninsula. From Gaza Strip to the Sinai Peninsula their explosives workshops which produce homemade missiles, rockets, mortars, improvised explosive devices, and so forth from. Dual-purpose materials which can be used for the production of explosives to rockets are regularly transferred to the peninsula.

The Sinai allows significant part of Hamas military industry to be beyond Israel's reach.

As noted the Sinai has emerged as one of the major routes for smuggling large consignments of rockets into Gaza which Hamas has used to target Israeli cities. In fact various radical militants in the Sinai are joining with Hamas in the war against Israel and they are establishing peninsula launch sites. The unasked question is how soon with Israel start seeing more of the advanced rockets and cruise missiles of Tehran striking out of the peninsula into its heartland? For now Israel has so far decided to standby to its longstanding policy and has refrained from preemptive measures on Egyptian soil of the Sinai. Given the uncertain situation along its borders with Syria and Jordan and the conflict with Hamas in Gaza, Israel cannot risk jeopardizing its 33-year-old peace treaty with Egypt in Sinai by initiating military courses of action.

"Hamas has established a clandestine operational office in Cairo, which the Egyptian authorities choose to ignore. This office is linked to both the Izz al-Din al-Qassam Brigades command in Gaza and the Hamas "Military Council" of Damascus recently moved because of the Syrian civil war," (Hamas Military Council is now believed to be in Doha Qatar)

Sinai: A New Front, January 2012 POLICY Notes The Washington Institute for Near East Policy • No. 9 • January 2012

The Hamas an off shoot of the Egyptian Muslim Brotherhood now has a comrade in arms in Cairo. Egyptian Muslim Brotherhood President Morsi has always strongly supported the Arab Palestine cause and has declared full support for the Arab Palestinian struggle against Israel. In an integral part of his speech in UN General Assembly in September 2012 wherein he said *"From a premise of defending truth, freedom, and dignity and from my duty to support our Palestinian brothers and sisters... call for a peace that would establish an independent Palestinian state – sovereign Palestinian state*

" Full Text of the speech of President Morsi at the United Nations, available at <http://www.whatthefolly.com/2012/09/27/transcript-egyptian-president-mohammed-morsis-speech-at-the-u-n-general-assembly/>, last accessed on 29 November 2012.

268). Rising concerns over foreign militants in the Sinai as more explosives seized By David Barnett January 19, 2013 10:28 PM http://www.longwarjournal.org/threat-matrix/archives/2013/01/concern_that_militants_from_al.php#ixzz2OsMjxICj
268a). Insight: In Sinai, militant Islam flourishes – quietly By Tamim Elyan NORTH SINAI, Egypt | Sun Apr 1, 2012
<http://www.reuters.com/article/2012/04/01/us-egypt-sinai-idUSBRE83006120120401>

Iranian naval forces are the corner stone in maintaining and expanding Tehran's sea to land weapons smuggling routes in order to support radical militants in the region. Tehran has two naval forces: the Islamic Republic of Iran Navy, or IRIN, and the Islamic Revolutionary Guard Corps Navy, or IRGCN. The IRIN is the naval branch of Iran's Artesh, the traditional military force that existed prior to the 1979 revolution. In general the IRIN Navy operates the larger assets and operates in a 'conventional navy' model, whereas the IRGCN operates smaller craft in an 'Asymmetrical' doctrine and is mainly confined to the Persian Gulf area. One of its more critical maritime route traverses the Strait of Hormuz to the Indian Ocean to Yemen's Gulf of Aden, and eastern Africa. Specifically this is IRIN's strategic triangle which runs through Yemen's Gulf of Aden, the Strait of Malacca and the Bab el Mandeb strait into the Red Sea and the Gulf of Aqaba. Bab el Mandeb is of immense importance to Iran because it is a natural choke point between the Red Sea and the Indian Ocean. The Tehran's two navies have overlapping functions and areas of responsibility, but they are distinct in terms of how they are trained and equipped- and more importantly also in how they fight. Tehran also uses its naval presence in the region as a type of soft diplomacy to maintain good relations with Eritrea, Sudan and Djibouti. Iranian tankers and other vessels, including military vessels, frequently dock at the Eritrean ports of Massawa and Assab and Port Sudan. Port Sudan's close proximity to Gaza through the Sinai Peninsula and Israel make it a perfect location for smuggling weapons northward for its military operations against Israel. This is Hama's military supply chain and also for the expanding radical Islamic forces in Sinai. This has made Sudan and the Red Sea area of a secondary battleground between Iran and Israel. For example in January 2009, during Hamas -Israel war Israel intelligence uncovered that the IRI was planning to deliver 120 tons of arms and explosives to Gaza, including anti-tank guided missiles and Iranian-made Fajr-3 rockets with a 40-kilometer (25-mile) range and 45-kilogram (99-pound) warhead. Tehran's military supplies were delivered to Port Sudan, and left in a large convoy of 23 trucks traveling across Egypt's southern border into Sinai. The Israeli air force intercepted this truck convoy and bombed it. In 2011, Khartoum blamed Israel for another strike on Port Sudan that killed two people. Leaked cables also indicate that the West warned Khartoum not to allow Tehran to arm Hamas militants during the 2008-2009 Gaza War. March 15, 2011 Iranian sent freighter Victoria was seized by the IDF. The ship was carrying Iranian arms bound for the Gaza Strip by way of Egypt, whose arrival would upgrade military capabilities of the terrorist organizations. Among the weapons on board the Victoria were C704 anti-ship cruise missiles, which could be used to attack not only military and civilian vessels but also strategic targets in the southern Israeli cities of Ashdod and Ashqelon.

269). Eastern Africa: A Battleground for Israel and Iran | Stratfor
<http://www.stratfor.com/analysis/eastern-africa-battleground-israel-and-iran>

269a) Iran's Naval Forces: From Guerilla Warfare to a Modern Naval Strategy 2009 Published By The Office Of Naval Intelligence Senior Intelligence Officer - Iran <https://www.fas.org/irp/agency/oni/iran-navy.pdf>

269b) The Washington Institute for Near East Policy • No. 9 • January 2012 Sinai: A New Front By Ehud Yaari

Palestinian Authority, Hamas and Fatah

The Palestinian Authority has two leading political parties, Hamas and Fatah. Both Hamas and Fatah are Arab Sunni however Hamas has aligned itself with Iran (Shiite Islam) and embraced Khomeini's tenants. Both have been at odds with one another culminating in a civil war over the Gaza Strip in 2006 which Hamas trumped. They are currently trying to share power even though their ideologies are decidedly different. This split in power has resulted in dual leadership/authority within the Arab Palestinians. Mahmoud Abbas, also known as Abu Mazen, has led the Palestinian Authority since he was elected as its president in January 2005. His term in office has been dogged by the deep schism between his own Fatah movement in the West Bank and the militant Hamas movement, which controls the Gaza Strip. He had been chairman of the umbrella body which represents Palestinian political factions (although not Hamas) and conducts negotiations with Israel since the death of its previous leader, Yasser Arafat, in 2004. The majority of the world's Muslim population follows the Sunni branch of Islam, and approximately 10-15% of all Muslims follow the Shiite (Shi'ite, Shi'a, Shia) branch. Fatah was founded in 1954 and eventually led by Egyptian Yasser Arafat. With the signing of the Oslo Accords between Yasser Arafat in 1993 and Israeli Prime Minister Yizhak Rabin, Fatah became recognized worldwide as the legitimate representative of Palestinian aspirations. Fatah and its leader Yasser Arafat, while not representing any fundamentalist Islamic ideology, allowed the blossoming of fundamentalist Islamic movements that wove fanatic religion and the destruction of Israel together to become terror organizations bent of destroying Israel and creating an Islamic republic in its place. Many these radical elements are known as Salafists, (Wahhabism /Sunni Islam). The Arab Palestinian group Hamas, owes its origins in the Muslim Brotherhood of Egypt, was created in 1987 by its spiritual leader Sheik Ahmed Yassin, a visual player in Arab Palestinian politics. Khaled Meshal has led Hamas since 2004. Khaled Meshal's Hamas was originally based out of Syria until the civil war broke out, currently resides in Doha, Qatar. Hamas became infamous embracing Khomeinism use of suicide bombings and introduced into Israeli-Arab Palestinian crisis. Later this doctrine of Islamic suicidal bombing that spread throughout the Arab Palestinian populous. Hamas vs. Fatah: The Struggle For Palestine by Jonathan Schanzer and Daniel Pipes (Nov 11, 2008) Palgrave Macmillan

"Malign Iranian influence: Despite significant economic sanctions and increased diplomatic isolation within the global community, Iran continues to export instability and violence across the region and beyond. There are five main threats Iran continues to develop: the potential nuclear threat; counter maritime threat; theater ballistic missile threat; the Iranian Threat Network to include the Qods Force and its regional surrogates and proxies; and cyber-attack capabilities, "

Statement of General James N. Mattis, U.S. Marine Corps Commander U.S. Central Command Before The Senate Armed Services Committee 5 Mar 2013 <http://www.armed-services.senate.gov/statemnt/2013/03%20March/Mattis%2003-05-13.pdf>



IRGC QODS
General
Qassem Suleimani

Tehran's Islamic Revolutionary Guards' Qods Force (IRGC-QF) is an elite special operations vanguard that is tasked to spearhead the export of Khomeini's Islamic Revolution beyond the borders of Iran. The desire to export the Islamic Revolution to other Muslim societies (and the world) is an integral part of the militant religious dogma of the Ayatollah Khomeini, who initiated the Islamic Revolution in Iran in 1979. Tehran's terrorist and subversive actions are not limited to the Middle East, but International. Three prominent, high-ranking Qods Force officers, conspicuous in the support provided to the Arab Palestinian terrorist organizations in the Gaza Strip.

- 1). Qassem Suleiman, Commander of the Qods Force, responsible for integrating support for the Palestinian terrorist organization organizations at high levels in Iran.**
- 2). Ismail Qaani, deputy commander of the Qods Force, extensively involved in providing military support for the Arab Palestinian terrorist organizations.**
- 3). General Hamed Abdillahi of Unit 400.**

The IRGC-QF responsibility for transporting military support to various radical Islamic groups the Arab Palestinian terrorist organizations in the Gaza Strip, especially Hamas and the Palestinian Islamic Jihad (PIJ). That includes smuggling weapons to the Gaza Strip, training terrorist operatives, transmitting technological expertise and providing financial support. Unit 400 is a covert unit within the Qods Force. It carries out "special operations" abroad under the direct command of Supreme Leader Ali Khamenei. The unit is involved in planning and carrying out terrorist attacks abroad and helps opposition groups and local militias in various countries. It is headed by Major General Hamed Abdillahi. [270] The third highest-ranking commander of the Qods Force, Operations and Training Deputy Mohsen Chizari, was also active in Iraq. Chizari was detained by U.S. forces in Baghdad in 2006 along with another unnamed Qods Force officer and detailed information on the import of sophisticated weaponry from Iran to Iraq. The Iraqi government quickly released Chizari and his co-conspirator, citing diplomatic immunity. [271]

- **By late 2008 the IRGC-QF had trained approximately 950 Hamas operatives in building rockets and bombs, tactical warfare, weapons operation, sniper tactics, explosives detonation, and other terrorist and guerilla warfare techniques, similar to those commonly used by Hezbollah. The training has taken place in Iran and Syria. [272]**

Manufacturing powerful IEDs: The terrorist organizations in the Gaza Strip possess explosively formed penetrators (EFPs) which can penetrate more than 200mm (8") of steel. They were manufactured by Hamas operatives using technological knowhow supplied to them by Iran.

Hamas also improved its mortar shell capabilities. Iran helped Hamas stock up on standard 120mm mortar shells, which were smuggled into the Gaza Strip. They are more accurate and more lethal than Hamas's improvised mortar shells. [273]

- **Iran has explicitly stated that the war in the Gaza Strip is one aspect of a wider campaign for the future of the Middle East being waged between the "resistance" camp and the forces of "arrogance" (the United States, the "Zionist regime," the West and waning liberal democracy.)[274]**

270). January 20, 2013 Iranian support for the Palestinian terrorist organizations capabilities especially their rocket-launching networks http://www.terrorism-info.org.il/Data/articles/Art_20459/E_267_12_1055464410.pdf

271). Irans Naval Upgrade Could Spell War for Israel in Africa December 13, 2012, <http://blogs.timesofisrael.com/irans-naval-upgrade-could-spell-war-for-israel-in-africa/>

272). Testimony: Iran's Global Force Projection Network: By Will Fulton March 20, 2013 <http://www.irantracker.org/>

273) Iran: Training and Arming Terrorist Groups that Target Israel <http://www.theisraelproject.org>

274). Intelligence and Terrorism Information Center at the Israel Intelligence Heritage & Commemoration Center (IICC) Iranian Support of Hamas January 12, 2009 <http://www.unitycoalitionforisrael.org/news/article.php?id=3564> 5). IBID 4

"The IRGC's senior leadership consists of a core network of individuals who developed professional military experience and enduring personal relationships during Iran's eight-year war with Iraq (1980-1988). The commander of the IRGC, Major General Mohammad Ali Jafari, reports to Iran's Supreme Leader and each of the IRGC's five combat service commanders report directly to Jafari, with the exception of one. Quds Force Commander Major General Qassem Suleiman also reports directly to the Supreme Leader."

Testimony: Iran's Global Force Projection Network: IRGC Quds Force and Lebanese Hezbollah
By Will Fulton March 20, 2013 <http://www.irantracker.org/analysis/fulton-iran-global-force-projection-network-irgc-quds-force-lebanese-hezbollah-march-20-2013>

- ***Tehran's expanding maritime power is directed more influence in the Red Sea, where the US and Royal Saudi navies have traditionally dominated. Sudan has become central to Iranian foreign relations in the Horn of Africa.***

Sudan developed a strong relationship with the IRI since the end of the 1980s. In recent years, Tehran and Sudan have increased their bilateral assistance to include economic, military, and nuclear issues. In April 1997 the two countries have signed more than 30 agreements ranging from agro-business to joint ventures to training for Sudanese army and intelligence officers in Iran. In a rare private meeting with a foreign head of state in 2006, Ayatollah Khamenei told Sudan President Omar Al-Bashir "the Islamic Republic is ready to transfer this experience and technology and knowledge of its nuclear scientists" to other friendly countries. In March 2008, the two countries signed a mutual defense agreement, providing for consolidated defense ties and joint efforts to strengthen peace and security in the Horn of Africa. In March 2008, Iranian Defense Minister Mostafa Mohammad Najjar said the two countries were expanding their military ties in "all fields, including the field of mutual defense. More importantly, the IRI is using its naval power to empower its alliance with the Islamist government in Sudan, led by the indicted war criminal Omar al-Bashir. Sudan, which borders the Red Sea, is a critical component of the weapons supply route from Iran to Gaza. [275]

In December 12, 2012 it was reported that al-Bashir gave the green light to Iran to establish a permanent military naval base on Sudanese soil, replete with long range missiles that could hit deep into the heart of Israel as well as Saudi Arabia and U.S. bases in the region. Sudan hosts critical IRGC weapons manufacturing facilities, such as the Yarmouk plant in Khartoum, owned and operated by IRGC-QF. Sudan was implicated in the 2002 weapons cargo ship Karine A Affair as well, which involved the Israeli seizure of a cargo ship in the Red Sea carrying weapons destined for the Arab Palestinian Authority. It was at a Sudanese port where the cargo and crew of the ship were changed to conceal the ship's mission. [276]



Sudan's President Omar Hassan al-Bashir (R) welcomes Hamas's political chief Khaled Meshaal before a meeting in Khartoum March 6, 2011. REUTERS

By 2011 Tehran had been caught red-handed in 10 different attempts to transfer weaponry to terrorists throughout the Middle East, including one case, in April 2011, when a shipment of advanced missiles was caught en-route to Taliban forces in Afghanistan. Even as the West seeks to engage Iran in negotiations over Tehran's nuclear program, Iran continues to arm rogue regimes and terrorist groups in blatant violation of UN Security Council Resolution 1747.

- 1). UN Security Council 5647th Meeting (PM) Security Council Toughens Sanctions Against Iran, Adds Arms Embargo, <http://www.un.org/News/Press/docs/2007/sc8980.doc.htm>
- 2). Iran Caught 10 Times Trying To Send Arms To Terrorists' By Yaakov Katz 06/10/2011 <http://www.jpost.com/Iranian-Threat/News/Iran-caught-10-times-trying-to-send-arms-to-terrorists>

275). Sudan-Iran Foreign Relations By Ariel Farrar-Wellman January 17, 2010 <http://www.irantracker.org/foreign-relations/sudan-iran-foreign-relations>

276). Irans Naval Upgrade Could Spell War for Israel in Africa
December 13, 2012, <http://blogs.timesofisrael.com/irans-naval-upgrade-could-spell-war-for-israel-in-africa/>

Sinai Peninsula: Ansar Bayit al Maqdis (Supporters of Jerusalem) Also known as Ansar Jerusalem, the *Jerusalem Post* reports that this is considered to be one of the more active terrorist group in Sinai. It is based primarily in Sinai and consists mainly of local Bedouin, but also recruits members from all over the Middle East and North Africa. [277]

Currently, the Qods Force conducts training activities in Iran and in Sudan. Using proxies enables the Iranian regime to obscure or hide its involvement in the attacks and use local terrorist operatives for its terrorist-subversive campaign, individuals who are more familiar than the Iranians are with the political-social-cultural environment of their countries.



Posters hung in the Gaza Strip, thanking Iran in four languages. The rocket launchers in the background symbolize Fajr-5 rockets (Qudsnet website, November 29, 2012)

- Iranian weapons shipments are a clear violation of U.N. Security Council resolutions and international maritime law.
- UN Security Council Resolution 1860, passed in January 2009, calls on all states to prevent illicit trafficking in arms and ammunition to the Gaza Strip, which is controlled by Hamas.
- U.N. Security Council Resolution 1747, passed in March 2007, prohibits Iran from supplying, selling or transferring, directly or indirectly, any arms or related materiel. The resolution also required all countries to prohibit the procurement or transfer of Iranian weapons shipments.
- U.N. Security Council Resolution 1701, passed in August 2006, requires all nations, including Iran, to take the necessary measures to prevent the sale or supply of arms to any entity in Lebanon except as authorized by the Lebanese government.
- Iranian arms shipments, including the mislabeling of cargo and falsification of cargo manifests, are also violations of the International Maritime Organization's Conventions and professional standards. [278]

In 2011 Turkish-Iranian Jafari smuggling network Turkey was another major transit point for Iranian shipments to Hamas and Hezbollah. The U.S. Treasury was forced to sanction the Turkish-Iranian Jafari smuggling network after Turkey failed to shut it down. The Jafari network allegedly operated two companies out of Iran and Turkey, using the Turkish company as a front and claimed end-user for goods that were later transshipped to Iran. Jafari operated Macpar Makina San. Ve Ticaret A.S., or "Macpar," and Standart Teknik Parca San. Ve Ticaret A.S., or "STEP." STEP was considered a Turkish business, while Macpar was both Turkish and Iranian. Both companies had locations in Tehran, Iran and Istanbul, Turkey. US Justice Department officials said Jafari and his associates set up companies outside Iran to provide "direct support" to Iran's missile program by securing metal products such as steel and aluminum alloys. [279]

For the first time in the history of Tehran's foreign diplomacy, in 2013 Iran openly declared that it is materially supporting and arming the Hamas fighting Israel. Iran openly acknowledged as being responsible for Hamas' rockets that were fired at Tel Aviv and Jerusalem during the latest Gaza war in November 2012. This is a significant shift from its previous policy of denying military support to its allies in the region for fear that the world would accuse it of supporting terrorism. It also shows the failure of America's current administration in dealing with the Islamic Republic's waging of international irregular wars. [280]

Hamas Reaps Over Half A Billion Dollars A Year From Tariffs On The Egypt-Gaza Tunnel Trade. It is therefore in Hamas's best interest to keep the blockade idea alive, in order to secure larger revenues for its Gaza government, all the while demonizing Israel and causing Gaza's residents to suffer, thereby making them even more dependent on Hamas. 281]

277). Armed Groups in the Sinai Peninsula Military Fusion Centre Presents February 2013
Comprehensive Information on Complex Crises
<http://www.allsinai.info/sites/beduines.htm>

278). UN Security Council 5647th Meeting (PM) Security Council Toughens Sanctions Against Iran, Adds Arms Embargo,
<http://www.un.org/News/Press/docs/2007/sc8980.doc.htm>

279). Case Study - United States Indicts Man behind Alleged Multi-Million Dollar Iranian Smuggling Network by Andrea Stricker
February 11, 2011 <http://isis-online.org/isis-reports/detail/united-states-indicts-man-behind-alleged-multi-million-dollar-iranian-smugg/>

The Basics For Understanding: Qassams, Scud Missiles to Cruise Missiles, Drones to UAVs and CBRN Warfare

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280). Iran Seeks to Retain Influence April 4 2013 In Palestinian Affairs <http://www.al-monitor.com/pulse/originals/2013/04/iran-hamas-ties.html>

281). Who Is Really Besieging Gaza? by Mudar Zahran November 15, 2012 <http://www.gatestoneinstitute.org/3453/besieging-gaza>

The Middle East Missile Environment 2013

- *"The Middle East remains that part of the world where the threat posed by rocket and missile proliferation and use is most acute, and the need for effective rocket and missile defense most urgent."*

Washington Institute of Improving the Quality of U.S. Middle East Policy[282]
Michael Eisenstadt



126 STAT. 1146 PUBLIC LAW 112–150—JULY 27, 2012 Public Law 112–150 112th Congress

An Act

To Enhance Strategic Cooperation Between The United States And Israel, and For Other Purposes.

SEC. 2. FINDINGS. Congress makes the following findings:

(1) Since 1948, United States Presidents and both houses of Congress, on a bipartisan basis and supported by the American people, have repeatedly reaffirmed the special bond between the United States and Israel, based on shared values and shared interests.

(2) The Middle East is undergoing rapid change, bringing with it hope for an expansion of democracy but also great challenges to the national security of the United States and our allies in the region, particularly to our most important ally in the region, Israel.

(3) The Government of the Islamic Republic of Iran is continuing its decades-long pattern of seeking to foment instability and promote extremism in the Middle East, particularly in this time of dramatic political transition.

(4) At the same time, the Government of the Islamic Republic of Iran continues to enrich uranium in defiance of multiple United Nations Security Council resolutions.

(5) A nuclear-weapons capable Iran would fundamentally threaten vital United States interests, encourage regional nuclear proliferation, further empower Iran, the world's leading state sponsor of terror, and pose a serious and destabilizing threat to Israel and the region.

(6) *IRAN:* Over the past several years, with the assistance of the Governments of the Islamic Republic of Iran and Syria, Hizbollah and Hamas have increased their stockpile of rockets, with more than 60,000 now ready to be fired at Israel. The Government of the Islamic Republic of Iran continues to add to its arsenal of ballistic missiles and cruise missiles, which threaten Iran's neighbors, Israel, and United States Armed Forces in the region.

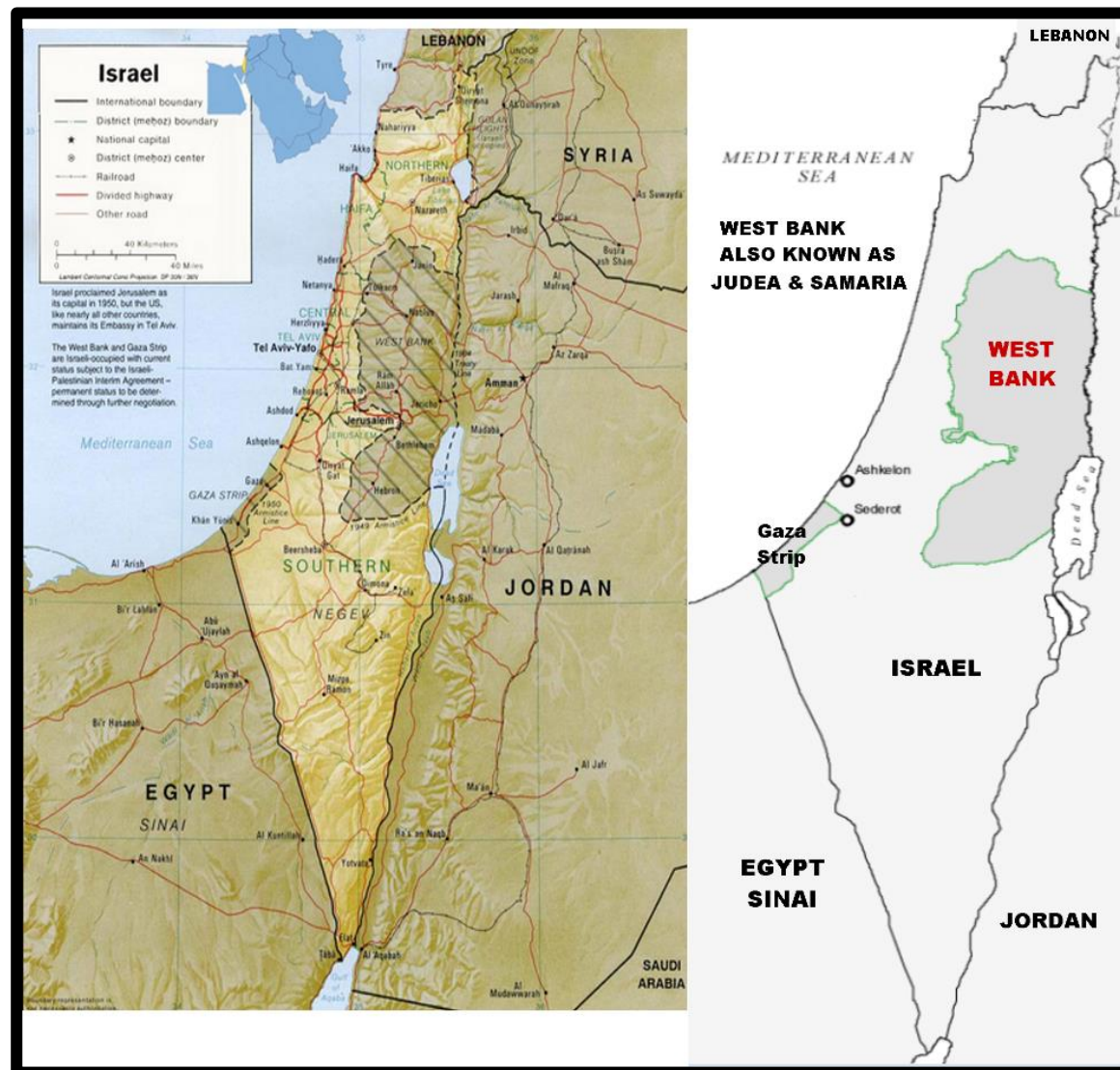
(7) *As a result, Israel is facing a fundamentally altered strategic environment.*

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STATES

LAW 112—
JULY 27,
UNITED



<http://www.gpo.gov/fdsys/pkg/PLAW-112publ150/pdf/PLAW-112publ150.pdf>



282).
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<http://www.washingtoninstitute.org/policy-analysis/view/the-middle-east-missile-environment>

The West Bank, Israel's new nightmare of rocket assaults?

- **Understanding the West Bank, the disputed territory (aka Judea and Samaria) Fatah vs. Hamas**



The West Bank shares boundaries (demarcated by the Jordanian-Israeli armistice of 1949) to the west, north, and south with the state of Israel, and to the east, across the Jordan River, with the Kingdom of Jordan. The West Bank also contains a significant coastline along the western bank of the Dead Sea. The West Bank, including East Jerusalem, has a land area of 5,640 km² (2,173 sq mi), and 220 km² water, the northwest quarter of the Dead Sea. It has an estimated population of 2,622,544 (June 2012). The West bank produces citrus fruits, vegetables, olives, and beef and dairy cattle. Historically, the region included ancient Samaria and Judea (Judah), and it has many sites of religious interest to Jews, Christians, and Muslims. Towns include Hebron, Nablus, Jericho, and Bethlehem. The region was occupied by Transjordan (now Jordan) during the 1948-49 Arab-Israeli war. It came under Israeli control in the 1967 war. Since 1996, the Palestinian National Authority, or PNA, the Arab governing body, has had increasing self-rule in the region. [283]

283). CIA Fact Book West Bank <https://www.cia.gov/library/publications/the-world-factbook/geos/we.html>

283a). West Bank Geography <http://geography.about.com/library/cia/blcwestbank.htm>

Israel is one of the few states in the world that for most of its history has been under repeated military assault by its neighbors, militant racial Islamic radical entities and under continuous rocket and mortar attacks almost on a daily bases.

Upon the departure of the British forces in May 1948 and the proclamation of the State of Israel, the armies of five Arab countries entered Palestine. In the ensuing Arab-Israeli War the West Bank was occupied by Jordanian and Iraqi forces. In the 1949 Armistice Agreements, the West Bank was declared part of Jordanian territory and defined the interim boundary between Israel and Jordan. The kingdom of Jordan formally annexed it on April 24, 1950. However, Jordan's claim was never recognized by the international community. Jordan occupied the West Bank from 1948 until 1967. [284]

There are various factions of Arab Palestinian groups having their own goals and aspirations, all came under the banner of the Palestine Liberation Organization (PLO), a multi-party confederation then headed by Yasser Arafat, Hamas being one of the 2nd largest factions. The PLO was considered by the

United States and Israel to be a terrorist organization until the Madrid Conference in 1991. In 1993, PLO recognized Israel's right to exist in peace, accepted UN Security Council resolutions 242 and 338, and rejected "violence and terrorism"; in response, Israel officially recognized the PLO as the representative of the Palestinian people. Fatah (also known as Fateh) is a major Arab Palestinian political party and the largest faction of the Palestine Liberation Organization.



- **1974 - King Hussein of Jordan turns over his government's responsibility for the West Bank to the Palestine Liberation Organization (PLO).**
- **1988 - Jordan ends financial and administrative support to the West Bank. The PLO declares an independent Palestinian state in the West Bank and Gaza.**
- **1993 - Israel and the PLO sign several agreements that lead to the withdrawal of Israeli troops from portions of the West Bank and from Gaza.**
- **January 1996 - Palestinians in the Palestinian-controlled parts of the West Bank and in Gaza elect a legislature and a president for these areas.**

The 1993 Israel-PLO Declaration of Principles on Interim Self-Government Arrangements (the DOP), signed in Washington provided for a transitional period not exceeding five years of Arab Palestinian interim self-government in the Gaza Strip and the West Bank. The DOP provided that Israel would retain responsibility during the transitional period for external and internal security and for public order of settlements and Israeli citizens. Israel embraced the DOP and agreed to transfer certain powers and responsibilities to Arafat's Palestinian Authority. This also included the Palestinian Legislative Council elected in January 1996, as part of the interim self-governing arrangements in the West Bank and Gaza Strip. The transfer of powers and responsibilities for the Gaza Strip and Jericho took place pursuant to the Israel-PLO 4 May 1994 Cairo Agreement on the Gaza Strip and the Jericho Area and in additional areas of the West Bank pursuant to the Israel-PLO 28 September 1995 Interim Agreement, the Israel-PLO 15 January 1997 Protocol Concerning Redeployment in Hebron, the Israel-PLO 23 October 1998 Wye River Memorandum, and the 4 September 1999 Sharm el-Sheikh Agreement. It was not until September 1999 when direct negotiations to determine the permanent status of Gaza and West Bank. Direct negotiations were derailed for three-years because of the second intifadah that broke out in September 2000.

- Israel's First Intifada (Intifada" means "shaking up" or "shaking off,") lasted from 1987 until 1991, finally dying off with the onset of the invasion of Kuwait and the 1991 Persian Gulf War.
 - The Second Intifada or Al-Aqsa Intifada is the name given to the Arab Palestinian violence that began at the end of September 2000. No definitive ending date can be assigned to the Second Intifada, though some would place the end October 2004 or at February, 2005.
 - From 2000 to 2004, Hamas was responsible for killing nearly 400 Israelis and wounding more than 2,000 in 425 attacks, according to the Israeli Ministry of Foreign Affairs.
- ***The resulting widespread violence in the West Bank and Gaza Strip, Israel's military response, and instability within the Palestinian Authority continue to undermine progress toward a permanent agreement. [285]***

284). The Fatah – Hamas Rivalry: Palestinian Domestic Competition and the Israeli Withdrawal from Gaza 15 August 2005 <http://www.mafhoum.com/press8/248P55.pdf>

285). Inside Gaza: The Challenge Of Clans And Families Middle East Report N°71 – 20 December 2007 http://mercury.ethz.ch/serviceengine/Files/ISN/46036/ipublicationdocument_singledocument/4f98d547-c1b1-44a2-9071-3c9e4ab2dc88/en/071_inside_gaza_clans_and_families.pdf 3). CRS Report for Congress, Fatah and Hamas: The New Palestinian Factional Reality, (2006)

Beginning with 1993 Oslo Accords , Arafat's tactical turn toward negotiations was driven more than anything else by domestic politics, and by the desire to sideline an increasingly powerful hardline Islamist opposition the Hamas, which since the first Intifada had gained in popularity and was "rapidly transforming its military capabilities" with the support of Tehran. The signing of the Oslo accord in 1993 came as a major psychological blow to Hamas, with triggering fears of political elimination by Arafat's PA. [286]

- ***In attempt to destroy the 1993 Oslo Accords Hamas introduced Tehran's Islamic Suicide bombing asymmetrical warfare. Israel's first wave of suicide bombings began in 1993. [287]***

Israeli Prime Minister Ariel Sharon's 2003 announcement of his plan to withdraw from the Gaza Strip and four settlements in the northern West Bank, as well as the death of PLO Chairman Yasser Arafat in 2004, major changes were beginning to take place within Israel and the Arab Palestinian territories. Following the death of Yasser Arafat in 2004, Mahmoud Abbas was elected President of the Palestinian Authority on January 9, 2005. Abbas is the leader of Fatah, the nationalist Palestinian political wing whose principal rival, the Iranian backed Hamas and their

leader Ismail Haniyeh. The vacuum left by Arafat's death, as well as the factionalism within the Palestinian Authority (PA), the entrance of Hamas into the political arena, and the prospect of Israel's "disengagement", pointed to the emergence of a new political system within the Arab Palestinian territories, and especially in Gaza's socio-political system.[288] The Arab Palestinians had grown tired of the corruption of Yasser Arafat's governing. At this point hundreds of millions of dollars were unaccounted for, later it was uncovered almost 1.2 billion dollars had disappeared.[289] The Hamas had grown in popularity with its community action charitable centers, food distributions and medical assistances. The economic deterioration caused by the intifadas reinforced the Arab Palestinian public's resentment of the disparity between its situation and that of PA officials; Fatah's decline has been extremely beneficial for Hamas, viewed by many Arab Palestinians as more efficient and less corrupt. Iranian backed Hamas leader Ismail Haniyeh gained legislative control of the Palestinian Authority early in 2006. Ismail Haniyeh became Prime Minister after winning the 2006 legislative elections. Haniyeh was formally presented to Mahmoud Abbas on 20 February and was sworn in as PM on 29 March 2006. However, there were bitter rivalries between Mahmoud Abbas and Ismail Haniyeh. After the formation of the Hamas-led cabinet on March 20, 2006, tensions between Fatah and Hamas militants rose progressively in the Gaza Strip. Fatah commanders refused to take orders from the government while the Palestinian Authority initiated a campaign of demonstrations, which escalate into a series of, violate confrontations. President Mahmoud Abbas then dismissed the Hamas-led Palestinian Authority government and outlawed the Hamas militia. At least 600 Palestinians died in fighting between Hamas and Fatah. Human Rights Watch, a U.S.-based group, accused both sides in the conflict of torture and war crimes. President Mahmoud Abbas dismissed Haniyeh from office on 14 June 2007 at the height of the Fatah-Hamas conflict. In June 2007, mere months after forming a unity government with Hamas and installing Hamas leader Ismail Haniyeh as PA Prime Minister Abbas declared a state of emergency, dissolved the government, and installed Salam Fayyad as the new PM in Haniyeh's place. In response Hamas began a brutal siege of Fatah positions in Gaza, ejecting the bulk of the Fatah from the Gaza strip. Hamas declared itself sole ruler of Gaza. Ismail Haniyeh continued to operate as Prime Minister in Gaza. The Palestinian Legislative Council also continues to recognize his authority. Ismail Haniyeh is the senior political leader of Hamas and one of two disputed Prime Ministers of the Palestinian National Authority, the matter being under political and legal dispute. Fatah and Hamas have on again off again reconciliation talks, but the bitter rivalries remain. [290]

- ***Iran & Ismail Haniyeh's Hamas forces in reality are directed towards removing Mahmoud Abbas, Fatah and taking complete control of the West Bank. From there Tehran can use Hamas to establish another field of asymmetrical rocket warfare into Israel. [291]***

In the West Bank, the regime of Mahmoud Abbas has remained in power largely due to the deployment of the Israel Defense Forces throughout the area and their counterterrorist operations against Hamas and its allies. [292]

287). Inside Gaza: The Challenge Of Clans And Families Middle East Report N°71 – 20 December 2007

http://mercury.ethz.ch/serviceengine/Files/ISN/46036/publicationdocument_singledocument/4f98d547-c1b1-44a2-9071-3c9e4ab2dc88/en/071_inside_gaza_clans_and_families.pdf

288). Erased In A Moment: Suicide Bombing Attacks Against Israeli Civilians Human Rights October 2002 <http://www.hrw.org>

289). Elusive Ingredient: Hamas And The Peace Process Beverley Milton-Edwards And Alastair Croke 27 Nov 2012

<http://www.palestine-studies.org/files/pdf/jq/11546.pdf> 4) Arafat's Purse September 13, 2002, | Rachel Ehrenfeld

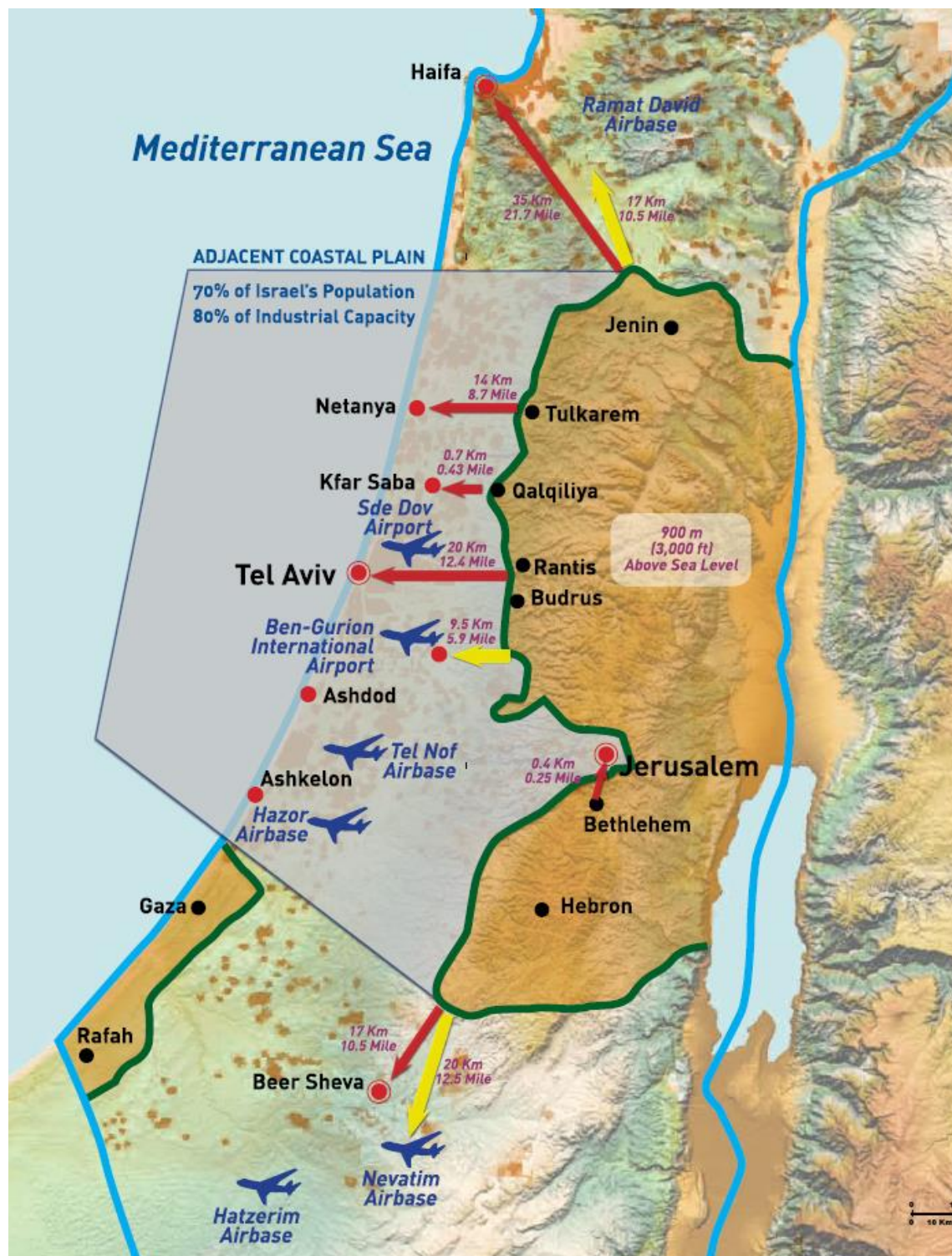
<http://old.nationalreview.com/comment/comment-ehrenfeld091302.asp>

290). Where's Arafat's Money? By Matt Rees/Jerusalem with Jamil Hamad/Ramallah and Aharon Klein/Jerusalem Monday, Nov. 22, 2004 <http://www.time.com/time/magazine/article/0,9171,995651,00.html>

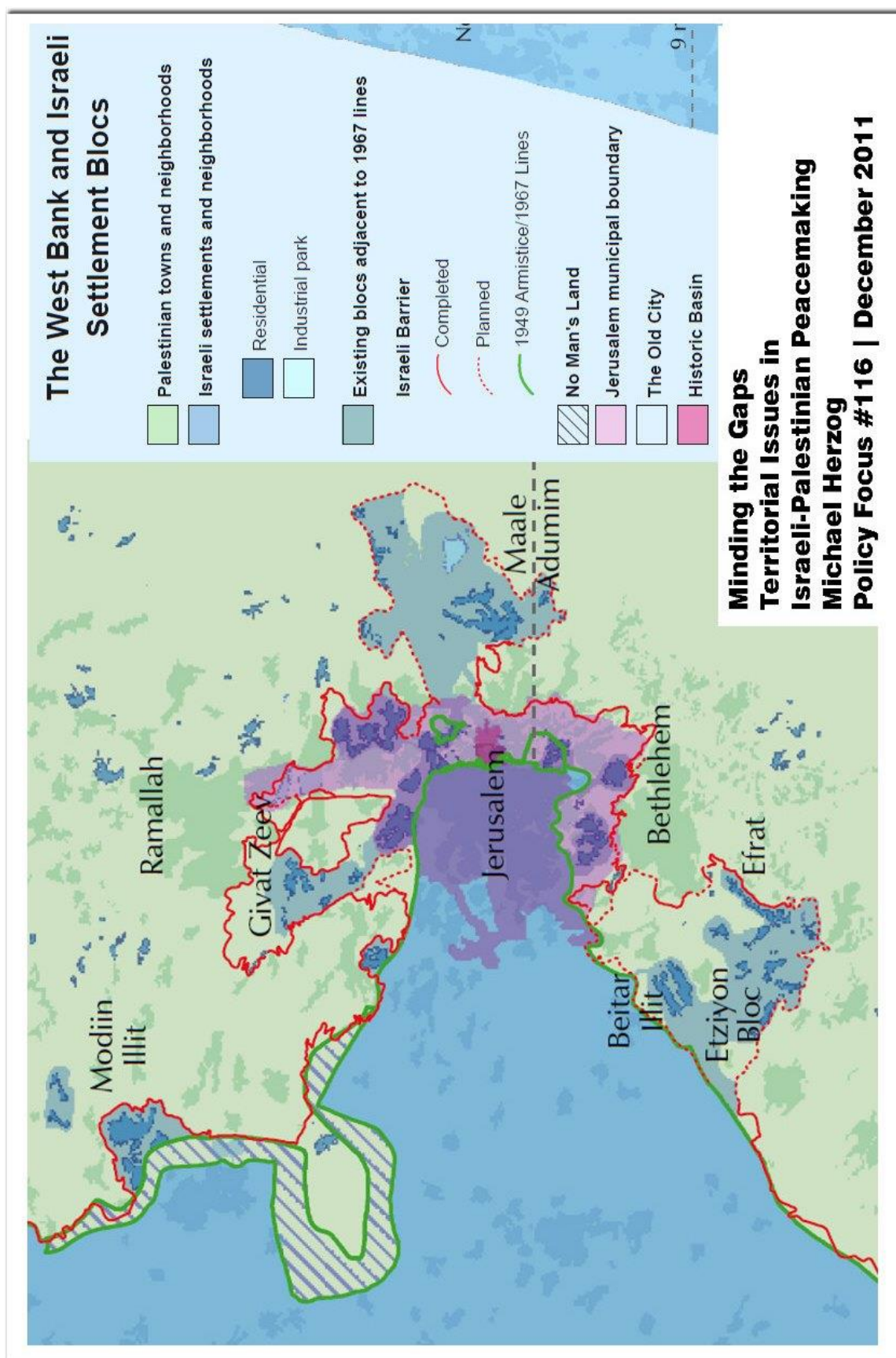
291). Arafat's Billions February 11, 2009

http://www.cbsnews.com/8301-18560_162-582487.html 292). IBID 6). Israel's Critical Security Requirements For Defensible

Borders The Foundation For A Viable Peace 2011 Jerusalem Center for Public Affairs www.jcpa.org



The Major point to realize is the Hamas would not need to move its longer range rockets into the West Bank to wage successful asymmetrical rocket warfare against Israel. In addition smaller rockets have proven to be the most difficult to detect and stop. As noted from the rocket wars from Hezbollah in Lebanon to the Gaza strip.



Since 2005, Hamas' continual use of terror against Israel has been combined with more advanced military capabilities such as standard Grad rockets, anti-tank and anti-aircraft missiles, and other weapons, all of which undermine the strategic balance.

"However, the difference between rockets from Gaza and rockets from the "West Bank" is Gaza is (with few exceptions) surrounded by almost empty Israeli farmland, while Judea and Samaria about Tel Aviv - the heart of Israel's population. So a "demilitarized" Palestinian Arab state in Judea and Samaria is within easy terrorist katyusha rocket range of over 70% of Israel's population and 80% of her industrial base. In American terms, and for Americans to "put on the shoes of the Israelis," if you fire 100 katyusha rockets into North Dakota you might hit some cow dung. But, if you fire one katyusha rocket from Brooklyn into Manhattan, you'll kill a dozen people. So, surrendering Judea and Samaria to a "demilitarized" Palestinian Arab state (which would be swept into Hamas hands the next business day) is equivalent to giving al Qaeda territory contiguous to the United States, from which they could fire small unstoppable chemical-war-headed rockets that could hit 200,000,000 American citizens. "

Judea and Samaria are Our Iron Dome Apr 04, 2013 Mark Langfan
<http://www.israelnationalnews.com/Articles/Article.aspx/13081#.UWHcIKKqJ8F>

The ongoing struggle for control of the West Bank: Tehran's one time leading terrorist and Hezbollah's military commander was the late Imad Mughniyah assassinated in Damascus in 2008. Before becoming involved with Tehran and the Hezbollah, he belonged to Arafat's as a personal bodyguard and an elite commando of the Arab Palestinian Force 17. Mughniyah was at the top of the FBI most wanted list, surpassed only by Osama Bin Laden. America had a 5 million dollar reward for his capture.[293] Mughniyah IRGC-QF - Hamas axis was a key factor into the building and directing the first onslaught of suicide bombers into Israel. Mughniyah also established the, "Return Brigades," (Kata'ib al-Awda) in the West Bank in 2002. The Return Brigades were Arab Palestinian terrorist cells, trained in Lebanon under IRGC-QF & Mughniyah.[294]Both Israeli and Fatah Arab Palestinian security officials say Hezbollah has been operating behind the scenes in the West Bank since 2000, pumping millions of dollars into militant groups for attacks against Israel.

- ***Hamas flags flew for the first time in the West Bank after a long absence in 2011, when Israel released 1,200 security prisoners as part of the Gilad Shalit exchange, with hundreds of convicted terrorists freed to the West Bank.***

In December 2011, there were 69 firebombing in the West Bank and 30 in Jerusalem. Three members of the Israeli security forces were injured, two were stabbed in the West Bank and one was hit by a car in a deliberate attempt to run him down in Jerusalem. Additionally, there were six improvised explosive attacks and three grenades thrown. Palestinian terrorists fired on Israeli targets twice. In total, there were 111 violent attacks in December. In November, the number of attacks in the West Bank and east Jerusalem was even higher, 166 and included two stabbings, three improvised explosives, a grenade and 156 fire- bombings. In comparison, there were 70 violent incidents in October. The shift is occurring as instances of violent disturbances involving rock throwing, Molotov cocktail attacks and sporadic grenade attacks and shootings rose significantly in November and December across the West Bank. To complicate the picture further, some of the violent incidents had been organized by paramilitary terror outfits affiliated with Fatah. [295]

294). Imad Mughniyah: Hezbollah's Phantom Killed By Alireza Nourizadeh, February 16, 2008 <http://www.iran-press-service.com/ips/articles-2008/february-2008/imad-mughniyeh-hezbollahs-phantom-killed.shtml>

295). Hezbollah's West Bank Terror Network Matthew Levitt Middle East Intelligence Bulletin August-September 2003
296). Is a Third Intifada Imminent? January 22, 2013 By Yaakov Lappin <http://www.jinsa.org/fellowship-program/yaakov-lappin/third-intifada-imminent#.UWSt0qKqJ8E>

Hamas, The Making of a Modern Asymmetrical War-Machine

"Operationally, Hamas made significant advances. It began to develop specialized professions: sniper units, antitank specialists, rocket specialists, combat intelligence, tunnel diggers, infantry, anti-aircraft, artillery and even naval commandos who were suppose to work with the coast guard. It then split the Gaza strip into five sections, with each corresponding to a brigade. Each brigade has battalions and each battalion has specialized units,

Israel vs. Iran, the Shadow War Katz & Hendel 2012, page 125 Potomac books

2012 "Operation Time Bomb," Israeli police and Israel Security Agency arrest 14 Israeli Arab members of terrorist cell that smuggled weapons and explosives from Lebanon into Israel. This foiled a IRGC-QF Hezbollah massive plot to carry out a "mega-attack" or wave of several deadly terrorist attacks in Israel. The terrorist cell, made up of three distinct groups and comprising 14 individuals smuggled in 24 ready-to-use C4 high-quality bombs with attached timers into the northern border town of Ghajar, which straddles the Israel-Lebanon border. From Ghajar, the explosives were transferred to Kafr Kana and Nazareth. The operation was dubbed "Time Bomb" as the security services were racing against time to make sure the explosives weren't scattered across the country. The cells were operated by the Hezbollah: One cell operated in Lebanon and transferred the explosives to the cell based in Ghajar. The Ghajar cell then worked with the Nazareth-based cell. Shin Bet official said that the agency decided to swoop in on the cell after the bombs were moved from the northern border town of Ghajar to Nazareth. Its Agency officials said that Hezbollah uses tactics of crime organizations, making use of drug smuggling networks. *This is just the tip of the iceberg of Hezbollah terror activity,* the official said. [297]

- ***For many years Hezbollah has been using drug dealers' networks in Southern Lebanon and Israel to promote its activity against Israel. Since the Israeli withdrawal from Lebanon in 2000, several Israelis were indicted due to involvement in drug trafficking for and transfer of information to Hezbollah.***

<http://www.shabak.gov.il/English/EnTerrorData/Reviews/Pages/HizballahandDrugTrafficking.asp>

X

(J&S) mountain ridges are 2,000ft above the 8-15 mile coastal plain : The vast of the West Bank mountain ranges look down into the coast areas of Israel. This area is ideal for asymmetrical rocket warfare. Unlike Gaza which sits mainly on flat coastal plains. Here rockets can be easy hidden in the rough terrain of Judea and Samaria. Analysis of the rocket attacks shows that 2012 saw the highest number of rockets shot from the Gaza Strip at targets in Israel, as 2,327 rockets and 230 mortar shells were fired. Had this been from the West Bank it would have ravaged Tel Aviv, killed hundreds and wounding many more. [298]



Tel Aviv/Ramat Gan Stock Exchange as Viewed from the Judea & Samaria mountain ridges

Judea and Samaria Annual Distribution of Attacks

Throughout 2012, there were 578 registered terror attacks in the West Bank as opposed to 320 incidents registered in 2011. There was a 42% increase in the number of registered terror attacks that included shooting, use of explosive devices, or grenades. Analysis of the rocket attacks shows that 2012 saw the highest number of rockets shot from the Gaza Strip at targets in Israel, as 2,327 rockets and 230 mortar shells were fired.

Shin Bet: No Israelis killed in West Bank terror in 2012, first year since 1973 Shin Bet's report attempts to analyze the levels on which Israel's security establishment handles the terror activity. By Gili Cohen | Jan.25, 2013

<http://www.haaretz.com/news/diplomacy-defense/shin-bet-no-israelis-killed-in-west-bank-terror-in-2012-first-year-since-1973.premium-1.496253>

Sharp increase in terrorist acts in West Bank in September Majority of the attacks involve Molotov cocktails, Shin Bet report shows

By **PHILIP PODOLSKY** October 3, 2012

<http://www.timesofisrael.com/increase-in-terrorist-acts-in-west-bank-in-september/>

297). Israeli Intelligence Cracks Massive Hezbollah Bomb Plot Aug 2012Aug Israel Hayom Staff

http://www.israelhayom.com/site/newsletter_article.php?id=5342

298). Shin Bet: No Israelis killed in West Bank terror in 2012, first year since 1973

By Gili Cohen | Jan.25, 2013

<http://www.haaretz.com/news/diplomacy-defense/shin-bet-no-israelis-killed-in-west-bank-terror-in-2012-first-year-since-1973.premium-1.496253>

- ***Not since Hitler's rocket and bombing blitz of Britain, has the world seen a country subjected to a continuous pounding to destroy it as Israel. Israel is the only country in history that has been subjected to the battering of asymmetrical rocket warfare supported by State sponsors, Tehran and Damascus in order not only to destroy it but to fashion another Jewish Holocaust.***

West Bank Mountain Ridges : For Air Defense the West Bank is crucial

The West Bank covering 2,123 square miles (5,500 square kilometers), but it is situated immediately adjacent to, and looks down upon the Israeli coastal plain where more than 70 percent of Israel's population and 80 percent of its industrial capacity are located. West Bank is comprised largely of a north-south mountain ridge that dominates vital Israeli infrastructure along the coast, including Israel's international airport, high-tech companies, and most of the major highways connecting Haifa, Tel Aviv, and Jerusalem. In short, a hostile force, asymmetrical rocket warfare located in commanding positions along the West Bank could pose a threat to the center of gravity of the State of Israel, cripple or even bring to a standstill its economic life, and put at risk large portions of its population.

- ***Insurgency is perhaps the iconic asymmetric strategy and has proven highly effective at inverting the strengths of even the world's most powerful militaries, such as America and Israel. The Islamic Republic of Iran has long used insurgencies and proxies such as Hezbollah, Hamas and others as a means to wage war against Israel and the USA; such tactics were common during the Cold War.***

During a period of elevated alert, Israel can deploy its air defense systems along West Bank hilltops in order to intercept enemy aircraft from forward positions and not from the densely populated coastal lowland. Short-range radar and early-warning systems situated on the coastal plain would have their line-of-sight blocked by the West Bank mountain ridge (this is not a problem for missile-interception radars). Therefore, for years, Israel has deployed these facilities on the high ground of the West Bank. If the airspace above the West Bank was in hostile hands, Israel would have no warning time to intercept attacking aircraft. Today, it would take three minutes for an enemy fighter bomber to navigate from the Jordan River over the West Bank and Israel 67 km (42 miles) to the Mediterranean. If Israel had less than three minutes to respond, the provision of adequate air defense by means of fighter interceptors or anti-aircraft missiles would be improbable. [299]

Hamas infrastructure in the West Bank was decimated in Israel's Operation Defensive Shield of 2002. Recently Hamas has been conducting low keyed operations in order to reestablish itself in the West Bank cities by building social aid programs called Da'wa stations. Another program called *Kutla*, which entails recruiting university students by spreading jihadi ideology among them. These steps are an attempt to recruit and create the building blocks for future terrorists' cells. Hamas is no longer constraining itself to its traditional West Bank bases of Hebron, Nablus, and Jenin. It is also attempting to spread out to the Palestinian Authority's Fatah heartland of Ramallah. Some 30 Hamas activists were arrested recently on suspicion of setting up a Hamas branch in the Ramallah area. [300]

299). Military-Strategic Aspects of West Bank Topography for Israel's Defense Jerusalem Center for Public Affairs

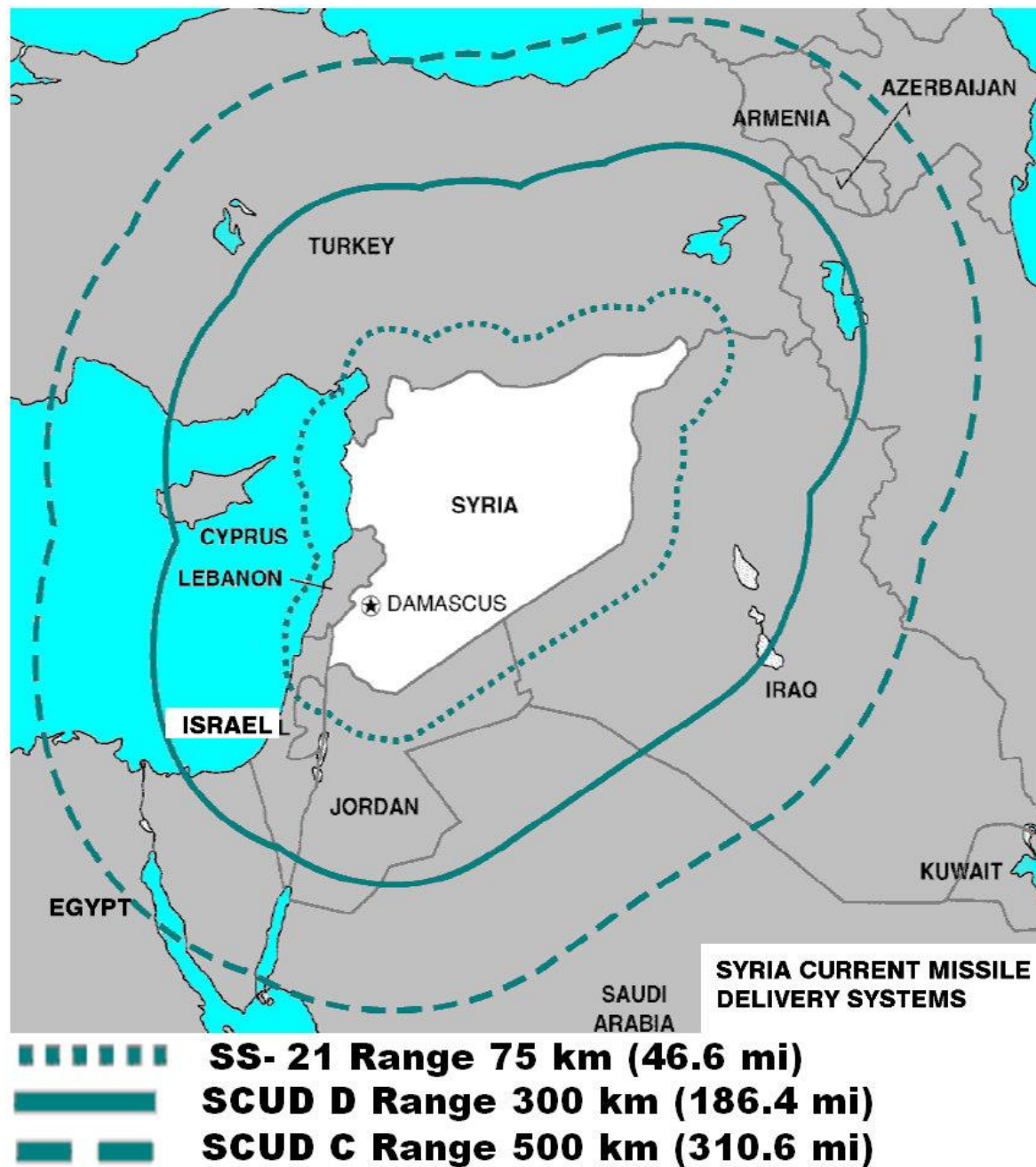
<http://www.defensibleborders.org/apx1.htm>

300). Is a Third Intifada Imminent? January 22, 2013 By Yaakov Lappin

<http://www.jinsa.org/fellowship-program/yaakov-lappin/third-intifada-imminent#.UWTieKKgJ8E>



Syrian Missiles



Israeli-Syrian Air and SAM Strength Analysis *Working Estimates of Force Numbers and Location* by Anthony H. Cordesman, Abdullah Toukan NOV 25, 2008 <http://csis.org/publication/israeli-syrian-air-and-sam-strength-analysis>

Syrian – Russian made, P-800 Yakhont Cruise Missile Also Known As: 3M55, Bastion (land based missile system), Oniks, Onyx, P-800 and SS-N-26 (SS-NX-26)

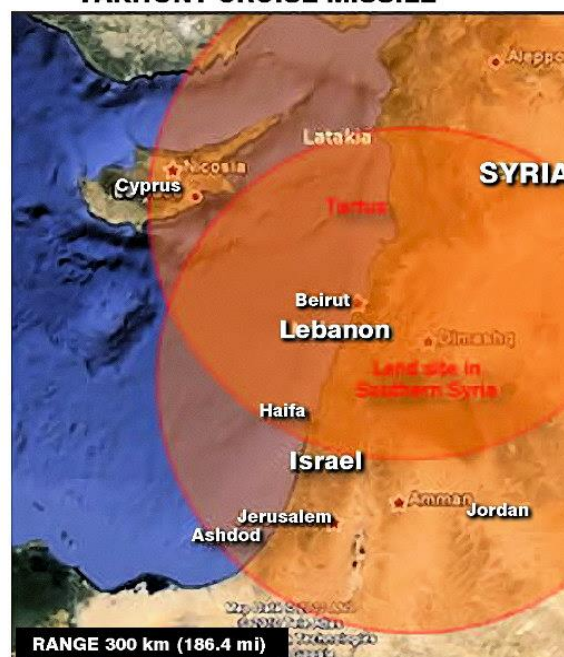
The Yakhont SS-u-26 is stealth-tech and supersonic with a range of 300 km (190 mi) at a speed of 2.6 mach. The P-800s, warhead contains 200 kg (440 pounds) of high explosive, enough to sink a large warship. The weapon's nearest U.S. counterparts, Raytheon's BGM-109 Tomahawk and Boeing's AGM-84 Harpoon, are subsonic. The best French equivalent, MBDA's MM-40 Exocet, only has a range of 45 miles. Syria was said to have purchased and deployed some seventy two P-800s. The cruise missiles, which operate as part of the Bastion mobile coastal defense system, .Each Bastion system is equipped with 36 cruise missiles as well as truck-mounted radar and other equipment. The Bastion battery comprises 18 mobile launchers each carrying two 3M55E Yakhont supersonic cruise missiles capable of striking surface targets on land and at sea at a range of 300 km, with their devastating 200 kg warhead. With these parameters, such missiles could put at risk elements of the US Six Fleet patrolling the eastern Mediterranean, as well as Israel navy vessels and Israeli offshore rigs.

If the Asad regime falls, these weapons could be transferred to his allies Iranian backed Hezbollah, Hamas or fall into the hands of extremist Islamic factions

The missile can use a high-low flight pattern for targets located at up to 300 km. The low-low flight pattern can be used against targets at ranges of 120 km or against well protected targets in order to be surprised minimizing its reaction time against the incoming missile and optimizing the missile's kill probability. During the low flight profile the Yakhont missile is able to fly at altitudes between 5 and 15 meters (5.6 ft & 16.4 ft) like a sea-skimming missile. The Yakhont is intended as a Russian surface ships and submarines anti-ship missile. It has been designed to defeat ships protected by the US AEGIS weapon system and its European counterparts. Defending against land-attack cruise missiles will stress air defense systems. Most missiles fly at low altitudes to stay below enemy radar and, in some cases, hide behind terrain features. But newer missiles are incorporating stealth features to make them even less visible to radars and infrared detectors. However if the Syrians are actually planning to expand their operational capabilities with the missile, one has to watch out for Syria to reach for UAVs, naval patrol aircraft (Be-200 or Il-38 from any CIS country or other countries (decommissioning such aircraft could be an option). Such transfer of equipment could remain unnoticed as it does not involve weapons transfer. They could also opt for upgrading the Su-24MK 'Fencer D' to take on maritime role. Even more significant is a combination of Su-27/Su-30 and P800s, which could provides the P800 with the stand-off targeting and attack capability against surface targets. Israel, the long range of the P800 means its naval vessels could be at risk, even at their main base in Haifa, a site already compromised by rockets fired from Lebanon during the 2006 war. Israel's second naval base in Ashdod could be targeted from land-based sites in Southern Syria. Furthermore, when targeting Israeli naval patrols in international waters off the Lebanese coast, P800 can be vertically launched from inland sites in Syria or Lebanon, fired behind the Lebanon mountain ridge, avoiding detection from the sea, thus minimizing the early warning for the targeted vessels. The Yakhont can be fitted with relatively small vessels, from corvette size and larger.

301). Russia sends ship-killer missiles to Syria Dec. 5, 2011
http://www.upi.com/Top_News/Special/2011/12/05/Russia-sends-ship-killer-missiles-to-Syria/UPI-77361323106694/#ixzz2Q8LpwUBo
301a). 3M55 Oniks / P-800 Yakhont / P-800 Bolid / SS-N-26
<http://www.globalsecurity.org/military/world/russia/ss-n-26.htm>
301b). Soviet/Russian Cruise Missiles Technical Report APA-TR-2009-0805 by Dr Carlo Kopp August 2009 Updated April, 2012
<http://www.airspacepower.net/APA-Rus-Cruise-Missiles.html#mozTocId241813>
Syria Receives 72 Yakhont Missiles from Russia Tamir Eshel Dec 2011
301c). http://defense-update.com/20111203_syria-receives-yakhont-missiles.html
How serious is the P800 Yakhont threat? Defense Update, Israel September 20, 2010 <http://www.freerepublic.com/focus/f-news/2592901/posts>

POTENTIAL RANGE OF SYRIAN P-800 YAKHONT CRUISE MISSILE

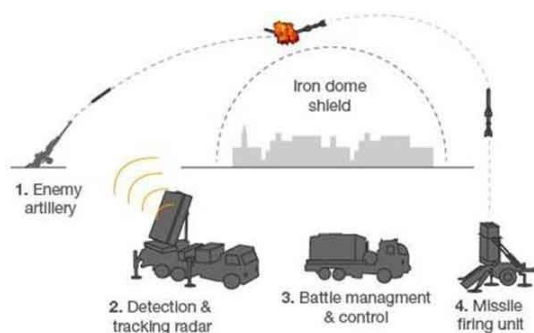


Russian missiles that had previously been delivered to Syria were later transferred to Hezbollah and used against Israeli Defense Forces. He also recalled an incident with anti-shipping missiles C-802 that Syria purchased from China and that were later deployed by Hezbollah against an Israeli destroyer in the 2006 Lebanon War, and severely damaging it.

- **Defending against land-attack cruise missiles will stress air defense systems," Most missiles fly at low altitudes to stay below enemy radar and, in some cases, hide behind terrain features. But newer missiles are incorporating stealth features to make them even less visible to radars and infrared detectors**



The tiny country of Israel out of necessity has dedicated anti-missile research and development programs. This has led to development of three main anti-missile systems. These are the Iron Dome, David Sling and the Arrow missile. The Iron Dome was used by the Israeli Defence Forces in operation titled "Pillars of Defence" against the Hamas in November 2012.



Broadly there are three components in the system which comprises of the detection and tracking radar, the Battle Management and Control and finally the Missile firing unit.

On 07 April 2011, the Iron Dome system first intercepted a Grad BM-21 rocket fired from Gaza. In 2012 more than 400 rockets including the Fajr rocket with a range of 75 km. In November 2012 during the Israeli Operation Pillar of Defence the Iron Dome intercepted an estimated 421 of the more than 1,000 rockets launched from Gaza in the recent eight-day war.

The Iron Dome system is really designed to intercept only short-range missiles, and not at the constant rate at which rockets were flying in during that conflict. Iron Dome battery costs between \$50,000 and \$100,000, and are usually fired in pairs. David's Sling is supposed to rectify both of these problems, by being both more cost-effective and able to intercept longer-range missiles, cruise missiles potentially fired from up to 300 kilometers (190 miles) away. This underwent a development test on 25 November 2012 and the test was a success. The David Sling is would be employed as a medium interceptor. Once David's Sling, also known as Magic Wand, becomes operational it will essentially complete a multi-tier missile defense shield that's been 20 years in the making. Above David's Sling is the Arrow-2 anti-ballistic system, built by state-owned Israel Aerospace Industries and Boeing of the United States, is designed to destroy Iran's Shehab-3b intermediate-range missiles and the Sejil-2 missile. Arrow-2, a variant of a system first deployed operationally in 2000, is a high-altitude, long-range weapons designed to intercept ballistic missiles in the final stage of their trajectory. Arrow-3, the most advanced variant now under development, is intended to destroy ballistic weapons outside Earth's atmosphere, with existing Arrow-2 batteries as back-up for those missiles that slip through the Israeli defenses. The David Sling system is capable of being transported on erector launchers. The first operational Arrow battery was deployed in 2000, and on 25 Feb 2013 Israel tested its latest version Arrow 3. The two stage missile is equipped with solid propellant booster and sustainer rocket motors. The missile attains a speed of Mach 9 and intercepts at the optimal intercept point. Each system is capable of detecting and tracking up to 14 incoming missiles.

302). Israel's New Missile Defense System Will Protect It From Missiles Fired From Even Farther Away
Robert Johnson | Nov. 26, 2012, Read more: <http://www.businessinsider.com/davids-sling-successfully-tested-israel-2012-11#ixzz2QJFSG9YV>

302a). The Iron Dome's New Brother: David's Sling Joins Israel's Growing Anti-Missile Family November 27 2012 9:11 AM
<http://www.ibtimes.com/iron-domes-new-brother-davids-sling-joins-israels-growing-anti-missile-family-901446#>

302b). Countering Artillery Shells Rockets and Missiles Major Gen PK Chakravorty Posted on April 9, 2013 by editor
<http://missilethreat.com/10497/>

MANPADS are shoulder-fired, deadly effective surface-to-air anti-aircraft missiles, and Hamas now has them.

In 2003 while addressing the Asia-Pacific Economic Cooperation forum, then Secretary of State Colin Powell warned that "no threat is more serious to aviation" than man-portable air defense systems (MANPADS). Easy to use and readily available on the black market, MANPADS do indeed pose an imminent and acute threat to military aircraft and civilian airliners.



Three general types of MANPADS exist: command line of sight, laser guided, and infra-red seekers. Command line-of-sight MANPADS are guided to their targets through the use of a remote control. Laser-guided or laser beam rider MANPADS follow a laser projected onto the target. The most common MANPADS, however, are infrared seekers, which hone in on the heat of an aircraft's engine. They are considered the easiest to operate and include the Soviet-era Strela and Igla weapons, as well as the U.S. Stinger. Today average MANPADS can reach a target from a distance of 3 miles, which means commercial aircraft are most vulnerable during periods of takeoff and landing. [333]

- **Some 20,000 MANPADS are missing from Libyan arsenals, since the fall of 41-year Libyan dictator Muammar Qaddafi in 2011. [334]**

In 2012 Hamas attempted to shoot down an Israeli Helicopter. Hamas fired a Strela shoulder-fired missile at an Israeli helicopter operating over Gaza. Strela is a low-altitude surface-to-air missile system with a high explosive warhead and passive infrared homing. Tens of thousands of anti-aircraft missiles went missing in the aftermath of the Qaddafi regime's overthrow. Israeli intelligence has long warned that many of them made their way from Libya and into the hands of Palestinian terrorist groups in the Gaza Strip, a suspicion that has now been confirmed. [335] MANPADS are shoulder-fired, surface-to-air anti-aircraft missiles that come in a variety of models. Performance varies considerably by type. The SA-7 has a kill zone with an upper limit of 4,290 feet while some newer models can reach altitudes of over 12,000 feet. The average range of MANPADS is about three miles. As for the vulnerability of large commercial aircraft, which usually cruise at around 30,000 feet, the weapon is most effective during takeoff and landing portions of a flight, or when aircraft are operating at lower altitudes. For more than three decades, shoulder-fired surface-to-air missiles have been used to attack civilian as well as military aircraft. Made famous by the Taliban in the Soviet – Afghan war was the stinger missile. MANPADS are designed to be man-portable. On the average systems usually weigh about 40 pounds and are balanced on and fired from the shooter's shoulder. Typically the missile is stored in and launched from a narrow tube that averages approximately five feet in length and about three inches in diameter. The system generally includes a battery and often an ejection motor. While the guidance mechanism within the missile itself can be quite complex, MANPADS are designed to be operated in harsh combat conditions, so durability is an important part of the design. There is a simple targeting interface which makes most MANPADS relatively easy to operate. MANPADS are also very cost-effective. They can be bought on the black market for prices as low as \$5,000 (for an old SA-7). A new third-generation missile, like the Russian SA-16, can cost anywhere from \$40,000 to several hundred thousand dollars. [336]

333). Man-Portable Air Defense Systems: A Persistent and Potent Threat Feb. 1, 2010 Stratfor.com

334). White House Believes 20,000 Sophisticated Missiles Missing in Libya By Colin Clark Published: September 27, 2011 <http://defense.aol.com/2011/09/27/white-house-believes-20-000-sophisticated-missiles-missing-in-li/>

335). Palestinians fired anti-aircraft missile at IDF helicopter, <http://www.timesofisrael.com/palestinians-fired-anti-aircraft-missile-at-idf-helicopter-israel-acknowledges/>

336). IBID 333

- 1). UN panel Libyan weapons are spreading at an alarming rate to new areas and fueling conflicts
By Associated Press April 9, 2013
http://www.washingtonpost.com/world/middle_east/
- 2). U.N.: Libyan weapons spreading
Associated Press | 4/10/13
<http://www.politico.com/story/2013/04/un-libyan-weapons-all-over-now-89846.html#ixzz20JcChE8U>

The Russian SA-24 MANPADS entered service nine years ago and is considered one of the most dangerous Russian portable anti-aircraft missiles. The SA-24 is a heat seeker, but it does not just go for the engine exhaust but rather any part of the aircraft. This makes the SA-24 more dangerous because if they just go for the engine exhaust these missiles often do little damage. SA-24 weighs 19 kg (42 pounds) and fires a 11.7 kg (26 pound) missile for up to 6,000 meters (19,000 feet). Similar to the American Stinger, the 14.3 kg Stinger fires its 10.1 kg missile out to 8,000 meters (4.9 mi), but both systems have similar resistance to countermeasures and a warhead of about the same size (2-3 kg/4.4-6.6 pounds). The SA-24 in the hands of terrorists could bring down helicopters and airliners taking off. Russia sold the SA-24s to Libya, and did so without having to tell other countries a word about it, thanks to the vague wording of international treaties. The reporting requirements for the United Nations Register of Conventional Arms exempt that system because it's not man-portable and it does not have a range beyond 25 kilometers. So the Russians did not violate the rules of the register. In 2011 the *Aviation Week's* Maxim Pyadushkin confirmed with Russian arms exporters that the SA-24s were not delivered with grips that enable them to be shoulder-fired.

Other Russian MANPADS seen in Syria : The SA-14 is 1.52 meters (4.7 feet) long, weighs 15.9 kg (35 pounds), and has a max range of 4,100 meters (4.5 mi). It can't hit anything above 2,300 meters (7,100 feet) and has a 1.36 kg (3 pound) warhead. It entered service in 1974, and is called the Strela-3 by the Russians. The primary advantage of the SA-14 over the SA-7 is improved reliability and a better sensor, which can more easily defeat countermeasures. The SA-18 entered service in 1980 and the SA-16 three years later. Both are incremental improvements on the SA-14 and roughly the same size and weight. The current version of the SA-7 weighs 15 kg (33 pounds) has a max range of 4,000 meters (2.4 mi) and max altitude of 2,300 meters (1.4 mi). SA-16 /Igla-1 9K310 man-portable surface-to-air missile system, a further development from the SA-7 & SA-14 series, is an improved version of the SA-18 GROUSE, which was introduced in 1983, three years before the SA-16. The SA-16 features a new seeker and modified launcher nose cover. The SA-16 has an aerodynamic cone held in place with a wire tripod. On the SA-18 the protective cover of the seeker is conical; on the SA-16 it is tubular with a prominent lip at the forward edge. The 9M313 missile of the SA-16 employs an IR guidance system using proportional convergence logic, and an improved two-color seeker, presumably IR and UV). The seeker is sensitive enough to home in on airframe radiation, and the two-color sensitivity is designed to minimize vulnerability to flares. The SA-16 has a maximum range of 5000 meters (3.1 mi) and a maximum altitude of 3500 meters (2.1 mi).



338). Syrian Rebels And Their SA-24s by James Dunnigan December 6, 2012

<http://www.strategypage.com/dls/articles/Syrian-Rebels-And-Their-SA-24s--12-6-2012.asp>

338a). Black Market Antiaircraft Missiles - Libya Military Analysis - Popular Mechanics

Where Are Libya's Anti-Aircraft Missiles? April 13, 2011 By Joe Pappalardo

<http://www.popularmechanics.com/technology/military/weapons/where-are-libyas-anti-aircraft-missiles-5557406>

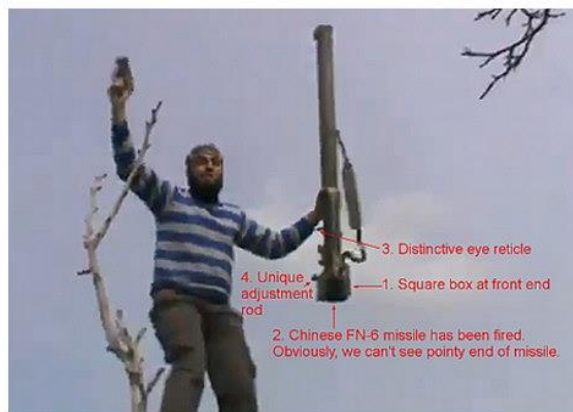
338b) 5 Things To Know About Libya's Missing Antiaircraft Missiles - SA-24 16 November 2012

Video Shows Captured SA-16 And SA-24 Surface To Air Missiles

Following my earlier post examining evidence of SA-24 and SA-16 surface to air missile captured by Syrian opposition groups a video has been posted on Youtube which appears to show the same missiles captured, along with a large number of other weapons

<http://brown-moses.blogspot.com/2012/11/video-shows-captured-sa-24-surfaceto.html>

Syrian rebels using what appears to be a Chinese-made FN-6

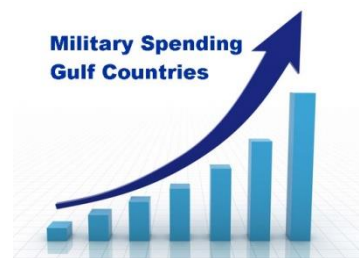


HongYing 6 (FN-6) Shoulder-Fired Air Defence Missile

In early 2013 Feb. 28, 2013 The YouTube carried a video which portrayed a Syrian air force Mi-8 Hip transport chopper being shot down by Syrian rebels using what appears to be a Chinese-made FN-6 shoulder-fired heat-seeking missile, N-6 (FN = FeiNu, 飞弩, meaning Flying Crossbow), is a third generation passive infrared (IR) man portable air defense system (MANPADS). It was developed by China, and is their most advanced surface-to-air missile. The FN-6 has a range of about 3.75 miles and can hit targets flying up to about 11,000 feet. The HY/FN-6 is an infrared seeking missile with a diameter of 71mm, a length of 1.495m and a weight of 10.77kg. All up with the launcher the system weighs 17kg and can intercept a target going 600m/sec. The launcher can be equipped with a night sight and an IFF system similar to the AN/PPX-1 fitted to the FIM-92 Stinger. While there have been some reports of the rebels seizing stocks of older Soviet-designed SA-7 Strela shoulder-fired missiles and possibly a few newer, much more capable Russian-made SA-24 Grinch missile systems, this is the first anyone has heard of anything other than Russian-made shoulder-fired missiles in rebel hands.

According to Syrian opposition sources with a generally reliable record, the Syrian Air Force suffered 144 aircraft losses in 2012. Here is the breakdown of the numbers: Total: 144, Helicopters: 83, Combat aircraft: 63, Shot down: 106, Destroyed on the ground: 38.

339). Jane's: FN-6 portable missile inflow of Syria's anti-government armed
<http://www.englishglobalnews.com/archives/20130228/janes-fn-6-portable-missile-inflow-of-syrias-anti-government-armed.html>
339a). Chinese surface to air missiles are being used by Syrian rebels Foreign Policy Posted on March 1, 2013 by editor
<http://missilethreat.com/chinese-surface-to-air-missiles-are-being-used-by-syrian-rebels/>
339b). PLA Mechanized Infantry Division Air Defence Systems PLA Point Defence Systems Technical Report APA-TR-2009-0301
Martin Andrew, PhD, RAAF(Ret.) <http://www.ausairpower.net/APA-PLA-Div-ADS.html#mozTocId503115>
339c). U.S. officials say there were 20,000 Russian-made anti-aircraft missiles in Libya before the uprising, and thousands have disappeared in the looting of Moammar Gadhafi's arm caches.
339d). Syrian Air Force lost 41 planes helicopters in 2012: survey 30 December 2012 By AL ARABIYA
<http://english.alarabiya.net/articles/2012/12/30/257707.html>



Military Spending Gulf Countries: Gulf oil producers pumped nearly \$130 billion into the military sector in 2012 as they pushed ahead with a drive to bolster their defenses, according to Western data.¹

Estimates by defense analysts revealed Arab League countries spent more than \$300 billion on arms and other military and security purchases during 2011-2013. The defense analysts stated they based their research estimates on official figures. These official figures showed total Arab expenditure stood at \$760 billion in 2011 and \$840 billion in 2012. As it accounted for nearly 75 per cent of total expenditure, the current spending totaled around \$1,200 billion during those years. With defense allocations standing at about 26 per cent, total military spending was estimated at around \$312 billion. Arab League figures showed overall Arab defense and security expenditure stood at around \$680 billion during 2002-2010, an average \$75 billion annually. According to Jane's, there have been sweeping orders for the latest multirole jet fighters and more are expected in the near future, with the UAE weighing up the Dassault Rafale and Euro-fighter Typhoon. In 2013 a USA \$30 billion contract with Saudi Arabia for new combat aircrafts Pentagon saying that Saudi Arabia needs to be able to defend itself. There have also been considerable orders of naval vessels that will help the Gulf States protect oil tankers if there is a conflict with Iran. GCC states of the UAE, Saudi Arabia, Kuwait, Bahrain, Qatar and Oman have long been among the world's biggest military spenders, allocating nearly a third of their current expenditure to the purchase of weapons and other military sectors, including maintenance, training and salaries to the armed forces.

- ***The most striking development last year was the number of requests for ballistic missile defense, namely the Patriot and Terminal High Altitude Air Defence (THAAD) systems and associated radars,***

Missile defense systems for the Arab states of the Gulf Partly in response to the ascertained threat from Iran, several Arab states in the Gulf are investing heavily in arms imports. Missile defense systems procured from the USA are an increasingly important element of their arms imports. In 2012 the UAE ordered 2 THAAD anti-ballistic missile systems and received the first components of 4 Patriot PAC-3 SAM systems ordered in 2008. In 2012 US defense agency cleared Qatar to buy a \$6.5 billion new Lockheed Martin Corp. missile-defense systems to "counter current and future threats" and reduce dependence on US forces. The sale of two Terminal High Altitude Area Defense (THAAD) fire units, 12 launchers, 150 interceptors, early warning radars, various parts, training and logistical support for an estimated cost of \$6.5 billion, according to the DSCA. In 2011 United Arab Emirates became the first country to buy the U.S. Terminal High Altitude Area Defense intermediate-range interceptor system, for \$3.5 billion. The UAE has also been cleared to purchase some \$1.1 billion in arms, after already signing an nearly \$2 billion initial order for weapons systems last December of 2011. In 2011 Saudi Arabia ordered an estimated 21 Patriot PAC-3 systems, and Kuwait ordered PAC-2 GEM-T missiles to upgrade its Patriot systems. In 2012 Qatar announced plans to procure THAAD and Patriot PAC-3 systems, and Kuwait announced plans to procure Patriot PAC-3 systems. The Forward-Based X-Band Radar-Transportable (FBX-T), also known as the Army Navy/Transportable Radar Surveillance (AN/TPY-2), is a high-resolution, phased-array X-band radar that detects missiles the boost phase. It is designed to be integrated with the hardware and software programs built for the Terminal High Altitude Area Defense (THAAD). The FBX-T enhances battle space awareness and engagement options for the Ballistic Missile Defense System (BMDS), as well as providing commanders with additional surveillance. Several have been deployed to the MENA.

- ***"Collectively, the requests were worth more than USD13 billion. This is clearly aimed at defending the Gulf States from Iranian ballistic missiles and long-range rockets."***

The figures by the Abu Dhabi-based Arab Monetary Fund showed defense allocations in the GCC and other regional nations accounted for more than eight per cent of GDP, making them the largest defense spenders in the world relative to their GDP. Independent estimates showed the cumulative crude export revenues of the six GCC countries over the past 15 years were estimated at a staggering \$3.76 trillion. Between 2000 and 2012, such allocations stood at an average 32 per cent of the current expenditure, which in turn accounted for nearly 77 per cent of their total spending, according to estimates by their governments. Saudi Arabia, the world's dominant oil exporter and largest Arab economy, has remained the top military spender in the region, traditionally allocating nearly a third of its total public expenditure to defense.

340). Gulf defense spending at \$130bn Spending is part of drive to bolster regional defense capability By Staff Published Monday, February 25, 2013 <http://www.emirates247.com/business/gulf-defence-spending-at-130bn-2013-02-25-1.496328>

340a) Continuing weapons spending spree, Qatar pursues \$6.5 billion missile defense system

<http://dohaneews.co/post/35118650021/continuing-weapons-spending-spre-qatar-pursues-6-5>

340b). Middle East bucks the trend on military spending Andrew Freeman January 7, 2013 http://www.yourmiddleeast.com/special-reports/article/middle-east-bucks-the-trend-on-military-spending_12145

4) ARMY NAVY/TRANSPORTABLE RADAR SURVEILLANCE (AN/TPY-2) <http://missilethreat.com/defense-systems/army-navytransportable-radar-surveillance-antpy-2/>

While total world military expenditure has leveled off for the first time in 12 years, the same cannot be said for the majority of countries in the Middle East North Africa (MENA) region. Statistics released by the Stockholm International Peace Research Institute (SIPRI) show that the Middle East increased its military expenditure by 4.6% last year. "As the lack of data for some countries suggests, military spending in the Middle East is severely lacking in transparency. Even in those countries for which figures exist, often only a single total is given, and this may well exclude significant off-budget military spending, in particular arms purchases made directly from oil revenue funds as opposed to the official defense budget," Pieter Wezeman, a Senior Researcher at SIPRI, noted. [341]The Islamic Republic of Iran conceals its defense spending through privatization. *Through privatization Khamenei has transferred control of Iran's Commerce, Industry, Oil, Gas and Public Services Sectors to the Islamic Revolutionary Guard.*

Iran's defense spending as a share of GDP only appears to be relatively low compared to the rest of the region that is because it is hidden through Privatization.

Hidden in Khamenei's decision to transfer control of a large portion of Iran's commerce, industry, oil and gas and services sectors to the IRGC was a carefully crafted covert agenda.

1. **To create front companies in a bid to conceal the nuclear and missiles program and facilitation of purchases and activities in this regard;**
2. **To fund the nuclear projects and militant fundamentalist activities in the region;**

 ***Privatization mean's expansion from relatively transparent parts of the public sector to parts of the public sector shielded from public scrutiny, especially the IRGC and its subordinate volunteer militia, the Basij.***

These transfers are conducted by credit and finance institutions, such as the IRGC and Basij Cooperative Foundations and their subsidiaries, such as the IRGC Cooperative Foundation (Bonyad-e Ta'avon-e Sepah) and the Ansar Financial and Credit Institute (Moassesseh-ye Mali/Eghtesadi-ye Ansar). These function as financial arms of the IRGC and the Basij on the Tehran Stock Exchange (TSE) and elsewhere, using their leverage to purchase shares of Iranian companies. Supremacy of Raison D'état: Justification of overriding state power, there are circumstances when the need to ensure the security or well-being of the state or the nation justifies governments ignoring the normal considerations of law or morality. [342]Khomeini formalized the supremacy of raison d'état over the tenets of Islam as the precept guiding IRI decision-making. This principle guides decision making at the highest levels of the regime, as well as the actions of the regime's foot-soldiers. [343] On February 2, 2012 the U.S. Senate Banking Committee unanimously adopted a measure that would compel the Obama administration to investigate links between Iran's crude-oil supply chain and its Islamic Revolutionary Guard Corps, which the U.S. has sanctioned for weapons proliferation, terrorism support and human-rights abuses. [344] **IRI Shell Game Reflagging Ships** The U.S. has already sanctioned Iran's national maritime carrier, the Islamic Republic of Iran Shipping Lines, for involvement in missile programs and transporting military cargoes. A report in January 2012 by the Stockholm International Peace Research Institute concluded the IRISL had renamed 90 of its 123 ships since 2008 and reflagged some of its fleet in an effort to circumvent sanctions. Khamenei's hidden defense planning is not only motivated by a desire to enhance the IRI's strategic military and deterrent capabilities. The Islamic Republic has faced real and perceived threats from the late Saddam Hussein's Iraq, the United States, and Israel. With the U.S. military and naval forces in the Persian Gulf the IRI is developing the means to break American attempts to encircle it as part of its efforts to contain the IRI. Of which is not only military or asymmetrical capacities, but a nuclear umbrella based on missile/cruise missile warfare costly technologies. [345]

In a 2012 report from Voice of Economic Reality (a think tank promoting transparency and freedom of information in Middle Eastern financial markets) estimates are that the IRGC now controls about USD 35–40 billion worth of business per year. Put in context, annual Iranian oil sales are USD 85 billion. The continued shift of economic power to the IRGC is very unpopular in Tehran as many small businessmen are being forced to sell their businesses to the IRGC. [1] Khamenei's has effectively launched the privatization of as much as \$120 billion worth of IRI's public assets. [2] According to a 2011 report, the Iran Privatization Organization over the past five years privatized 589 state-owned companies with nearly 83 billion dollars' worth of shares. [3]

1). Insights – Expanding IRGC Ownership of the Iranian Economy
http://www.voiceofeconomicreality.com/newsletters/2011/aug_2011.html

2).All the Guard's Men: Iran's Silent Revolution September/October 2010 Ali Alfoneh
<http://www.worldaffairsjournal.org/article/all-guards-men-irans-silent-revolution>

3).U.S. Sanctions and Iran's Economic Realities by Abolghasem Bayenat August 17, 2011

341) Middle East bucks the trend on military spending Andrew Freeman January 7, 2013

http://www.yourmiddleeast.com/special-reports/article/middle-east-bucks-the-trend-on-military-spending_12145

342).Raison D'etat Discipline: Political Science <http://www.wisdomsupreme.com/dictionary/raison-detat.php>

343).The Strategic Culture of the Islamic Republic of Iran Operational and Policy Implications Michael Eisenstadt Middle East Studies at the Marine Corps University Monograph Series August 2011 p2

344). Iran Sanctions Bid Targets Oil Tanker Companies to Cut Exports By Indira A.R. Lakshmanan - Feb 6, 2012 11:26 AM PT
bloomberg.com/news/2012-02-06/iran-sanctions-plan-targets-oil-companies-tanker-fleet-to-slash-business.html

345). IBID (see also Chapter 2 Islamic Revolutionary Guard Corps, The Military Political Economic Structure Of Iran

Regional Security Umbrella Against Iran: The United States has been working with Gulf states (Including Israel, Turkey) on a bilateral basis, not as a group, to boost the range of radar coverage and related capabilities across the Gulf for the earliest possible defense against any missiles fired by Iran. U.S. officials said the ultimate goal is a regional shield that can be coordinated with U.S. systems parallel with Washington's drive to expand missile defense to protect NATO's European territory against ballistic missiles that could be fired by Iran. [346] In 2012 U.S. Secretary of State Hillary Clinton said "*it is a U.S. priority*" to help Persian Gulf States build regional missile interceptor systems to counter missiles from Iran. Speaking in Saudi Arabia at a Gulf Cooperation Council (GCC) forum, Clinton said the United States believes "*strongly*" that "*we can do even more to defend the Gulf through cooperation on ballistic missile defenses.*" [347] The Department of Defense had announced the broader Middle Eastern security effort in January 2012 as part of a new guidance document, "U.S. Priorities for 21st Century Defense." [348]



— Source: Raytheon

Pentagon's X-Band Radar Systems: Army-Navy Transportable Surveillance Radar, or AN/TPY-2

In 2008 the Pentagon deployed to Israel's Mt. Keren an X-Band radar system. Directed to the northeast where lies Iran, it has the capability of detecting a Iranian missile launched at Israel. The Pentagon's X-Band radar system sophisticated electronics can ascertain an Iranian missile launch just seconds into its flight. It is so advanced it can see over the horizon, and it is said it is so sensitive it can spot a softball tossed in the air from 2,900 miles away. Tehran is about 1,000 miles away to the northeast. In 2012 Pentagon started building a missile-defense radar station at a secret site in Qatar as preparations

accelerate for a possible flare-up with the IRI. The radar site will complete the backbone of a system designed to defend U.S. interests and allies such as Israel and European nations against Iranian rockets, The Pentagon chose to place the new radar site in Qatar because it is home to the largest U.S. military air base in the region, Al Udeid Air Base, analysts say. More than 8,000 troops are stationed there and at another U.S. base in Qatar. U.S. officials and allied militaries to track missiles launched from deep inside the Islamic Republic. The radar base in Qatar is slated to house powerful AN/TPY-2 radar, also known as an X-Band radar, and supplement two similar arrays already in place in Israel and in central Turkey, officials. The Israel base is outfitted and staffed by the U.S. European Command, which covers Israel. Inside the wire, however, the chain of command is American. In the one-story building beside the radar, technically called the Army-Navy Transportable Surveillance Radar, or AN/TPY-2, the data flows first to technicians' readouts, then on to California, where the U.S. Missile Defense Agency also registers feeds from satellites and sea-borne sensors. If their computers recognize an ascending fireball as a hostile missile launch, U.S. commanders may pass the information to their Israeli counterparts. Together, the three radar sites form an arc that U.S. military officials say can detect missile launches from northern, western and southern Iran. [349]



U.S. ARMY

346) .U.S., Gulf countries seek to advance missile defense plan By Andrew Quinn
NEW YORK | Fri Sep 28, 2012 5:47pm EDT <http://www.reuters.com/article/2012/09/28/us-un-assembly-gulf-usa-idUSBRE88R1GW20120928>

347). U.S. Pushes Missile Defense in Mideast Tom Z. Collina May 2012
http://www.armscontrol.org/act/2012_05/US_Pushes_Missile_Defense_in_Mideast

348). [Sustaining U.S. Global Leadership: Priorities for 21st Century](http://www.defense.gov/news/defense_strategic_guidance.pdf) www.defense.gov/news/defense_strategic_guidance.pdf

349). How a U.S. Radar Station in the Negev Affects a Potential Israel-Iran Clash By Karl Vick and Aaron J. Klein May 30, 2012
<http://www.time.com/time/world/article/0,8599,2115955,00.html>

349a) Pentagon Bulks Up Defenses in the Gulf By Adam Entous And Julian E. Barnes 17 July 2012
<http://online.wsj.com/article/SB10001424052702304388004577531331722511516.html>

Building Gulf Missile Defenses *"Establishing an effective regional missile defense system for the Gulf Arab states has become more achievable in recent months amid a series of modest but important improvements in technology and doctrine. The cumulative impact of these "small wins" can help consolidate regional cooperation, but Washington will need to assume an even more proactive role if it hopes to deter Iran."* Col. Eddie Box (USAF)

Progress In Missile Defense

The successes to date for Gulf missile defense include:

- Agreement on the importance of the Iranian threat
- "Bilateral multilateralism," in which each Gulf Cooperation Council (GCC) state coordinates with Washington individually, and Washington then coordinates with the others -- a useful means of fostering cooperation among often-suspicious governments
- Adoption of a common missile defense doctrine and progress on a nascent regional missile defense plan
- Procurement of interoperable missile technology that can be more readily forged into a common shield

The recent technological milestones in particular offer much reason for optimism about the prospects for effective defense against Iranian missiles. Today's systems are increasingly capable, offering several advancements that are relevant to the Gulf.

Remote Sensor Cueing. In a February 2013 test, a U.S. Space Tracking Surveillance System-Demonstrator (STSS-D) satellite tracked a Scud-like target and relayed data through a secure, jam-resistant datalink to an Aegis cruiser located over 500 miles away. The cruiser then destroyed the target with a SM-3 Block IA interceptor. With such remote datalinking, missile defense arrays involving Aegis ships, Patriot batteries, and Terminal High-Altitude Area Defense (THAAD) systems can now be cued and ready to fire much more quickly, while enemy missiles are still hundreds of miles away. Today's missile launchers are not limited to the range of their co-located radars and can therefore maximize the "fly out" range of their interceptors. In the Gulf, Turkey, and Israel, the long-range X-band TPY-2 radar and airborne platforms such as drones, E-3 AWACS, E-8 JSTARS, and the RC-135 Rivet Joint/Cobra Ball can feed real-time and extended missile-launch information to land- and sea-based interceptors minutes earlier than previously -- a crucial improvement in scenarios where even seconds count.

Layered Missile Defense. In October 2012, U.S. forces in the Pacific carried out the world's most sophisticated and complex live missile scenario to date, with Aegis, Patriot, and THAAD systems simultaneously tracking and engaging four different types of air and space targets: a cruise missile, an aircraft, a short-range ballistic missile, and a medium-range ballistic missile. Directed from an integrated command-and-control system organized much like CENTCOM, the exercise proved the viability of using a layered defense against multiple, simultaneous manned and missile targets. These same capabilities can be employed in the Gulf. Similarly, Israel recently showed how the Iron Dome short-range interceptor system can fill a layered defense niche, adding it to the national air and missile defense network alongside David's Sling (used for countering cruise missiles and long-range rockets) and Arrow (for medium- and long-range missiles).

Longer-range Engagements with Redundant Targeting. Aegis and THAAD missile intercepts are designed to take place in the exoatmosphere (outer space). In the case of targeting Iranian ballistic missiles carrying weapons of mass destruction, the intention would be to have missile debris disintegrate as it enters the atmosphere. U.S. and allied technology continue to extend the range of missile intercepts, pushing them further away from civilian populations and infrastructure. For example, one Israeli Arrow 3 test missile reached hypersonic speeds over the Mediterranean Sea and climbed over seventy miles into space. Once in the exoatmosphere, the Arrow 3 becomes a space vehicle that maneuvers for intercept. These and other longer-range interceptors give defenders multiple opportunities to engage enemy missiles at greater distances from friendly territory, including the possibility of a second chance if the initial intercept attempt fails.

Next Steps

In addition to these technological advances, more can be done to continue the pattern of small wins and create a credible deterrent to Iran's ballistic missile program. As the Gulf states field newer, more sophisticated U.S. systems such as PAC-3 and THAAD, Washington must continue its hands-on role, leading efforts to enhance interoperability and further integrate command and control. The ultimate goal of such efforts is a self-sufficient GCC missile defense network that is integrated with systems in neighboring states. First, although missile interceptors are increasing in range and altitude, more should be done to develop boost-phase intercept capabilities -- that is, targeting enemy missiles shortly after launch, when they are most vulnerable due their relatively low speed, heavy fuel load, inability to deploy decoys or engage in evasive maneuvering, and susceptibility to tracking due to prominent infrared signatures. Investments should be made in air-launched



Col. Eddie Box (USAF)
visiting military fellow at
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interceptors that could be carried on allied aircraft, allowing them to engage missiles as close as possible to their launch sites in Iran. (Continued)

Toward that end, Washington should conduct exercises that include engaging air-launched cruise missiles, which U.S. forces practiced during the Cold War.

Fifth-generation aircraft such as the F-22 and F-35 can carry Airborne Weapons Layer (AWL) munitions, which are roughly 18 inches in diameter and 160 inches long -- about the size of a 2,000-pound bomb. With a range of up to 400 miles, they would provide a much-needed boost-phase intercept capability against Iranian ballistic missiles. During times of increased tension, such aircraft could conduct continuous missile-defense patrols against mobile launchers or remain on station near Iranian missile silo fields. Second, U.S. policymakers should be more proactive in embracing missile defense in the region. For example, Adm. James Stavridis, the top U.S. commander in Europe, recently told the Senate that "Patriot missile batteries already deployed to southern Turkey could be positioned, with Turkey's consent, to protect a Syrian safe zone and defend against Assad's frequent use of Scud missiles, which are capable of delivering chemical weapons." The first missile or aircraft downed by such a system while attempting to kill Syrians would demonstrate that multinational missile defense forces are a credible deterrent -- a useful lesson for not only Damascus, but also Iran and North Korea. Some critics have challenged the efficacy of missile defense, but successful intercepts of Syrian Scuds would prove that the technology and procedures have evolved greatly since U.S.-led efforts to deal with Saddam Hussein's missile arsenal. As shown by Israel's Iron Dome, an effective missile defense system has many benefits. Yet none are as important as reassuring civilians, giving diplomats more time to seek peaceful outcomes during crises, and, under certain circumstances, influencing the decision making of totalitarian regimes. Accordingly, Washington and its allies should mount a concerted campaign to convince Tehran that their recent small wins could produce a highly capable missile defense in the Gulf, rendering the regime's efforts to build a large and capable missile force increasingly expensive and ineffective.

Col. Eddie Box (USAF) Eddie Boxx, a colonel in the U.S. Air Force, directed the Air Component Coordination Element for Joint Interagency Task Force South (JIATFS) in Key West, Florida, where he was responsible for integrating Air Force assets to counter aerial and maritime smuggling operations across the U.S. southern border. A veteran combat air battle manager, he has qualified in both the E-3 AWACS and E-8 Joint STARS aircraft. Colonel Boxx has logged 1,500 combat and combat-support hours in the Near East in support of air operations in Yemen, Turkey, Saudi Arabia, Iraq, and Afghanistan. While deployed in 2006 in support of Operation Iraqi Freedom, he participated in aerial counter-IED smuggling and employment operations. He also flew missions in support of the northern and southern no-fly zones in Iraq in the 1990s.

Building Gulf Missile Defenses One Small Win at a Time Eddie Boxx March 28, 2013

<http://www.washingtoninstitute.org/policy-analysis/view/building-gulf-missile-defenses-one-small-win-at-a-time>



Chemical Biological Radiological Nuclear Weapons

Nuclear, Biological, and Chemical weapons programs proliferated through the third world in the 1960s. These programs reached maturity in the 1980s when chemical and toxin weapons were used on battlefields in North Africa, the Middle East, and Southeast Asia. In the 1990s, these programs were being expanded

and refined. Chemical warfare agents are being produced and stockpiled. Biological warfare programs are being established. Virtually all NBC weapons states have deep strike capabilities through ballistic & cruise missile programs. These factors increase the likelihood of NBC weapons used in conflicts between third world states. Chemical and biological weapons are attractive to many Third World countries because they are much easier to produce than nuclear weapons. Many countries with chemical and biological warfare programs also are equipped with ballistic and cruise missiles. Accuracy is not very important for these weapons when used against urban areas or large concentrations of military forces. [350]

350). The Worldwide Nuclear, Biological, And Chemical Warfare Threat Commandant US Army Chemical School FT MC CLELLAN, AL 36205-5020 DSN 865-6454 STU III - 4037 http://www.fas.org/irp/threat/cbw/NBC_Threat.pdf

Chemical and biological weapons are capable of producing massive casualties, inducing panic and chaos in civilian populations. There is no way to segregate nuclear technologies employed for “peaceful” purposes from technologies that may be employed in weapons—the former may be, and have been, transformed into the latter. The myth of the “peaceful atom” is belied by the easy modification of a nuclear energy infrastructure to create the material required for a nuclear bomb. International treaties leave non-weapons states free to use and develop sensitive nuclear technology such as uranium enrichment and spent nuclear fuel reprocessing. While such technologies are ostensibly employed to create fuel in power reactors, they may be easily adjusted or redirected to produce weapons-grade fissile material. Moreover, power reactors themselves produce plutonium, which may be used in bombs. Once the nuclear genie is out of the bottle, it becomes impossible to restrict its use to “peaceful” purposes. [351]

Nuclear Non-Proliferation Treaty (NPT) Fatal Flaw: Though considered one of the most successful international arms-control agreements ever instituted, the Treaty on the Non-Proliferation of Nuclear Weapons—commonly known as the Nuclear Non-Proliferation Treaty or “NPT”—suffers a fatal flaw: Article IV of the NPT allows and encourages signatories to develop nuclear technology for “peaceful purposes,”. Such as for the production of electricity, calling such use the “inalienable right” of all parties to the treaty. Article IV further encourages NPT signatories to engage in the “fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy.” Non-nuclear-weapons states are especially encouraged to participate in commercial nuclear power development. Article X of the NPT gives signatories the right to withdraw at their discretion, requiring only three-months of advance notice. Thus non-weapons countries may fully develop nuclear technology while a party to the treaty, being subject to the inspections and protection of the IAEA, (International Atomic Energy Agency) but then withdraw without having to forsake their acquired nuclear technology. Such is precisely the case with North Korea, which withdrew from the international pact in January 2003.[352] The proliferation crises of the late 1990s and early 2000s led the Washington & Pentagon officials to conclude that the traditional non-proliferation regulations was not sufficient to prevent the proliferation of CBRN weapons to the states and non-state actors that particularly alarm Washington. The major non-proliferation treaties and export control regimes had failed to prevent India and Pakistan from becoming nuclear powers, and Libya, the Democratic People's Republic of Korea (DPRK) and other states had attempted to follow suit to varying degrees of success. From captured documents to proclamations even Al-Qaeda has aspiration to acquire WMD capabilities. In late 2003, the exposure of the nuclear smuggling network orchestrated by Pakistani metallurgist A.Q. Khan revealed the ease with which various states and nonstate actors had been able to capitalize on gaps in the non-proliferation regime. [353]



Today Iran Remains the most activate customer in the International Nuclear Black Market,

"Today, Iran remains the most active customer in the international nuclear black market. It has sought dual-use goods from some of the same people and firms previously linked to Khan, but has also turned to new technology brokers. According to one 2006 report, 'German, EU and US officials say that Iran has built an equivalent, if not larger, network than Khan's to supply prohibited goods for its nuclear ... program'. Although exporting countries have heightened their vigilance, Iran still tries to evade export controls by repeatedly changing front companies and financing arrangements. Iran continues to seek nuclear technology in Western Europe and nuclear know-how from the former Soviet Union. It has been suggested that Iran has secretly continued experiments into laser enrichment, using hired Russian expertise. An investigation by the Turkish Customs Directorate released in May 2006 claimed that an Istanbul trading firm served as the hub of a network which procured dual-use equipment manufactured in Europe, including by subsidiaries of US companies, for Iran's nuclear program"

1993–94 deal : Iran received more from A.Q. Khan than nuclear designs and equipment. The equipment supply documents the Khan network provided the Iranians allowed them to contact suppliers in Europe, Russia and Asia to acquire nuclear-related equipment and technologies

Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks (A Net Assessment) (An IISS Strategic Dossier) Chapter2 The International Institute for Strategic Studies 2007 <http://www.iiss.org>

351) The Worldwide Nuclear, Biological, And Chemical Warfare Threat Commandant US Army Chemical School FT MC CLELLAN, AL 36205-5020 DSN 865-6454 STU III – 4037 http://www.fas.org/irp/threat/cbw/NBC_Threat.pdf

352) The Future of the Nuclear Nonproliferation Treaty (NPT): Prospects and Problems <http://www.cato.org/events/future-nuclear-nonproliferation-treaty-npt-prospects-problems>

353). WMD Proliferation Threatens the World A bountiful supply raises risk of WMDs falling into wrong hands Carol E. B. Choksy, Jamsheed K. Choksy Yale Global, 5 April 2013 <http://yaleglobal.yale.edu/content/wmd-proliferation-threatens-world#comment-68966>

Countries have spurred proliferation of every CBRN category since the 1950s. Disseminating the weapons, relevant technologies and dual-use materials remains a surefire way for not only rogue states and terrorist organizations but even superpowers to sway other nations, make quick profits or destabilize foes. Not surprisingly, the United Nations Institute for Disarmament Research concluded: "The non-proliferation treaties lack effective mechanisms to enforce compliance. The less formal export control regimes suffer from the same lack and have limited membership." For example in the biological warfare programs in the Middle East, Egypt weaponized anthrax, botulism and plague in the 1970s with Soviet aid. [354]

Indeed the danger of nuclear, chemical and biological agents passing to non-state actors is on the rise. Since 2001 Al Qaeda and its affiliates have sought various WMD capabilities. Al Qaeda and associated extremist groups have a wide variety of potential agents and delivery means to choose from for chemical, biological, radiological, or nuclear (CBRN) attacks. Al Qaeda end goal is the use of CBRN to cause mass casualties; Training videos found in Afghanistan show Al Qaeda tests of easily produced chemical agents based on cyanide. Documents found in Afghanistan highlight Al Qaeda interest in the production of more effective chemical agents such as mustard, sarin, and VX. [355]

"Al-Qa'ida has openly expressed its desire to produce nuclear weapons. We know that the group could easily construct a radiological dispersal device, or "dirty bomb" like the one shown here, which, while incapable of causing mass radiation-related casualties, could result in panic and enormous economic damage,"

CIA Terrorist CBRN: Materials and Effects
https://www.cia.gov/library/reports/general-reports-1/CBRN_threat.pdf

During Syria's civil war some sarin, mustard gas and cyanide from government depots reportedly have fallen into illicit hands. The possibility of Islamists wresting materials from Pakistan's WMD facilities increases as that nation's political instability grows. Iran for its part appears to have transferred some technologies to regional militant organizations such as Hamas and Hezbollah. [356]

354). WMD Proliferation Threatens the World A bountiful supply raises risk of WMDs falling into wrong hands Carol E. B. Choksy, Jamsheed K. Choksy Yale Global, 5 April 2013 <http://yaleglobal.yale.edu/content/wmd-proliferation-threatens-world#comment-68966>

355). CIA Terrorist CBRN: Materials and Effects
https://www.cia.gov/library/reports/general-reports-1/CBRN_threat.pdf

356). IBID 354

**Declassified 2012 Report
Unclassified Report to
Congress on the Acquisition of
Technology Relating to
Weapons of Mass Destruction
and Advanced Conventional
Munitions, Covering 1 January
to 31 December 2011**

II. Chemical, Biological, Radiological, and Nuclear Terrorism Several terrorist groups, particularly al-Qa'ida and al-Qa'ida in the Arabian Peninsula, probably remain interested in chemical, biological, radiological, and nuclear (CBRN) capabilities, but not necessarily in all four of those capabilities. A number of the 33 US Department of State-designated foreign terrorist organizations worldwide have previously expressed interest in one or more of these capabilities, mostly focusing on low-level chemicals and toxins. Some terrorist groups see employing (CBRN) materials as a high-impact option for achieving their goals, as even if they do not produce many casualties they would have a psychological impact. We believe some of these terrorists aim to use these agents against Western targets, especially in Iraq and Afghanistan. We continue to be concerned about al-Qa'ida's intent to conduct unconventional attacks against the United States. While counterterrorism actions have disrupted al-Qa'ida's near-term efforts to develop a sophisticated CBRN attack capability, we judge the group is still intent on its acquisition.

<http://www.fas.org/irp/threat/wmd-acq2011.pdf>

The Syrian Conflict has attracted a plethora of foreign fighters. Unlike Iraq and Afghanistan, where the vast majority of foreign fighters were jihadists, foreign fighters in Syria fall across the spectrum. Many are simply young revolutionaries from the region who have been caught up in the spirit of the Arab Spring. They participated in successful revolutions in their own countries and are now looking to help their Syrian counterparts succeed. Others are Islamic-inspired foreign fighters who, like the Syrian religious-nationalists, believe that it is their duty to help protect their Muslim brethren, as many 600 are known to have come from Europe.

Amid other upheavals in the Arab world, popularly known as the Arab Spring, protests to the rule of President Bashar al-Assad started in March 2011. In response, the Assad regime unleashed a campaign of a violent crackdown. As the brutal crackdown intensified through 2011, the Arab League in November suspended Syria's membership, and called for political and security reforms and negotiations with the opposition. In February 2012, Western and Arab powers established a Friends of Syria Group in Tunis, Tunisia, and the United States withdrew its embassy staff from the capital Damascus. Amid growing international condemnation for the violence, the United Nations Security Council that spring appointed former U.N. Secretary-General Kofi Annan to administer a combined U.N.-Arab League peace plan. Washington and many of its Western allies have imposed economic sanctions against Syria, condemning al-Assad and demanding that he leave country. Over one million refugees have fled to neighboring countries. Syria's cities are left destroyed, its streets deserted. Syria's civil war continues unabated in early 2013 amid an enduring international impasse over how to negotiate the two-year-old conflict that has killed more than sixty thousand people and displaced some seven hundred thousand more, according to the United Nations. Western governments fault Russia and China both staunch supporters of the Assad regime--for a lack of diplomatic progress on Syria. Moscow and Beijing have vetoed three UN Security Council resolutions aimed at isolating Syrian President Bashar al-Assad, and have rejected the imposition of economic sanctions. Policymakers in the United States continue to push for Assad's departure, but debate continues over whether greater unilateral action is prudent, including providing arms to the opposition.

"There are no good options in Syria. No matter what happens, the current civil war has triggered divisions between Sunni, Alawite, Kurd, and Syria's smaller minorities that will take a decade or more to heal and leave lasting anger and hatred between Sunni and Alawite. The war has already spread to involve Lebanon and Iraq, unleashing a rebirth of sectarian tensions and conflict in each country. Worse, it has become linked to a religious war within Islam that increasingly pits Sunni against Shi'ite, and religious extremists against mainstream Islam, across the entire Islamic world,"

**Syria: The Search for the Least Bad Option Anthony H. Cordesman
April 3, 2013**

<http://csis.org/publication/syria-search-least-bad-option>

356). Syria War: What You Need To Know 2 Years Into The Conflict The Huffington Post By Eline Gordts 03/19/2013
http://www.huffingtonpost.com/2013/03/19/syria-war_n_1696079.html
356a). Syria's Crisis and the Global Response Author: Jonathan Masters, Deputy Editor Updated: April 3, 2013 <http://www.cfr.org/syria/syrias-crisis-global-response/p28402>

Syria is currently believed to have one of the largest and most sophisticated operational arsenals of chemical weapons in the world, based primarily on nerve agents. This group represents the most advanced form of military chemicals materials. The main agent is sarin (also known as GB), an extremely toxic and volatile agent. The Syrians are also thought to have persistent VX, even more toxic than sarin. The launch mechanisms include aerial bombs and shells, but the chief strategic weapons are ballistic missiles (Scuds and its derivatives as well as the SS-21) capable of reaching every part of Israel. Much less is known about the country's biological weapons program, with disagreement as to whether the country has developed an offensive biological weapons capability. The components of Syria's chemical weapons structure are dispersed over a large number of sites throughout the country, while the regime is believed to run four production facilities.

Regional Proliferation and the Arab Spring Chemical Weapons in Libya and Syria Benedetta Berti and David Friedman Strategic Assessment | Volume 15 | No. 4 | January 2013

Syria Threatens to Attack Israel and Mid-East with WMDs: In 2011 fearing an International intervention similar to the military operation that helped topple Muammar Gaddafi Libyan government, Syrian President Bashar Assad threatened to set fire to the Middle East, and especially Israel, if NATO attacks Syria. In a 2011 meeting with Turkish Foreign Minister Ahmet Davutoglu, Assad said: "If a crazy measure is taken against Damascus, I will need not more than six hours to transfer hundreds of rockets and missiles to the Golan Heights to fire them at Tel Aviv. According to the Fars news agency, the Syrian president stressed that Damascus will also call on Hezbollah in Lebanon to launch a fierce rocket and missile attack on Israel, such that Israeli intelligence could never imagine. All these events will happen in three hours, but in the second three hours, Iran will attack the US warships in the Persian Gulf and the US and European interests will be targeted simultaneously," Assad said.[357] Then in 2013 in the face of International support of the Syrian opposition groups Syria's President Bashar Assad accused the West on Wednesday of supporting al-Qaeda operatives in Syria's civil war and warned they would turn against their backers and strike "in the heart of Europe and the America. In addition he included neighboring Jordan for allowing thousands of fighters to cross the border to join a conflict he insisted his forces would win and save Syria from destruction.[358]



- **In July 2012, a Syrian official indicated that the government possesses chemical and biological weapons and may use them if attacked. During a July 23, 2012, press conference, Syrian Foreign Ministry Spokesperson Jihad Maqdisi stated that "any chemical or biological weapons will never be used ... in the Syrian crisis, no matter what the internal developments in this crisis are." He explained that "all varieties of these weapons are stored and secured by the Syrian armed forces and under its direct supervision, and will not be used unless Syria is subjected to external aggression."**[359]

According to Washington & Pentagon officials the question of a Syrian biological weapons program has also been raised in discussions of loss of sensitive military sites. Syria's biological weapons activities appear to be considerably less advanced than the country's chemical weapons program. Past U.S. assessments have stated that Damascus was pursuing biological weapons.[360] However these same officials fail to take into account Syria's long time relationship with the late Iraqi dictator Saddam Hussein who had a vast arsenal of biological weapons and delivery capabilities. The cloud of suspicion over the Assad's role in smuggling Saddam's WMDs is linked to large truck convoys spotted entering Syria from Iraq in the run-up to the March 2003 U.S.-led invasion of Iraq. [361] He was one of Saddam Hussein's top military advisors, Iraqi General George Sada in his book, "Saddam's Secrets he veiled how Saddam's WMDs were moved to Syria under the guise of civilian aid when a dam broke in Syria in 2002. SADA: They (WMDs) were moved by air and by ground, 56 sorties by jumbo, 747, and 27 were moved, after they were converted to cargo aircraft, they were moved to Syria.[362]

358). Report: Assad threatens to attack Tel Aviv in case of NATO strike 10.04.11, <http://www.ynetnews.com/articles/0,7340,L-4131259,00.html>

359). Assad says West will pay for backing al-Qaeda in Syria
Syrian president says US, Europe will regret supporting rebels in Syria, 'will pay a heavy price' Reuters 4/18/2013
<http://www.ynetnews.com/articles/0,7340,L-4369114,00.html>
360). Syria's Chemical Weapons: Issues for Congress Mary Beth Nikitin, Coordinator Specialist in Nonproliferation Andrew Feickert Specialist in Military Ground Forces Paul K. Kerr Analyst in Nonproliferation December 5, 2012 page 5 Congressional Research Service 7-5700 www.crs.gov R42848 4). IBID 3
361). Syria after Lebanon: The Growing Syrian Missile Threat by Lee Kass Middle East Quarterly Fall 2005, pp. 25-34
362). Exclusive! Former Top Military Aide to Saddam Reveals Dictator's Secret Plans January 26, 2006
<http://www.foxnews.com/story/2006/01/26/exclusive-former-top-military-aide-to-saddam-reveals-dictator-secret-plans/#ixzz2QmmvWeg>

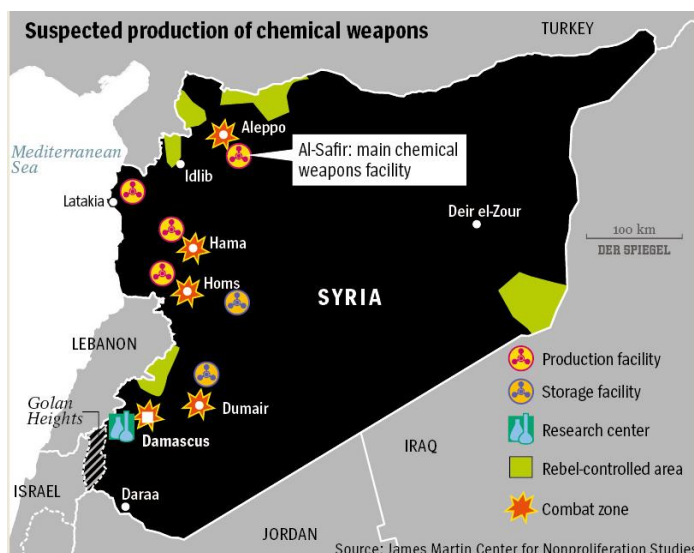
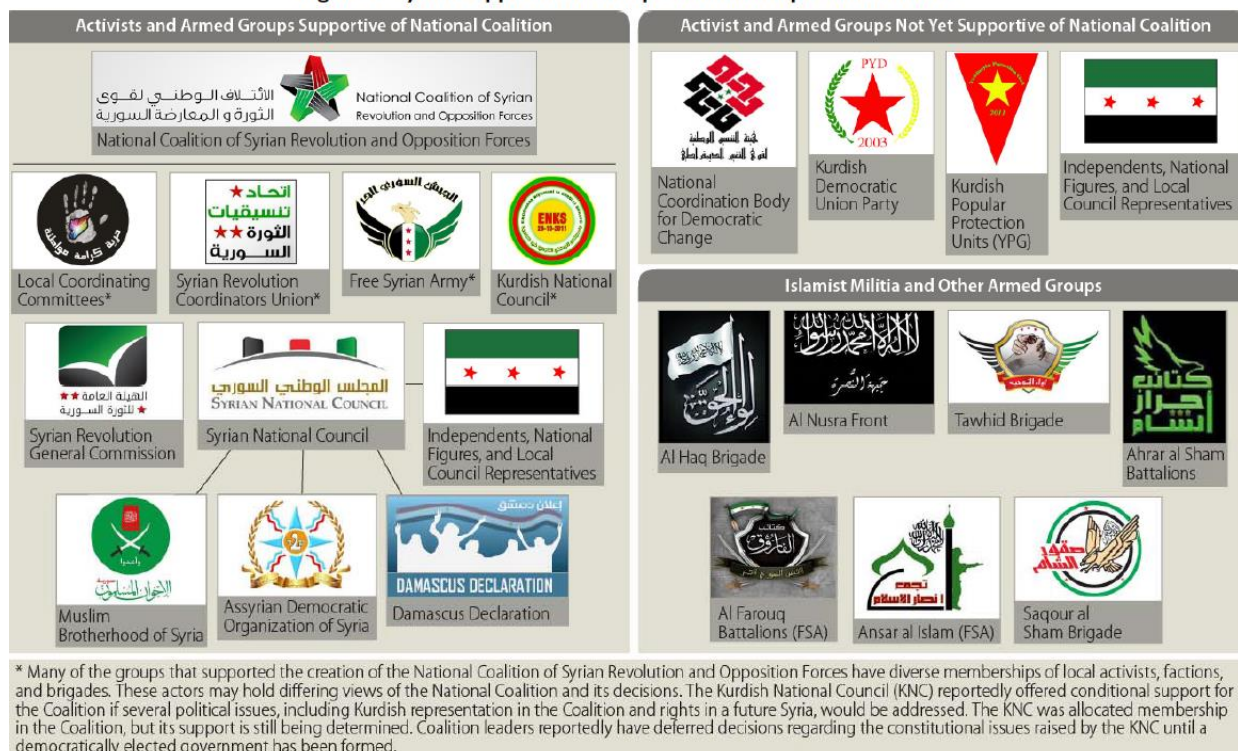


Figure 2. Syrian Opposition Groups: Relationships and Factions



Armed Conflict in Syria: U.S. and International Response Jeremy M. Sharp Specialist in Middle Eastern Affairs
Christopher M. Blanchard Specialist in Middle Eastern Affairs December 20, 2012 page 6 Congressional Research
Service 7-5700 www.crs.gov RL33487

Al Nusra Front (Jabhat al-Nusra) and rising radical tide of Islamic holy wars

Al Qaeda's franchise in Syria, just one year old, is now the fastest-growing al Qaeda front in the world, attracting fighters from across the Islamic world. Founded in January 2012, almost a year after the first demonstrations began against the dictatorship of President Bashar al-Assad. Its main roots stem from Iraq as it was created with the assistance of the al Qaeda franchise in Iraq that was formed nearly a decade ago during America's Operation Iraq Freedom. The Syrian franchise gets crucial support from Afghanistan and the al-Qaeda core in Pakistan. The Iraqi base provided a safe haven for setting up the front in Syria and still provides sanctuary for the Syrian group to this day.

- **Al-Qaeda leader Ayman Zawahiri issued a public call in February 2012 in which he urged "every Muslim and every free and honest person in Turkey, Iraq, Jordan and Lebanon to rise and help their brothers in Syria with everything they have and can do."**

It is described as "the most aggressive and successful arm of the rebel force". The group was designated by the United States as a terrorist organisation in December 2012. In April 2013, the leader of the Islamic state of Iraq released an audio statement announcing that Jabhat al-Nusra is its branch in Syria. The leader of Al Nusra, Abu Mohammad al-Golani, said that the group will not merge with the Islamic state of Iraq, but still maintain allegiance to Ayman al-Zawahiri. "The sons of Al Nusra Front pledge allegiance to Sheikh Ayman al-Zawahiri," al-Golani said in a recorded message released last week. The statement also indicated that the Syrian terrorist group would merge with Al Qaeda in Iraq, from which Al Nusra has received personnel and training.

363). Global Jihad in Syria: Disputes Amidst a Common Goal INSS Insight No. 419, April 18, 2013
Schweitzer, Yoram and Toren, Gal <http://www.inss.org.il/publications.php?cat=21&incat&read=11264>
363)a Jabhat al Nusra Is Growing Menace To Mideast and BeyondBy: [Bruce Riedel for Al-Monitor](http://www.inss.org.il/publications.php?cat=21&incat=&read=11256) Posted on April 8.
<http://www.inss.org.il/publications.php?cat=21&incat=&read=11256>



With a base in Syria, the jihadists can threaten American interests in the entire region, in addition to Europe and Washington's allies in the MENA. The worst danger is that the al Nusra front and other radical Islamic groups will get control of some of Syria's large chemical weapons arsenals.

The presence of young militants from different nationalities, including dozens of volunteers from Western countries, does not augur well, given the potential for terrorism developing in Syria over many months. The concentration of young Muslims from all over the world in a single region, trained in warfare, accumulating combat experience, and harnessed for action on behalf of a common Islamic goal occurred in the past in Afghanistan and Iraq, and led to the creation of a reserve of new cadres of fighters who can be sent anywhere in the world for jihad activity, except the question is Assad's arsenals of WMDs. The evolution of these radical Islamic groups, Al Qaeda is well known for its hatred of America, Israel, Jews in general. Unfortunately for the west and much of Washington today is the failure to acknowledge how main stream in the Middle East and Region the hatred for Jews, Christians and for the West this has become. The Jews are portrayed in Arab cartoons and media as demons and murderers, as a hateful, loathsome people to be feared and avoided. They are invariably seen as the origin of all evil and corruption, authors of a dark, unrelenting conspiracy to infiltrate and destroy Muslim society in order eventually to take over the world. Attacking, purging America, Israel and its allies in the heart of the Middle East and region is seen by Radical Islam as purification so the heart of their true Islam may take root, and the whole world to embrace Islam. Looking deeper into this radical tide of Islam is religious driven warfare ideologies, from Iran's Shia Khomeinists, to Sunni driven Salafists who want to establish a World Caliphate. (Salafist activism is generally described as a movement that combines traditional Salafi doctrine and dogma with the activism of the Muslim Brotherhood. As such, the visions of both Ibn Taymiyyah and Sayyid Qutb are important intellectual influences in the movement.) There is a larger war in the background found between these two groups. The two great Titans is Saudi Arabia the other the Islamic Republic of Iran. There is a very strong evidence that a CBRN event would involve these two rival factions of Islam. It is true Khomeinists and Salafists fight together in loose and aligned affiliations against Israel, America in Iraq and Afghanistan. Sudan a Sunni country is a close ally of Shia Iran. However we are seeing a greater fragmentation among these groups. There is a bloody cold war raging between Saudi Arabia and Iran in Iraq, Syria, Yemen, Bahrain and other international places.

364). Hastening the End to the Civil War in Syria INSS Insight No. 418, April 17, 2013 Stein, Shimon and Brom,

Shlomo <http://www.inss.org.il/publications.php?cat=21&incat=&read=11256>

364a). Syria's Armed Opposition 2012

<http://www.understandingwar.org/report/syrias-armed-opposition>

364)b Al Nusra: Al Qaeda's Syria Offensive by Bruce Riedel Feb 23, 2013

<http://www.thedailybeast.com>

364c) Jihad in Syria Middle East Security Report 6 Elizabeth O'Bagy September 2012

<http://www.understandingwar.org/sites/default/files/Jihad-In-Syria-17SEPT.pdf>

Syria's Crisis and the Global Response Author: [Jonathan Masters](#), Deputy Editor

Updated: April 3, 2013 <http://www.cfr.org/syria/syrias-crisis-global-response/p28402>

The Arab-Israeli conflict has been largely replaced by the Sunni Muslim-Shia Muslim conflict as the Middle East's featured battle.

While the Arab-Israeli conflict will remain largely, though not always, one of words, the Sunni-Shia battle involves multiple fronts and serious bloodshed. Shia Muslims are a majority in Iran and Bahrain; the largest single group in Lebanon; and significant minorities in Saudi Arabia and Iraq. While the ruling Alawite minority in Syria is not Shia—as almost all Sunni Muslims (but not Westerners) know, it has identified with that bloc. The main conflict in this confrontation is in Syria, where a Sunni rebellion is likely to triumph and produce a strongly anti-Shia regime. A great deal of blood has been shed in Iraq, though there the Shia majority has triumphed. The tension is already spreading to Lebanon, ruled largely by Shia Hizballah. In Bahrain, where a small Sunni minority rules a restive Shia majority, the government has just outlawed Hizballah as a terrorist, subversive group, even while European states have refused to do so. By Islamizing politics to a greater degree, the victories of the (Sunni) Muslim Brotherhood group have deepened the Sunni-Shia battle. And, of course, on the other side, Iran, as leader of the Shia bloc, has been doing so, too, though its ambition was to be the leader of all Middle East Muslims. Yet also, especially when it comes to Iran, the Sunni Muslim bloc is also very much an Arab one as well. Many Sunnis, especially the more militantly Islamist ones, look at Shias—and especially at Iranian Persians—as inferior people as well as heretical in terms of Islam. I don't want to overstate that point but it is a very real factor.

The Main Battle in the Middle East is Among Muslims, Sunni vs. Shia; Arabs vs. Persians BY Barry Rubin April 15,

2013 <http://www.gloria-center.org/2013/04/the-main-battle-in-the-middle-east-is-among-muslims-sunni-vs-shia-arabs-vs-persians/>

Syria's Chemical & Biological Arsenals, Washington and the International Community is helpless

2013 House Intelligence Committee Chairman Mike Rogers (R-Mich.) pressed top intelligence officials Thursday on whether Washington was able to secure Syria's vast stockpiles of chemical and biological weapons if embattled President Bashar Assad is overthrown. Rogers asked Director of National Intelligence James Clapper and CIA Director John Brennan during the House hearing. "Not only the chemical weapons, but the stockpile of sophisticated conventional weapons?" "I'm not sure how to make a call like that," Clapper replied. "It would be very, very situational dependent," he added, "to render an assessment on how well we could secure any or all of the [weapons] facilities in Syria." Washington would also need to generate sizable international support from its allies in the region and elsewhere to be able to mount a full-on security mission on those weapons, the Intelligence chief added. [365]

Abu Mus'ab al-Suri with all the turmoil and global crisis, one event for the most part has escaped the attention of the International Intelligence Community was Syria's release of al -Suri. After his arrest in Pakistan in 2005, they turned him over to the CIA who in turn under a controversial American rendition program handed him over to Syria in 2006 where he was a wanted man. Bashar al-Assad in his anger to the America's support for the rebels released him. More than likely Abu Mus'ab al-Suri fled to the safety of Tehran. He was first reported to have been released by Syrian's security services along with his deputy, Abu Khalid, in late December 2011, by the Sooryoon Syrian news website. [366]

1999-2001 CBR Al Qaeda training camps in Afghanistan / Abu Musab al-Suri :

"Al Qaeda training camps in Afghanistan conducted chemical, biological, and radiological basic training courses for hundreds of extremists. The organization's Durante & Tarnak Farms training courses were led by Abu Khabab al-Masri (aka Midhat Mursi al Sayid Umar), a chemist and alleged top bomb maker for al Qaeda, who was part of Osama bin Ladin's inner circle and Abu Musab al-Suri (aka Setmariam), a Spanish citizen born in Syria"

Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality? By Rolf Mowatt-Larssen Foreword by Graham Allison 2010 Belfer Center for Science and International Affairs <http://belfercenter.org>

Afghanistan Darunta camp, where the Al Qaeda and other terrorist groups experimented with chemical weapons. In 2000, al-Suri established the Al Ghuraba training camp near Kabul. The camp was established under the aegis of the Taliban's Ministry of Defense. In 2004, the US State Department issued a \$5 million reward for information leading to his capture, and said that al Suri "trained terrorists in poisons and chemicals" [367]

365) Intel Chief Uncertain of U.S. Ability to Secure Syrian Chemical Weapons April 12, 2013 <http://www.nti.org/gsn/article/intel-chief-uncertain-us-ability-secure-all-syrian-chemical-arms/>

366). Abu Musab al Suri released from Syrian custody: report By Bill Roggio February 6, 2012

http://www.longwarjournal.org/archives/2012/02/abu_musab_al_suri_re.php#ixzz2QxRJIOzh 367). IBID 366

al-Nusra War In Jordan

These Salafi-jihadists include members of al-Qaeda Iraq (AQI) and its affiliate the Islamic State of Iraq (ISI), as well as the Abdullah Azzam Brigades led by Saudi Majid bin Muhammad al-Majid and a number of prominent Jordanian Salafi-jihadists

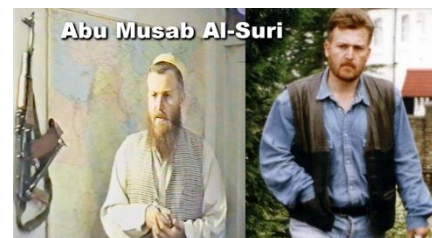
The Syrian group has also tried to export its violence to Jordan. In October, the Jordanian intelligence service foiled a plot based in Syria by al-Qaeda to stage a mass casualty terror attack in Amman that was apparently modeled on the 2008 attack by Pakistani terrorists on Mumbai, India. The Jordan attack would have begun with suicide bombings in two shopping malls in Amman, then when the security forces rushed to deal with those, other attackers would have struck the American Embassy and other western diplomats in the city. Jordanian authorities believe that the plot was scheduled to coincide with the anniversary of November 9, 2005, terrorist attacks in Amman, in which 60 people were killed and 115 injured in multiple hotel bombings. Al Qaeda claimed responsibility for the plot, citing its rejection of Jordan's alliance with the United States and Jordan's 1994 peace treaty with Israel. Jordanian intelligence said that the group nicknamed its new terror plot "9/11 the second" after the 2005 bombings. Among those arrested were two cousins of the Jordanian founder of al Qaeda in Iraq, Abu Musaib al Zarqawi, who planned the 2005 attacks.

Jabhat al Nusra Is Growing Menace To Mideast and Beyond

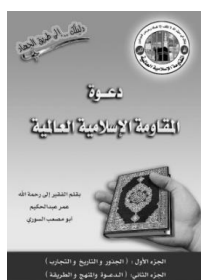
By: [Bruce Riedel for Al-Monitor](#) Posted on April 8. <http://www.inss.org.il/publications.php?cat=21&incat=&read=11256>

It is very important to take a closer look at Abu Mus'ab al-Suri and what it means to the future of CBRN asymmetrical warfare.

His real name was Mustafa bin Abd al-Qadir Sitt Maryam Nasar, (aka Umar Abd al-Hakim) Al-Suri 1959, in Syria where he joined the Syrian Muslim Brotherhood, an affiliate organization of Bin Laden's right hand man, Al Zawahiri Egyptian Muslim Brotherhood. While not a household name like Osama bin Laden, al Suri had an immense influence on the global jihadist movements, shaping asymmetrical warfare and particularly using CBRN is waging Jihad against Israel and the West.



Al-Suri was al-Qaeda's operations chief in Europe and has been accused of planning the 2005 London bombings. The 7 July 2005 London bombings (often referred to as 7/7) were a series of coordinated suicide attacks in London which targeted civilians using the public transport system during the morning rush hour. On the morning of Thursday, 7 July 2005, four Islamist home-grown terrorists detonated four bombs, three in quick succession aboard London Underground trains across the city and, later, a fourth on a double-decker bus in Tavistock Square. Fifty-two civilians and the four bombers were killed in the attacks, and over 700 more were injured. The bombings were followed exactly two weeks later by a series of attempted attacks. He is also wanted in Spain in connection with the Madrid train bombings in 2004, which left 191 dead, and for links to an attack on the Paris Metro in 1995.



Al-Suri is best known for his 1,600-page treatise *Dawat al-Muqawamah al-Islamiyyah al-Alamiyyah* (Call of Global Islamic Resistance), which articulates a strategy of decentralized jihad, rather than one that depends on clandestine organizations.

Al-Suri was recognized one time as Al Qaeda leading theoretician and strategic thinker; he is particularly credited for being its post 9/11 principal architect. Prior to his arrest in November 2005, the Al Qaeda veteran was purportedly Osama bin Laden's top aide, His 1,604-page book, Call to Global Islamic Resistance (GIR), has often been likened to a manifesto, and occasionally been referred to as the Mein Kampf of the jihadist movement, in fact it invites its readers to self-recruit and become independent terrorists.

- ***At the same time that Al-Suri was released, security sources revealed that the Syrian government had also released dozens of other known radical militants, many with ties to Al-Suri and others to AQI.***

**Middle East Security Report 6 | Jihad In Syria | Elizabeth O'Bagy | September 2012
www.Understandingwar.org**

In the late 1980s, he was one of those pressing bin Laden to take a more hostile line toward Saudi Arabia. In the late 1990s he ran the Al-Ghuraba camp in a semi-independent way from the Al Qaeda leadership, determined to press home his own Abu Musab Al Suri conception of jihadist strategy. Rather than concentrate on the indoctrination of the rank and file, al-Suri focused on training the future recruiters of Al Qaeda: the masterminds of future operations. The lectures he gave in Afghanistan were filmed and disseminated widely across the Muslim world. Some of these videotapes have been uncovered by police in the houses and mosques of jihadist sympathizers in various European countries. Al -Suri also widely acknowledged as a master of both urban warfare and the usage of explosives. His leaderless jihad strategy or decentralized, lone wolf packs Jihad warfare and ideas have reemerged and have been popularized in jihadist circles over the past few years. They have been taken up by prominent figures like the head of al Qaeda's media department, Adam Gadahn, and Yemeni-American jihadist Anwar al-Awlaki, as well as being featured by Samir Khan in al Qaeda in the Arabian Peninsula's *Inspire Magazine*.

"Al- Suri had a great fascination with the destructive impact of Weapons of Mass Destruction. His training in the 1980s, including time in Saddam Hussein's Iraq, had allowed him to build up a certain expertise."

Abu Musab Al Suri: Architect of the New Al Qaeda Paul Cruickshank Center on Law and Security NYU School of Law New York, New York, USA Mohannad Hage Ali Al-Hayat London, UK

368). Architect of Global Jihad: The Life of Al-Qaeda Strategist Abu Mus'ab Al-Suri (London and New York: Hurst & Columbia University Press, 2008)

The 9/11 Attacks Were a Mistake Afghanistan should have been built into an International base of operations from which to strike out at the world using decentralized cells, CBRN attacks.

Al- Suri criticized the 9/11 attacks because he believed that Afghanistan, which was being used as a base by the Taliban, was crucial to the global Islamic resistance. *"The outcome of the 9/11 attacks as a I see it, was to put a catastrophic end to the jihadi current,"* Suri noted. *"The jihadism entered the tribulations of the current maelstrom which swallowed most of its cadres over the subsequent three years."* [369]

As a prominent trainer, military instructor and jihadist lecturer, al -Suri had a large network of top-level contacts in many jihadist organizations, and he is believed to have trained militants who later returned to Europe as 'sleeper cells', especially in Spain, Italy and France, according to Spanish authorities. A review videotapes of his complete lecture series discovered in Afghanistan reveal that as early as 2000, al-Suri was pressing a future generation of operatives and recruiters toward a new modus operandi, one that bears striking similarity to the evolution of the structure and strategy of Al Qaeda after 9/11. The GIR outlines future strategies for the international jihadist movement. Al - Suri's book begins by dictating that armed jihad must be supported through a background of Islamic political thinking, understanding and Jihad warfare. Al-Suri then describes the "third generation of Mujahideen" as a generation currently in the process of being defined, born after the "September happenings, the occupation in Iraq, and the Palestinian Intifada". While exhorting the third generation to keep to their roots in the international movement, al-Suri describes his 1990 decision that jihadist groups cannot hope to confront America and its allies until weakening these enemies through decentralized jihad. [370]

- **The Enemies of Islamic who must be destroyed " Jews, Americans, British, Russian, and any and all the NATO countries, ;**

Once the jihadist groups have created a sustainable civil society, they can begin al-Suri's three stage battle: first, all forms for war presence of the enemy in our land other world countries second, and at their homeland third". Throughout his book, al-Suri names these enemy countries as the " Jews, Americans, British, Russian, and any and all the NATO countries, as well as any country that takes the position of oppressing Islam and Muslims". He further provides a clear indication that only by carrying out terrorist attacks and decentralized urban warfare, CBRN tactics would the jihadi network win. Al-Suri explicitly calls for attacks on all sectors of the enemy's influence, both civilian and military. According to his book, the *"...political, military, economical, educational, missionary, and tourist presence etc in our countries" are the primary targets of jihad.* [371]

369). Free Radical Bashar al-Assad appears to have let one of the world's most prominent jihadist ideologues out of jail. He's playing with fire. By Aaron Y. Zelin | February 3, 2012 http://www.foreignpolicy.com/articles/2012/02/03/free_radical
370). Abu Musab Al Suri <http://www.Globalterroralert.Com/Pdf/0705/Abumusabalsuri.Pdf>
371). Journal of Strategic Security Volume 6 Number 1 Spring 2013 Analysis of Abu Mus'ab al-Suri's "Call to Global Islamic Resistance" M.W. Zackie University of Cambridge pp. 1-18 /scholarcommons.usf.edu/cgi/viewcontent

"Al-Suri is one of the leading developers of geopolitical strategies for al-Qaeda and the jihad movement in general. He urged jihadists to strengthen their position in Central Asia and to use Yemen as a launching pad against the neighboring Gulf States. The current flow of fighters to their home countries in Central Asia from the Afghanistan-Pakistan region as well as the presence of al-Qaeda in the Arabian Peninsula (AQAP) in Yemen shows the influence of al-Suri's ideas. While it is true that jihadists are driven by conditions on the ground, such ideas have nonetheless played a major role in shaping the movement's ideology."

Syria's Surprising Release of
Jihadi Strategist Abu Mus'ab al-
Suri Publication: Terrorism
Monitor Volume: 10 Issue: 3
February 10, By: Murad Batal al-
Shishani

"Al-Suri played a key role in the 1990s in establishing al-Qaida's presence in Europe and forging its links to radical jihadism in North Africa and the Middle East, the Balkans and the former Soviet Union, South and East Asia. He was a spokesman for the Algerian Groupe Islamique Armé, a press attaché for Osama bin Laden in London and an adviser to Mullah Omar in Kabul, and he appears under a variety of aliases in books by foreign correspondents."

Journal of Strategic Security
Volume 6 Number 1 Spring 2013
Article 4 An Analysis of Abu
Mus'ab al-Suri's "Call to Global
Islamic Resistance" M.W. Zackie
University of Cambridge pp. 1-18
[http://scholarcommons.usf.edu/
cgi/viewcontent.cgi?article=1230
&context=jss](http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=1230&context=jss)

Leaderless jihad strategy: Al -Suri "This radicalized third generation will in due course create security problems in their own countries"

It was al-Suri who first argued that in order to survive, al-Qaida had to become a kind of travelling army based on mobile, nomadic, flexible cells operating independently of one another, unified by little more than a common ideology and by the sense of shared grievances that the West's 'war on terror' was likely to foster among Muslims. The concept of 'leaderless jihad', now much in vogue among so called terrorism experts, is to a great extent al-Suri's invention.

CBRN: Al-Suri, stated that the 9/11 planes should have been loaded with some kind of weapon of mass destruction; he profoundly believed that WMD was the best tactical means of conducting warfare against the great Satan, "America".^[372]

- In his open letter, Al-Suri talks at length about the importance of using WMD against the United States as the only means to fight it from a point of equality. He even criticizes Osama bin Laden for not using WMD in the September 11th attacks: *"If I were consulted in the case of that operation I would advise the use of planes in flights from outside the U.S. that would carry WMD. Hitting the U.S. with WMD was and is still very complicated. Yet, it is possible after all, with Allah's help, and more important than being possible—it is vital."* Al-Suri states "the Muslim resistance elements (must) seriously consider this difficult yet vital direction." Al-Suri also surprises his readers by sending requests to North Korea and Iran to continue developing their nuclear projects.^[373]
- ***It was in Iraqi Dictator's Saddam Hussein terrorist Camping and during the Iran- Iraq War al-Suri learned the deadly arts of CBRN warfare. Though little acknowledged, there is overwhelming evidence, through his background a time Iraq. In addition once putting all the pieces of his life together it becomes self evident.***

From his book, the camp is in Saddam Hussein's Iraq. In his book "The Call for Global Islamic Resistance", he recalls his experience there:

"I joined a training course which prepared the Muslim Brotherhood's military branch cadres during the Jihad and revolution against Hafez Assad's regime. I was 22 years old and that was in the Iraqi army's Racheed camp in Baghdad in 1980. The trainer was a righteous man from the old guards who pledged allegiance to Sheikh Hassan al Bannah (the founder of the Muslim brotherhood) at 17. He accompanied Sayyid Qutb [the leading ideologue of the jihadist movement], and then spent the rest of his life outside Egypt. I recall that the first thing he said [was] "Are you Muslim brotherhood members." We all said "yes." Then the trainer said while pointing at his neck "you will all get slaughtered, do you approve of that?" Then we happily and joyfully said "we approve Sir." He then turned to the chalkboard and wrote the title of his very first lecture: "Terrorism is a duty and assassination is a Sunnah, an action ordained by the Prophet Mohammed." [374]

Saddam's Reach extended into and acted through radical Islamic groups in Afghanistan, Pakistan and Africa. The late Saddam Hussein ever on guard of the American, Israeli and other intelligent agencies computer hacking capabilities, along with the security risks associated with storing secret documents on a computer, chose to keep some of his most guarded secrets and messages on paper. Mountains of these documents have been found in Iraq, those that have been translated paint entire different picture of the Iraqi dictator. After the defeat of Iraq in the Gulf War, Saddam embarked upon a covert war against the US using proxy Islamic groups much as the US had done to the Soviets just a few years before. Shortly after the U.S. Invasion of Iraq, special teams began to collect these documents in a monumental effort to catalog the regime's secrets.^[375]

372). Abu Musab Al Suri: Architect Of The New Al Qaeda, Paul Cruickshank, Center On Law And Security, Nyu School Of Law. New York, New York, USA Mohannad Hage Ali Al-Hayat London, UK

373) Architect Of New War On The West, Writings Lay Out Post-9/11 Strategy Of Isolated Cells Joined In Jihad By Craig Whitlock, *Washington Post* Foreign Service, Tuesday, May 23, 2006; A01. [Washingtonpost.Com/Wp-Dyn/Content/Article/2006/05/22/Ar2006052201627.Html](http://www.washingtonpost.com/wp-dyn/content/article/2006/05/22/Ar2006052201627.html)

374). Global Jihad And WMD Between Martyrdom and Mass Destruction Sept 26, 2005, Intelligence And Terrorism Information Center At The Center For Special Studies (C.S.S) http://209.85.135.104/Search?Q=Cache:Ozrhnnzhcej:Www.Intelligence.Org.II/Eng/Eng_N/Pdf/Wmd.Pdf+Al+Suri+And+Saddam+Hussein&HI=En&Ct=Clnk&Cd=39

375). The directorate of national intelligence with the U.S. Army foreign military studies office has begun to make over 50,000 boxes of documents and some 3,000 hours of audio tape captured in Iraq available on the Web at <http://fmso.leavenworth.army.mil/products-docex.htm>

Found among just a few hundred publicly released memos is evidence that Saddam supported Islamic terror groups. Saddam's regime was "open for business" to leaders from al-Qaeda, Egyptian Islamic Jihad, the Taliban, Hamas, Afghani warlords and other Islamic extremist organizations. A singular instance or two of the Saddam regime meeting with Islamic terrorist leaders could possibly be discounted in the overall scheme of things. However, document after document indicates that Saddam's strategy was to support Islamic terrorists to achieve mutual objectives.[375] Egyptian Islamic Jihad (aka Islamic Jihad Organization). Ring a bell? Well it should. Zawahiri led the EIJ from 1993, and orchestrated the merger with what we know as today's al Qaeda in 1998.

The Tehran Connection: Al - Suri was among a number of Al Qaeda leaders, including Sayf al-Adil, Sa'd bin Laden, al Zarqawi and others, who sought refuge in Iran after the fall of the Taliban regime, in 2001 and had operated for some time from Iranian territory. Names of Al Qaeda leaders present in Iran have figured in various media outlets since 2002, and there is little doubt that a number of leading Al Qaeda members have been present on Iranian territory for extended periods of time. Al - Suri is believed to have entered Iranian territory at the beginning of 2002. [376]



Us District Court Rules Iran Behind 9 11 Attacks : December 23, 2011

A federal district court in Manhattan entered a historic ruling that reveals new facts about Iran's support of al Qaeda in the 9/11 attacks. U.S. District Judge George B. Daniels ruled yesterday that Iran and Hezbollah materially and directly supported al Qaeda in the September 11, 2001 attacks and are legally responsible for damages to hundreds of family members of 9/11 victims who are plaintiffs in the case. Judge Daniels had announced his ruling in *Havlish, et al. v. bin Laden, et al.*, in open court on Thursday, December 15, 2011. The evidence was developed over a seven-year international investigation by the Havlish attorneys who pursued the 9/11 Commission's recommendation regarding an apparent link between Iran, Hezbollah, and the 9/11 hijackers, following the Commission's own eleventh-hour discovery of significant National Security Agency ("NSA") intercepts: Members of the 9/11 Commission staff testified that Iran aided the hijackers by concealing their travel through Iran to access al Qaeda training camps in Afghanistan. Iranian border inspectors refrained from stamping the passports of 8 to 10 of the 9/11 hijackers because evidence of travel through Iran would have prevented the hijackers from obtaining visas at U.S. embassies abroad or gaining entry into the United States. The 9/11 Commission Report addressed these facts and called for further investigation. *9/11 Commission Report at pp. 240-41. A May 14, 2001 memorandum from inside the Iranian government demonstrating that Iran's Supreme Leader, Ayatollah Khamenei, was aware of the impending attacks and instructing intelligence operatives to restrict communications to existing contacts with al Qaeda's Ayman al Zawahiri and Hizballah's Imad Mughniyah.* - Documents obtained from German federal prosecutors showing that 9/11 coordinator Ramzi Binalshihb traveled to Iran in January 2001 on his way to Afghanistan to brief Osama bin Laden on the plot's progress. - Evidence from the 9/11 Commission Report that a "senior Hezbollah operative," which the Havlish evidence identifies as Hezbollah terrorist chief Imad Mughniyah, coordinated activities in Saudi Arabia and was present (or his associate) on flights the hijackers took to and from Beirut and Iran. 9/11 Commission Report at pp. 240-41. Mughniyah, a longtime agent of Iran, orchestrated a string of terror operations against the U.S. and Israel during the 1980s and 1990s. He was assassinated in Syria in February of 2008. <http://www.iran911case.com/>

Somehow they missed the Al-Suri Documents ...

"The Iraqi Perspectives Project (IPP) review of captured Iraqi documents uncovered strong evidence that links the regime of Saddam Hussein to regional and global terrorism. Despite their incompatible long-term goals, many terrorist movements and Saddam found a common enemy in the United States. At times these organizations worked together, trading access for capability. In the period after the 1991 Gulf War, the regime of Saddam Hussein supported a complex and increasingly disparate mix of pan-Arab revolutionary causes and emerging pan-Islamic radical movements. The relationship between Iraq and forces of pan-Arab socialism was well known and was in fact one of the defining qualities of the Ba'ath movement. But the relationships between Iraq and the groups advocating radical pan-Islamic doctrines are much more complex. This study found no "smoking gun" (i.e., direct connection) between Saddam's Iraq and al Qaeda."

**Iraqi Perspectives Project
Saddam and Terrorism: Emerging
Insights from Captured Iraqi
Documents Volume 1 (Redacted)
November 2007 Approved for
public release Kevin M. Woods,
Project Leader with James Lacey
<http://www.fas.org/irp/eprint/iraqi/v1.pdf>**

375). Both In One Trench: Saddam's Secret Terror Documents BookSurge Publishing (November 29, 2007) by Ray Robison
376). Architect of Global Jihad: The Life of Al-Qaeda Strategist Abu Mus'ab Al-Suri (London and New York: Hurst & Columbia University Press, 2008)

Tehran's Al Qaeda Network Today In 2011 The U.S. Treasury Department identified six al Qaeda members as Specially Designated Global Terrorists in the IRI. The Treasury Department explained that the six operatives are members of an al Qaeda network "headed by Ezedin Abdel Aziz Khalil, a prominent Iran-based al Qaeda facilitator, operating under an agreement between al Qaeda and the Iranian government."



The network is "the core pipeline" for moving money and personnel from the Middle East into South Asia.

These six terrorist operatives form a network that funnels money and personnel from the Gulf to Iraq, Afghanistan, and Pakistan via Iran. The head of the network, Syrian-born Ezedin Abdel Aziz Khalil, operates from inside the Islamic Republic with the full knowledge of the Iranian regime. According to Treasury, Khalil, who represents al Qaeda in Iran, has run the current network since 2005 "under an agreement between al-Qaeda and the Iranian government." The network's ties to multiple enemy groups illustrate the syndicate-like nature of al Qaeda's presence in Iran. Al Qaeda's core leadership in Pakistan, al Qaeda in Iraq, and the Taliban are all connected to the Khalil network according to Treasury. Recent American and coalition operations in Afghanistan corroborate the existence of other al Qaeda-affiliated networks inside Iran. In February 2011, International Security Assistance Force (ISAF) and Afghan troops detained an Islamic Jihad Union (IJU) facilitator in northern Afghanistan; the IJU facilitator coordinated the flow of foreign fighters from Iran into Afghanistan. [377]

10 Million Dollar US Reward for Ezedin Abdel Aziz Khalil. In December 2011 The State Department announced that a reward of up to \$10 million is being offered for any information leading to the capture of an Iran-based al Qaeda financier named Ezedin Abdel Aziz Khalil. Pakistani intelligence reports indicate that al Suri is based in Zahedan, Iran. As the capital of Iran's Sistan and Baluchistan province, Zahedan sits on the border with both Pakistan and Afghanistan an ideal location for smuggling al Qaeda operatives to other parts of the terror network. [378]

In 2012 The U.S. State Department on Thursday announced a \$12 million bounty for information on the precise location of two Iran-based al Qaeda money-men. The rewards, part of the department's Rewards for Justice program, include \$7 million for information on alleged al Qaeda senior facilitator and financier Muhsin al-Fadhli and \$5 million for information on his deputy, Adel Radi Saqr al-Wahabi al-Harbi. [379]

In 2013 Bin Laden's son in law Osama bin Laden's son-in-law Abu Ghaith, who had been living for untold years in the Islamic Republic stepped out and was promptly captured by US Officials' now in custody, had spent many years there. [380] According to U.S. Treasury documents in addition to Abu Ghaith, other of bin Laden's inner circle who ended up in Iran include the formidable military commander of al Qaeda, Saif al-Adel, a former Egyptian Special Forces officer who had fought against the Soviets in Afghanistan, as well as Saad bin Laden, one of the al Qaeda's leader older sons who has played some kind of leadership role in the group. [381]

377). Analysis: Spinning Iran and al Qaeda, part 1 By Thomas Joscelyn May 5, 2012

longwarjournal.org/archives/2012/05/analysis_spinning_ir.php#ixzz2R3y4iuxc
378). US offers \$10 million reward for Iran-based al Qaeda financier By THOMAS Joscelyn December 23, 2011

http://www.longwarjournal.org/archives/2011/12/state_department_off.php#ixzz2R3xjQfmF

379). Rewards for Justice - al-Qaida Reward Offers Media Note Office of the Spokesperson Washington, DC October 18, 2012

<http://www.state.gov/r/pa/prs/ps/2012/10/199299.htm>

380). Strange bed fellows Iran and al Qaeda By Peter Bergen, CNN National Security Analyst March 10, 2013

<http://www.cnn.com/2013/03/10/opinion/bergen-iran-al-qaeda/index.html>

381). Treasury Targets Al Qaida Operatives in Iran

1/16/2009 hp-1360 Washington, D.C. <http://www.treasury.gov/press-center/press-releases/Pages/hp1360.aspx>

**Mustafa bin Abd al-Qadir Sitt
Maryam Nasar, (aka Umar
Abd al-Hakim) Al-Suri**

**Once called "the most
dangerous terrorist you've
never heard of" by CNN,**

**Mr. al-Suri The New Mastermind
of Jihad By David Samuels April 6,
2012**

**"Al-Suri's manifesto designs
the future of jihad. In his
vision, he calls for a new holy
war that employs nuclear,
chemical and bacteriological"
(biological) weapons, and
dirty bombs,"**

**Assessing Spain's al-Qaeda
Network Publication: Terrorism
Monitor Volume: 3 Issue: 13 July
1, 2005 By: Kathryn Haahr**



It was not until 2012 that the U.S. Treasury Belatedly Labeled Iranian M.O.I.S as terrorists organization. Treasury Designated Iranian Ministry of Intelligence and Security for Human Rights Abuses and Support for Terrorism, Al Qaeda

"The Iranian intelligence service is called the Ministry of Intelligence and Security (MOIS), or Vezarat-e Ettela'at va Amniat-e Keshvar (VEVAK) in Farsi. MOIS is the most powerful and well-supported ministry among all Iranian ministries in terms of logistics, finances, and political support. It is a non-military governmental organization that operates both inside and outside of Iran. Intelligence experts rank MOIS as one of the largest and most dynamic intelligence agencies in the Middle East According to Iran's constitution, the Supreme Leader

sets the direction of foreign and domestic policies. He is commander in chief of the armed forces and controls intelligence operations. Hence, both MOIS and IRGC Intelligence, including the Quds Force, report directly to the Supreme Leader Iran's intelligence apparatus is composed of a number of entities, one of which is MOIS. According to the Islamic Republic of Iran's constitution with regard to the establishment of the ministry, article 1, clause 1, requires military organizations to coordinate with MOIS on military intelligence. The same article, clause 2, requires all ministries, institutions, governmental companies, and military and police forces that gather specialized information to share it with MOIS and to provide MOIS with any other information it demands. The constitution also stipulates that MOIS is in charge of intelligence activities inside and outside of Iran. In addition, articles 5 and 6 define the responsibilities of the IRGC and the ministry and how they should cooperate. Article 5 requires the Islamic Revolutionary Guards Corps to comply with the policy of the Ministry of Intelligence and Security with regard to combating domestic antirevolutionary dissidents, and the IRGC is entitled to collect, analyze, and produce information to identify the anti-revolutionaries by way of helping MOIS. Thus, the IRGC and its external operational wing, the Quds Force, are required to report their activities to MOIS as the highest intelligence authority in the Islamic Republic of Iran. In return, MOIS provides logistical support and handles the communications aspect of operations involving Quds Force o operatives and foreign organizations that work with the Quds Force, (IRGC-QF) such as Hezbollah."

Iran's Ministry of Intelligence and Security: A Profile A Report Prepared by the Federal Research Division, Library of Congress under an Interagency agreement with the Combating Terrorism Technical Support Office's Irregular Warfare Support Program December 2012
<http://www.fas.org/irp/world/iran/mois-loc.pdf>

- ***"Back in 1998 al-Suri had described Iran as the only possible sanctuary for him and his fellow jihadis should the Taliban regime expel the Arab -Afghans." (to note at one time the Taliban was bitter enemies with Iran and various radical Islamic groups)***

Architect of Global Jihad: The Life of Al-Qaeda Strategist Abu Mus'ab Al-Suri (London and New York: Hurst & Columbia University Press, 2008) page 326

In June 2010, Al Qaeda in the Arabian Peninsula was reported to have published *Inspire magazine* – its first English language publication. It contained an article published under the name Abu Mus'ab al-Suri. This article was the beginning of a series entitled: *"The Jihadi experiences"*. Further articles in this series appeared in the next 5 issues of *Inspire*. These excerpts were copied from a translation of *"The Global Islamic Resistance Call"* which appeared in a biography of Abu Musab al-Suri. [382]

382). http://en.wikipedia.org/wiki/Mustafa_Setmariam_Nasar

Manual for Poisons and Chemical Gases Published on Hamas Website

(IsraelINN.com) A manual published on the official Hamas website, titled "The Mujahideen Poisons Handbook," has been discovered, which is a manual for preparing poisonous materials to use in a terrorist attack. The 23-page manual, written by Abdel-Aziz in 1996, details for terrorists how to prepare various homemade poisons, chemical poisons, poisonous gases and other deadly materials for use in terrorist attacks against Israelis, Westerners, and anyone else who stands in the way of an Islamic Jihad. Introduction The author begins the manual with an introduction that blesses those on Islamic Jihad. He quotes the Prophet Muhammad, "you will conquer Constantinople and Rome." Aziz writes that the information in his booklet is, "esoteric knowledge and must only be passed on to those who truly intend to us it Fee-Sabeelillah [along the path of Allah]. The information in the manual is derived from a course on poisoning he took with other terrorists. The products were used on rabbits to test their effectiveness. The author warns his readers, "Be very careful when preparing poisons. It is much, much more dangerous than preparing explosives! I know several Mujahids [Jihad warriors] whose bodies are finished due to poor protection, etc."

1/2/2003

<http://www.israelnationalnews.com/News/Flash.aspx/36613#.UXC2IqKgJ8E>

Understanding the basics of Chemical –Biological – Nuclear – Radiological Weapons & Agents

Case Study in Nuclear Proliferation & the NPT Fatal Flaw

The Pakistan Atomic Energy Commission (PAEC) was set up in 1956 so that it could participate in the Atoms for Peace program announced by the Eisenhower administration. Whether by intention to prepare a "nuclear option" or not, decisions made in the 1960s already provided a valuable basis for establishing a weapons program. In 1971 the Canadian General Electric Co. completed a 137 MW (electrical) CANDU power reactor for the Karachi Nuclear Power Plant (KANUPP) which went critical in August 1971 and began commercial operation in October 1972. CGEC also provided a small heavy water production facility. These facilities had been contracted for in the mid-60s. The technology for KANUPP was the same natural uranium/heavy water technology used in the Indian Cirus and later Dhruva reactors used by India for producing weapons plutonium. The facilities were under IAEA safeguards, nonetheless it was the initial intent of the Pakistani nuclear weapons program to use plutonium from this reactor as the key ingredient in their nuclear arsenal. But to do that Pakistan required a means of separating plutonium from spent fuel. Some advance preparation had occurred here also. In the late 1960s Pakistan had contracted with both British Nuclear Fuels Limited and Belgonucléaire to prepare studies and designs for pilot plutonium separation facilities. The BNFL design, was capable of separating up to 360 g of fuel a year. The plans for this plant were completed by 1971. Through at least 1975 there is every reason to believe that Pakistan's intended principal route to the bomb remained the obvious one using plutonium. The centerpiece of their program at this time was the effort to acquire a reprocessing plant to separate plutonium from the fuel of KANUPP. The first step after Multan was to build a pilot reprocessing facility called the "New Labs" at Pinestech. This facility was a larger and more ambitious project than the original BNFL plan. It was built in the early 70s by Belgonucléaire and the French corporation Saint-Gobain Techniques Nouvelles (SGN). The pilot plant was followed by a contract signed with SGN in March 1973 to prepare the basic design for a large-scale reprocessing plant, one with a capacity of 100 tons of fuel per year, considerably more than KANUPP would generate. SGN was the world's chief exporter of reprocessing technology and had previously built military plutonium facilities for France, The Chashma plant, as it was known, would have the capability to produce 200 kg of weapons grade plutonium a year, if sufficient fuel were available to feed it. It would have provided Pakistan with the ability to "break safeguards" and quickly process accumulated fuel from KANUPP when it decided to openly declare itself a nuclear armed state. The initial design contract was followed by one for the final detailed design and construction on 18 October 1974. The original contract for this project did not include significant safeguards to discourage diversion of the separated plutonium, or controls on the technology ^[383]



- Pakistan went on to become one of the world's leading nuclear – black market sources (more on this later). Today Pakistan is on track to have the 5th largest nuclear arsenal in the world, surpassing Great Britain. ^[384]
- Between 2002 and 2008, the United States distributed more than \$15 billion in overt foreign aid to Pakistan. (b) In the next five years America will provide Pakistan with some 7.5 billion dollars (from 2010 to 2014), in part to help secure Pakistan's growing nuclear arsenal. ^[385]
- In addition the reader must bear in mind the volatile and internal war which Pakistan is waging with Militant Islam Forces and their allies in Afghanistan. ^[386]

383) Pakistan's Nuclear Weapons Program The Beginning By Carey Sublette

<http://nuclearweaponarchive.org/Pakistan/PakOrigin.html>

384). Pakistani Nuke Arsenal on Track to be World's Fifth Largest Tuesday, Feb. 1, 2011

http://www.globalsecuritynewswire.org/gsn/nw_20110201_5282.php

385). U.S. Aid to Pakistan: The Kerry-Lugar Bill <http://www.pbs.org/frontlineworld/stories/pakistan901/aid.html>

386). Kerry –Lugar Bill <http://ipripak.org/factfiles/ff114.pdf>

Biological Weapons

Biological warfare, or BW, is the use of pathogens or toxins as weapons. Pathogens include bacteria and viruses which cause diseases such as anthrax, cholera, and plague. Pathogens as weapons would be used against strategic targets such as food supplies, troop's concentrations, and population centers to create panic and disrupt military mobilization plans. Biological warfare agents include anthrax, plague, cholera, smallpox, tularemia, Q fever, ricin, and botulinum toxin. BW states hide their programs under the guise of legitimate medical research. There is little to distinguish a vaccine or pharmaceutical plant from a BW facility. BW production does not require specialized equipment, nor do threat states need to keep stockpiles of biological warfare agents. Through biotechnology, they can quickly produce the quantities of BW agent needed from small cultures.

Biological Agents of Military Significance:

- **Bacteria:** Single-cell organisms that cause diseases as anthrax, plague, and tularemia. Although many pathogenic bacteria are susceptible to antibiotic drugs, strains can be selected that are resistant to antibiotic and occur naturally. Bacteria can be readily grown in artificial media using facilities similar to those found in the brewery industry;
- **Virus:** 100 times smaller than bacteria and occur in large numbers in nature. Among disease-producing viruses are smallpox, Ebola, and Venezuelan equine encephalitis. Viruses must be grown on living tissue and they can mutate naturally or be genetically engineered to increase their effectiveness;
- **Rickettsiae:** Similar to bacteria in structure and form but must be grown on living tissue. Diseases caused by rickettsiae include Q-fever, typhus, and Rocky Mountain spotted fever;
- **Fungi:** Occur greatly in nature and could be used to destroy crops. Relatively few species appear to have potential for deliberate use against humans. The fungal pathogens that cause hardship and famine are potato blight and cereal rust;
- **Toxins:** Non-living products of micro-organisms, plants or living creatures such as botulinum toxin, ricin from castor beans, or saxitoxin from shellfish. Toxins can only affect those exposed to the toxin and cannot produce transmissible diseases. Toxins are effective and specific poisons produced by living organisms. Many of them are extremely poisonous, with a toxicity that is several orders of magnitude greater than the nerve agents.



A Few Examples of Toxins Which May Be Used As Chemical Warfare Agents

The trichothecenes, mycotoxins obtained from, e.g., *Fusarium* genera, were alleged in the early 1980's to have been used as CW agents in Southeast Asia ("Yellow Rain")

Bacterial Toxins: Botulinum toxin, produced by the bacteria *Clostridium botulinum*, is the most poisonous substance known. The bacteria grows on, e.g., poorly preserved food and causes a severe form of food-poisoning (botulism). The incubation period is between one and three days after which the victim becomes ill with stomach pains, diarrhea, and disturbances to vision, giddiness and muscular weakness. The whole body including the respiratory musculature becomes paralyzed which leads to death by suffocation within a few days. The toxin is a protein available in seven different forms, where the most poisonous is type A the lethal dose to man has been estimated to about one microgram if ingested and even less if inhaled. It is possible to vaccinate against botulism but once the victim has become poisoned there is no antidote.

Staphylococcus Enterotoxin Type B (SEB): Not all toxins have a lethal outcome. One of those classified in the incapacitating group is *Staphylococcus enterotoxin type B (SEB)*, which is produced by *Staphylococcus aureus* bacteria. SEB is the toxin which is most commonly found to have caused food poisoning. SEB is a protein (molecular weight = 28,500 D), which is easily soluble in water and relatively stable. It can withstand boiling for a couple of minutes and when in freeze-dried state, it can be stored for more than one year. Persons exposed to SEB (20-25 g) fall ill after a few hours with typical food poisoning symptoms, such as stomach cramp, diarrhea and vomiting. The sufferer frequently recovers without special treatment within 24 h.

Plant Toxins

Ricin: The seeds of the castor oil plant can be used to extract a mixture of poisonous proteins, ricin. One of these has also been produced by *Escherichia coli* bacteria to which the ricin gene has been transferred. Ricin became of interest as a CW agent at an early stage as it is relatively easy to produce in large quantities. Ricin poisoning occurs through blockages of the body's synthesis of proteins. The development is slow and includes decreased blood pressure. Death frequently occurs through heart failure. Ricin has approximately the same toxicity as saxitoxin. Different forms of ricin bound to, e.g., monoclonal antibodies are being studied today in order to treat leukemia and cancer of the liver.

Saxitoxin: Is synthesized by a type of blue-green algae. Many toxins are produced by marine organisms. One such example is saxitoxin, which is synthesized by a type of blue-green algae (cyanobacteria). These algae provide food for different shellfish, e.g., mussels. The mussels themselves are not influenced by the poison, but human beings who later eat the mussels may become seriously ill. Saxitoxin attacks the nervous system and has a paralyzing effect, but causes no symptoms in the gastro-intestinal tract. The development of the illness is extremely rapid and at high doses death may occur within less than 15 minutes.

New Types of Biological Weapons

- **Binary biological weapons** that use two safe to handle elements that can be assembled before use. This could be a virus and helper virus like Hepatitis D or a bacterial virulence plasmid like *E. coli*, plague, Anthrax, and dysentery.

- **Designer Genes and life forms**, which could include synthetic genes and gene networks, synthetic viruses, and synthetic organisms. These weapons include DNA shuffling, synthetic forms of the flu – which killed more people in 1918 than died in all of World War I and which still kills about 30,000 Americans a year – and synthetic microorganisms.

- **"Gene therapy" weapons** that use transforming viruses or similar DNA vectors carrying Trojan horse genes (retrovirus, adenovirus, poxvirus, HSV-1). Such weapons can produce single individual (somatic cell) or inheritable (germline) changes. It can also remove immunities and wound healing capabilities.

- **Stealth viruses** can be transforming or conditionally inducible. They exploit the fact that humans normally carry a substantial viral load, and examples are the herpes virus, cytomegalovirus, Epstein-Barr, and SV40 contamination which are normally dormant or limited in infect but can be transformed into far more lethal diseases. They can be introduced over years and then used to blackmail a population.

- **Host-swapping diseases:** Viral parasites normally have narrow host ranges and develop an evolutionary equilibrium with their hosts. Disruption of this equilibrium normally produces no results, but it can be extremely lethal. Natural examples include AIDS, Hantavirus, Marburg, and Ebola. Tailoring the disruption for attack purposes can produce weapons that are extremely lethal and for which there is no treatment. A tailored disease like AIDS could combine serious initial lethality with crippling long-term effects lasting decades.

- **Designer diseases** involve using molecular biology to create the disease first and then constructing a pathogen to produce it. It could eliminate immunity, target normally dormant genes, or instruct cells to commit suicide. Apoptosis is programmed cell death, and specific apoptosis can be used to kill any mix of cells.

Biological weapons intentionally disseminate infectious diseases and conditions that would otherwise appear only naturally or not at all. Such agents can be divided into bacteria (such as anthrax), viruses (such as smallpox), rickettsiae (such as Q fever), chlamydia, fungi, and toxins (such as ricin). The features that influence their potential for use as weapons include infectivity, virulence, toxicity, pathogenicity, the incubation period, transmissibility, lethality, and stability. The advent of genetic engineering has had a profound impact on the threat from biological weapons. Agents that are extremely harmful in nature can be modified to increase virulence, the production rate per cell, and survivability under environmental stress, as well as to mask their presence from immune-based detectors. Since most agents are living organisms, their natural replication after dissemination increases the potential impact of a strike, making such weapons even more attractive. Any country possessing a pharmaceutical or food storage infrastructure already has an inherent stabilization and storage system for biological agents. Aerosol delivery is optimal, while explosive delivery is also effective, but to a lesser extent owing to the possibility for organism inactivation because of heat from the blast.



The Basics For Understanding: Qassams, Scud Missiles to Cruise Missiles, Drones to UAVs and CBRN Warfare

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Germ or Virus	Effects	Lethality	Amount produced	Weaponization efforts
Aflatoxin	Liver cancer	Long-term only	More than 2,000 liters	Loaded into missile warheads and R-400 bombs
Anthrax - inhalation (pulmonary)	Gradual onset of flu-like symptoms, followed in 2-3 days by severe respiratory distress; uncontrollable bleeding	Death usually within 24-36 hours; if not treated until symptoms appear, almost always fatal	Iraq declared 8445 liters; inspectors determined that at least three times this much could have been made	Loaded into missile warheads and R-400 bombs; developed drop tanks, and the "Zubaidy Device" for helicopter dissemination
Anthrax - cutaneous	Lesions, achiness, fever, and nausea	Treatable with antibiotics; only fatal to about 20% of untreated victims	-	-
Anthrax - intestinal	Nausea, vomiting, fever, diarrhea	25-60% of those infected will die	-	-
Botulinum toxin	Weakness, dizziness and disinterest, trouble with motor functions affecting vision and swallowing; extremities and respiratory muscles become progressively weaker; abrupt respiratory failure	80% of victims die within 1-3 days	Almost 20,000 liters	Loaded into missile warheads and R-400 bombs
Cholera	Diarrhea, dehydration	Limited lethality	Unknown	Unknown
Clostridium perfringens (gas gangrene)	Acute lung distress, leaking blood vessels, breakdown of the red blood cells or platelets (which enable the blood to clot), and liver damage	Can be fatal, though early antibiotic treatment is effective if done before toxins accumulate in the body	Up to 5,000 liters possible, though far less declared by Iraq	Iraq declared none was weaponized
Mycotoxins	Attack the cells of bone marrow, skin, and the G-I tract, block blood clotting	Only about 35 milligrams (aerosol) kills an average man, but considered only moderately lethal	Unknown	Unknown
Ricin	Flu-like symptoms, then shock and cardiovascular collapse, and finally quick, extreme lung failure	Highly lethal - only about 10 millionths of a gram need to be inhaled	10 liters declared by Iraq	None - all used in field trials, according to Iraq
Shigella	Diarrhea; in rare cases a rash, generalized sepsis and death	Not usually fatal	Unknown	Unknown
Wheat-cover smut	No effect to humans	Fatal to the wheat plant	Iraq declared amounts made were "Not quantifiable"	Unknown
Camelpox	Fever and skin rash in camels	Rarely infects humans	Unknown	Unknown
Enterovirus 70	Flu, colds, or pneumonia	Not fatal	Unknown	Unknown
Infectious hemorrhagic conjunctivitis	Attacks the eyes, causing a loss of sight and in some cases bleeding	Not fatal	Unknown	Unknown
Rotavirus	Diarrhea, dehydration adults, Lethal to infants & children	Limited lethality Lethal to infants & children	Unknown	Unknown
Smallpox	Flu-like symptoms, then a rash	Kills about 1/3 of unvaccinated victims, but the vaccine is highly effective	Unknown	Unknown
Genetic Engineering	Can create strains that are more stable during dissemination and less susceptible to standard treatments	NA	NA	One goal was to make an antibiotic-resistant strain of anthrax

Saddam Hussein's Bio-warfare Arsenal : WMD Profiles: Biological Program Histories Iraq's Biological Weapon Program
<http://www.iraqwatch.org/profiles/biological.html>

What is a Chemical Warfare Agent?

A United Nations report from 1969 defines chemical warfare agents as "... chemical substances, whether gaseous, liquid or solid, which might be employed because of their direct toxic effects on man, animals and plants ... ". The Chemical Weapons Convention defines chemical weapons as including not only toxic chemicals but also ammunition and equipment for their dispersal. Toxic chemicals are stated to be "... any chemical which, through its chemical effect on living processes, may cause death, temporary loss of performance, or permanent injury to people and animals". Plants are not mentioned in this context.

Chemical Weapons: Chemical weapons use the toxic properties, as opposed to the explosive properties, of chemical substances to produce physical or physiological effects on an enemy

CHEMICAL WARFARE AGENTS	
CLASS	NAMES
Nerve Agents	Tabun (GA) VX Sarin (GB) Soman (GD) Cyclosarin (GF)
Vesicants	Lewisite (L) Sulfur Mustard (mustard gas) Phosgene oxide (CX)
Cyanides	Hydrogen Cyanide (AC) Cyanogen chloride (CK)
Pulmonary Agents	Phosgene (CG)
Riot Control Agents	CN (Mace) CS CR

Chemical Weapons

Chemical warfare agents can be classified by their effects on the body. These agents are blood, choking, blister, and nerve. Blood agents interfere with the transfer of oxygen, suffocating the victim. Hydrogen cyanide is a blood agent which kills quickly and dissipates quickly. Choking agents damage the lungs. Blister agents cause painful blisters on the skin and are especially damaging when inhaled. Nerve agents attack the nervous system, causing difficulty in breathing, nausea, dim vision, convulsions, and death. Chemical warfare agents can be persistent or non-persistent. The effects of persistent agents, such as mustard or VX, may last days or weeks. Hydrogen cyanide and sarin are non-persistent agents. For example, sarin evaporates at about the same rate as water. Some industrial chemicals are also proven chemical warfare agents. These chemicals, like hydrogen cyanide and phosgene, are produced in industrial chemical plants throughout the world.

🚩 **Practically any munitions can be filled with CW agents. Chemical munitions are fitted with long or short bursts, according to the agent properties and the chemical strike planner's intended effect.**

Chemical warfare agents have often been referred to as warfare gases, but in fact many chemical warfare agents exist as liquids at ambient temperatures. The common chemical warfare agents have varying degrees of volatility and pose both a vapor hazard as well as a liquid contact hazard.

Classes of Chemical Warfare Agents

Among lethal CW agents, the nerve agents have had an entirely dominant role since the Second World War. Nerve agents acquired their name because they affect the transmission of nerve impulses in the nervous system. All nerve agents belong chemically to the group of organo-phosphorus compounds. They are stable and easily dispersed, highly toxic and have rapid effects both when absorbed through the skin and via respiration. Nerve agents in general attack the nervous system of the human body.

VX: A clear, colorless liquid – technically named methylphosphonothioic acid and described as the most deadly nerve agent ever created.

Nerve agents can be manufactured by means of fairly simple chemical techniques. The raw materials are inexpensive and generally readily available.

Nerve Agents

Inhibit acetyl - cholinesterase (AChE) causing Ach accumulation and excessive cholinergic stimulation

- **Incapacitating Agents:** Irritation and extreme pain to affected organs
- **Pulmonary Agents:** Impair ability to function- not permanent
- **Vesicants and Blistering Agents:** Extensive irreversible tissue damage
- **Blood Agents:** Interfere with cellular respiration

Mustard Agents: are usually classified as "blistering agents" owing to the similarity of the wounds caused by these substances resembling burns and blisters. However, since mustard agents also cause severe damage to the eyes, respiratory system and internal organs, they should preferably be described as "blistering and tissue-injuring agents". In its pure state, mustard agent is colorless and almost odorless. The name was given to mustard agent as a result of an earlier production method which yielded an impure mustard-smelling product. Mustard agent is also claimed to have a characteristic smell similar to rotten onions. However, the sense of smell is dulled after only a few breaths so that the smell can no longer be distinguished. In addition mustard agent can cause injury to the respiratory system in concentrations which are so low that the human sense of smell cannot distinguish them. At room temperature, mustard agent is a liquid with low volatility and is very stable during storage

Mustard agent is very simple to manufacture and can therefore be a "first choice" when a country decides to build up a capacity for Chemical Warfare Capability.

Delivery Systems



Fig. 2-53. A chemical warhead for the Honest John rocket. It was designed to break apart and disperse the spherical bomblets of nerve agent. Photograph: Chemical and Biological Defense Command Historical Research and Response Team, Aberdeen Proving Ground, Md.

■ **Unitary:** This implies that it contains one active ready-to-use CW agent.

■ **Binary Technology:** In a binary weapon, the component chemicals are kept separate, to be combined on launch.

The Principle for the Use of Binary Weapons: Two canisters with the two liquid components are placed one after the other in the shell. When the shell is fired, forces of inertia will press the liquid contents in the front canister backwards and burst the wall separating the canisters. The rifling in the barrel gives

the shell a spinning velocity of about 15,000 r.p.m. which contributes to the mixing. Most chemical ammunition can be described as Binary technology implies that the final stage in the synthesis of the nerve agent is moved from the factory into the warhead, which thus functions as a chemical reactor.

Two initial substances which are stored in separate containers are mixed and allowed to react and form the nerve agent when the ammunition (bomb, projectile, grenade, etc.) is on its way towards the target. Until the actual moment of use, the ammunition contains only relatively non-toxic initial substances. It is therefore considered to be safer to manufacture, store, transport and finally, destroy. However, some critics question whether this practically untested type of new ammunition is reliable. The technique for mixing substances in bombs and rockets is complicated and requires space. The reaction has to be controlled (e.g., the temperature) and the process should preferably take place without solvents.

340). Chemical Warfare Agents
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Toxicology Fellow Maryland Poison
Center
<http://www.mdpoison.com/publications/pdf/Feb2002Toxalert.pdf>

Following Iraq's invasion of Kuwait in 1990 and during the United Nations Special Commission's inspections in Iraq from 1991 to 1998, it became clear that Iraq had had the largest and most sophisticated chemical and biological weapons program in the developing world. In addition to the production of several nerve agents, mustard agents, and biological warfare agents, Iraq also produced and weaponized several highly potent toxins such as botulinum toxin and aflatoxin.

The United Nations and the Iraq-Kuwait Conflict, 1990–1996. The United Nations Blue Book Series, Volume IX, Department of Public Information, United Nations, New York, USA, 1996.

It was the held belief of the many International Intelligence Agencies those countries in the Mid-East was incapable of mastering the complexities of binary chemical weapons production. After the 1991 Persian Gulf War and Saddam's surrender the United Nations established its Special Commission (UNSCOM, United Nations Special Commission, this later became United Nations Monitoring, Verification and Inspection Commission, UNMOVIC). UNSCOM Inspectors sent to Saddam's Iraq were charged with the task of destroying, removing, or rendering harmless "all chemical and biological weapons and all stocks of agents and all related subsystems and components and all research, development, support and manufacturing facilities." What they discovered horrified them; Saddam's Iraq had not only succeeded in manufacturing binary chemical weapons, he had perfected production of one of the most complex deadly Nerve Agents ever conceived VX Nerve Agent. However, not only had Saddam's Iraq produced deadly VX but in fact had mastered the technological complex binary form. [341]

Chemical Weapons Delivery Systems

Chemical weapon delivery requires disseminating the agent in one of two forms: liquid droplets or aerosol. When dispersed, larger droplets fall to the ground, causing ground contamination, whereas the smaller, lighter droplets remain airborne as an aerosol. A chemical cloud is highly susceptible to environmental conditions. Wind velocity necessarily dictates its direction and speed dispersal. Rain and low temperatures may reduce agent effectiveness. Conversely, warm temperatures and high humidity can increase the toxic concentration of the chemical cloud. A wide variety of possible delivery systems exists for chemical weapon agents. Typical military devices include "artillery shells, aerial bombs (including cluster bombs), spray tanks, missiles, rockets, grenades, and mines. All of these munition types are intended to provide an appropriately sized aerosol that will remain suspended in the air close to the ground where it will be readily inhaled." [342]Sophisticated chemical delivery systems were perfected in the 1960s with the development of binary chemical agents. Previously, chemical weapons were composed of a unitary chemical munition. The chemical agent was manufactured, poured into the munitions, and then stored, ready for use. Binary technology altered weapon design by combining two chemicals of lesser toxicity to create a lethal agent after the munition was fired. By delaying the creation of the toxic substance until after the weapon's discharge, binary technology ensured greater safety during transportation, handling, and storage of chemical weapons. Commercial methods of distributing chemical agents are typically less efficient and reliable but can

nevertheless be effective. Crop-dusting aircraft, pesticide foggers, and even simple aerosol spray cans offer potential dissemination methods. A sarin filled munitions with a long busts disseminates the agent as a vapor or fine aerosol, with some of the fragmentation effect of a conventional munitions. A blister or persistent nerve agent filled munition with a short bust is used to contaminate terrain or equipment. The short bursts disperse the agent in droplets or as a coarse aerosol, so that it will evaporate more slowly, and its effects remain on target longer. [343]

341). United Nations Monitoring, Verification and Inspection Commission Note by the Secretary-General Distr.: General 21 June 2006 p 40 http://www.un.org/Depts/unmovic/new/documents/compendium_summary/s-2006-420-English.pdf

342). Frederick Sidell, William Patrick, and Thomas Dashiell, Jane's Chem-Bio Handbook (Alexandria: Jane's Information Group, 2000), p. 147.

343). Gert Harigel, Chemical and Biological Weapons: Use in Warfare, Impact on Society and Environment, Carnegie Endowment for International Peace. Available at www.ceip.org/files/publications/Harigelreport.a

The Comparative Effects of Biological, Chemical, and Nuclear Weapons Delivered Against a Typical Urban Target		
Using one aircraft delivering 1,000 kilograms of Sarin nerve gas or 100 kilograms of Anthrax spores: Assumes the aircraft flies in a straight line over the target at optimal altitude and dispensing the agent as an aerosol. The study assumes that a biological agent would not make maximum use of this payload capability because this is inefficient. It is unclear this realistic.		
	Area Covered in Square Kilometers	Deaths Assuming 3,000-10,000 people Per Square Kilometer
<u>Clear sunny day, light breeze</u>		
Sarin Nerve Gas	0.74	300-700
Anthrax Spores	46	130,000-460,000
<u>Overcast day or night, moderate wind</u>		
Sarin Nerve Gas	0.8	400-800
Anthrax Spores	140	420,000-1,400,000
<u>Clear calm night</u>		
Sarin Nerve Gas	7.8	3,000-8,000
Anthrax Spores	300	1,000,000-3,000,000
Source: Adapted by the Anthony H. Cordesman from Office of Technology Assessment, <u>Proliferation of Weapons Mass Destruction: Assessing the Risks</u> , US Congress OTA-ISC-559, Washington, August, 1993, pp. 53-54.		



CBRN Delivery Systems:

- (1). Missiles
- (2). Rockets
- (3). Bombs
- (4). Artillery
- (5). UAVs
- (6). Sprayers

Missiles encompass a range of types and technologies, from ground-, sea- and air-launched cruise missiles to land- and sea-launched ballistic missiles, and they are often dual-use—that is, they can deliver conventional weapons or WMD, which greatly that have been developed outside the technically advanced states are not considered suitable for the delivery of conventional warheads.

Nuclear: A nuclear weapon is a device with explosive energy, most or all of which derives from fission or a combination of fission and fusion processes. Explosions from such devices cause catastrophic damage due both to the high temperatures and ground shocks produced by the initial blast and the lasting residual radiation. Nuclear fission weapons produce energy by splitting the nucleus of an atom, usually highly enriched uranium or plutonium, into two or more parts by bombarding it with neutrons. Each nucleus that is split releases energy as well as additional neutrons that bombard nearby nuclei and sustain a chain reaction. Fission bombs, such as those dropped on Hiroshima and Nagasaki, are the easiest to make, and they provide the catalyst for more complex thermonuclear explosions. In such weapons a fission explosion creates the high temperatures necessary to join light isotopes of hydrogen, usually deuterium and tritium, which similarly liberate energy and neutrons. Most modern nuclear weapons use a combination of the two processes, called boosting, to maintain high yields in smaller bombs. Nuclear weapons are the most deadly weapons ever invented. A single, compact nuclear weapon can instantly devastate a mid-sized city. Nuclear weapons are also the most difficult mass destruction weapons to manufacture or acquire. [344]

A variety of names are used for weapons that release energy through nuclear reactions - atomic bombs (A-bombs), hydrogen bombs (H-bombs), nuclear weapons, fission bombs, fusion bombs, thermonuclear weapons (not to mention "physics package" and "device"). A few comments about terminology are probably in order. The earliest name for such a weapon appears to be "atomic bomb". This has been criticized as a misnomer since all chemical explosives generate energy from reactions between atoms - that is, between intact atoms consisting of both the atomic nucleus and electron shells. Further the fission weapon to which "atomic bomb" is applied is no more "atomic" than fusion weapons are. However the name is firmly attached to the pure fission weapon, and well accepted by historians, the public, and by the scientists who created the first nuclear weapons. Since the distinguishing feature of both fission and fusion weapons is that they release energy from transformations of the atomic nucleus, the best general term for all types of these explosive devices is "nuclear weapon" (hence the name of this FAQ). Fusion weapons are called "hydrogen bombs" (H-bombs) because isotopes of hydrogen are principal components of the nuclear reactions involved. In fact, in the earliest fusion bomb designs deuterium (hydrogen-2) was the sole fusion fuel. Fusion weapons are called "thermonuclear weapons" because high temperatures are required for the fusion reactions to occur.[345]

The Mechanics Of Nuclear Explosions: In nuclear explosions, about 90 percent of the energy is released in less than one millionth of a second. Most of this is in the form of the heat and shock waves which produce the damage. It is this immediate and direct explosive power which could devastate the urban centers in a major nuclear war. Compared with the immediate colossal destruction suffered in target areas, the more subtle, longer term effects of the remaining 10 percent of the energy released by nuclear weapons might seem a matter of secondary concern. But the dimensions of the initial catastrophe should not overshadow the after-effects of a nuclear war. They would be global, affecting nations remote from the fighting for many years after the holocaust, because of the way nuclear explosions behave in the atmosphere and the radioactive products released by nuclear bursts. When a weapon is detonated at the surface of the earth or at low altitudes, the heat pulse vaporizes the bomb material, target, nearby (continued) [346]

344). Invention and Discovery: Atomic Bombs and Fission <http://nuclearweaponarchive.org/Usa/Med/Discfiss.html>

345). The Nature of an Atomic Explosion. In The Avalon Project at Yale Law School, *The Atomic Bombings of Hiroshima and Nagasaki*. Chapter 11. The Lillian Goldman Law Library in Memory of Sol Goldman. New Haven, Conn.

URL: <http://www.yale.edu/lawweb/avalon/abomb/mp11.htm>

346). Ibid 345

structures, and underlying soil and rock, all of which become entrained in an expanding, fast-rising fireball. As the fireball rises, it expands and cools, producing the distinctive mushroom cloud, signature of nuclear explosions. The altitude reached by the cloud depends on the force of the explosion. When yields are in the low-kiloton range, the cloud will remain in the lower atmosphere and its effects will be entirely local. But as yields exceed 30 kilotons, part of the cloud will punch into the stratosphere, which begins about 7 miles (11.2 KM) up. With yields of 2-5 megatons or more, virtually all of the cloud of radioactive debris and fine dust will climb into the stratosphere. The heavier materials reaching the lower edge of the stratosphere will soon settle out, as did the Castle/Bravo fallout at Rongelap. But the lighter particles will penetrate high into the stratosphere, to altitudes of 12 miles (19.3 Km) and more, and remain there for months and even years. Stratospheric circulation and diffusion will spread this material around the world. ^[346]

346). The Nature of an Atomic Explosion. In The Avalon Project at Yale Law School, *The Atomic Bombings of Hiroshima and Nagasaki*. Chapter 11. The Lillian Goldman Law Library in Memory of Sol Goldman. New Haven, Conn.

URL: <http://www.yale.edu/lawweb/avalon/abomb/mp11.htm>

Blast Effects (10 and 15 psi)

City:	20 KT		100 KT		500 KT	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
Amman	5,226	1,877	15,191	5,494	34,643	8,215
Tehran	8,565	3,077	24,894	9,004	56,771	13,463
Tel Aviv	3,084	1,108	8,966	3,243	20,445	4,849
Damascus	17,253	6,197	50,146	18,136	114,356	27,119

For the Fallout Radiation we consider the following amounts of dosage:

- 300 rem dosage:

Vomiting and nausea in nearly all exposed population on first day, followed by other symptoms of radiation sickness; about 20% deaths within 2 to 6 weeks after exposure; survivors convalescent for about 3 months.

- 1000 rem dosage:

Vomiting and nausea in all those exposed within 1 to 2 hours; probably no survivors from radiation sickness.

Radioactive Fallout: Both the local and worldwide fallout hazards of nuclear explosions depend on a variety of interacting factors: weapon design, explosive force, altitude and latitude of detonation, time of year, and local weather conditions. All present nuclear weapon designs require the splitting of heavy elements like uranium and plutonium. The energy released in this fission process is many millions of times greater, pound for pound, than the most energetic chemical reactions. The smaller nuclear weapon, in the low-kiloton range, may rely solely on the energy released by the fission process, as did the first bombs which devastated Hiroshima and Nagasaki in 1945. The larger yield nuclear weapons derive a substantial part of their explosive force from the fusion of heavy forms of hydrogen--deuterium and tritium. Since there is virtually no limitation on the volume of fusion materials in a weapon, and the materials are less costly than fissionable materials, the fusion, "thermonuclear," or "hydrogen" bomb brought a radical increase in the explosive power of weapons. However, the fission process is still necessary to achieve the high temperatures and pressures needed to trigger the hydrogen fusion reactions. Thus, all nuclear detonations produce radioactive fragments of heavy elements fission, with the larger bursts producing an additional radiation component from the fusion process. The nuclear fragments of heavy-element fission which are of greatest concern are those radioactive atoms (also called radionuclides) which decay by emitting energetic electrons or gamma particles. An important characteristic here is the rate of decay. This is measured in terms of "half-life"--the time required for one-half of the original substance to decay--which ranges from days to thousands of years for the bomb-produced radionuclides of principal interest. (See "Nuclear Half-Life" note.) Another factor which is critical in determining the hazard of radionuclides is the chemistry of the atoms. This determines whether they will be taken up by the body through respiration or the food cycle and incorporated into tissue. If this occurs, the risk of biological damage from the destructive ionizing radiation is multiplied. Probably the most serious threat is cesium-137, a gamma emitter with a half-life of 30 years. It is a major source of radiation in nuclear fallout, and since it parallels potassium chemistry, it is readily taken into the blood of animals and men and may be incorporated into tissue. Other hazards are strontium-90, an electron emitter with a half-life of 28 years, and iodine-131 with a half-life of only 8 days. Strontium-90 follows calcium chemistry, so that it is readily incorporated into the bones and teeth, particularly of young children who have received milk from cows consuming contaminated forage. Iodine-131 is a similar threat to infants and children because of its concentration in the thyroid gland. In addition, there is plutonium-239, frequently used in nuclear explosives. A bone-seeker like strontium-90, it may also become lodged in the lungs, where its intense local radiation can cause cancer or other damage. Plutonium-239 decays through emission of an alpha particle (helium nucleus) and has a half-life of 24,000 years. To the extent that hydrogen fusion contributes to the explosive force of a weapon, two other radionuclides will be released: tritium (hydrogen-3), an electron emitter with a half-life of 12 years, and carbon-14, an electron emitter with a half-life of 5,730 years. Both are taken up through the food cycle and readily incorporated in organic matter. Three types of radiation damage may occur: bodily damage (mainly leukemia and cancers of the thyroid, lung, breast, bone, and gastrointestinal tract); genetic damage (birth defects and constitutional and degenerative diseases due to gonadal damage suffered by parents); and development and growth damage (primarily growth and mental retardation of unborn infants and young children). Since heavy radiation doses of about 20 roentgen or more (see "Radioactivity" note) are necessary to produce developmental defects, these effects would probably be confined to areas of heavy local fallout in the nuclear combatant nations and would not become a global problem.

Nuclear Half-Life: The concept of "half-life" is basic to an understanding of radioactive decay of unstable nuclei. Unlike physical "systems" -- bacteria, animals, men and stars -- unstable isotopes do not individually have a predictable life span. There is no way of forecasting when a single unstable nucleus will decay. Nevertheless, it is possible to get around the random behavior of an individual nucleus by dealing statistically with large numbers of nuclei of a particular radioactive isotope. In the case of thorium-232, for example, radioactive decay proceeds so slowly that 14 billion years must elapse before one-half of an initial quantity decayed to a more stable configuration. Thus the half-life of this isotope is 14 billion years. After the elapse of second half-life (another 14 billion years), only one-fourth of the original quantity of thorium-232 would remain, one eighth after the third half-life, and so on. Most manmade radioactive isotopes have much shorter half-lives, ranging from seconds or days up to thousands of years. Plutonium-239 (a manmade isotope) has a half-life of 24,000 years. For the most common uranium isotope, U-238, the half-life is 4.5 billion years, about the age of the solar system. The much scarcer, fissionable isotope of uranium, U-235, has a half-life of 700 million years, indicating that its present abundance is only about 1 percent of the amount present when the solar system was born.

Worldwide Effects of Nuclear War

Note 4: Nuclear Half-Life

http://www.atomicarchive.com/Docs/Effects/wenw_note4.shtml

Local Fallout: Most of the radiation hazard from nuclear bursts comes from short-lived radionuclides external to the body; these are generally confined to the locality downwind of the weapon burst point. This radiation hazard comes from radioactive fission fragments with half-lives of seconds to a few months, and from soil and other materials in the vicinity of the burst made radioactive by the intense neutron flux of the fission and fusion reactions. It has been estimated that a weapon with a fission yield of 1 million tons TNT equivalent power (1 megaton) exploded at ground level in a 15 miles-per-hour wind would produce fallout in an ellipse extending hundreds of miles downwind from the burst point. At a distance of 20-25 miles (40.2 KM) downwind, a lethal radiation dose (600 rads) would be accumulated by a person who did not find shelter within 25 minutes after the time the fallout began. At a distance of 40-45 miles (72.4 KM) a person would have at most 3 hours after the fallout began to find shelter. Considerably smaller radiation doses will make people seriously ill. Thus, the survival prospects of persons immediately downwind of the burst point would be slim unless they could be sheltered or evacuated. It has been estimated that an attack on U.S. population centers by 100 weapons of one-megaton fission yield would kill up to 20 percent of the population immediately through blast, heat, ground shock and instant radiation effects (neutrons and gamma rays); an attack with 1,000 such weapons would destroy immediately almost half the U.S. population. These figures do not include additional deaths from fires, lack of medical attention, starvation, or the lethal fallout showering to the ground downwind of the burst points of the weapons. Most of the bomb-produced radionuclides decay rapidly. Even so, beyond the blast radius of the exploding weapons there would be areas ("hot spots") the survivors could not enter because of radioactive contamination from long-lived radioactive isotopes like strontium-90 or cesium-137, which can be concentrated through the food chain and incorporated into the body. The damage caused would be internal, with the injurious effects appearing over many years. For the survivors of a nuclear war, this lingering radiation hazard could represent a grave threat for as long as 1 to 5 years after the attack.

Historical Reference Casualties at Hiroshima and Nagasaki

Hiroshima: Height of Burst : 1,670 ft
Yield : 12.5 Kilotons
Nagasaki: Height of Burst : 1,640 ft
Yield : 22 Kilotons

Estimates of Casualties

	Hiroshima	Nagasaki
Pre-raid population	256,000	173,800
Dead	68,000	38,000
Injured	76,000	21,000
Total Casualties	144,000	59,000

Because the Hiroshima bomb was detonated at a height of 1,670 ft, many of the fatalities were immediate; additional fatalities occurred days, weeks, or even years later.

(Source: Samuel Glasstone and Philip J. Dolan, The Effects of Nuclear Weapons, 1977)

Understanding Nuclear Fall Out

- The closer to ground a bomb is detonated, the more dust and debris is thrown into the air, and the more local fallout.
- Impact with the ground severely limits the blast and radiation from a bomb. Ground bursts are not usually considered tactically advantageous, with the exception of hardened underground targets such as missile silos or command centers.
- Population kills can be different. For a 1 MT explosion, lethal ellipses can reach 40-80 miles against unsheltered populations after 18 hours
- For a 1 MT explosion, lethal ellipses will reach 40-80 miles against unsheltered populations after 18 hours. Area of extreme lethality (3000 rads) can easily reach 20+ miles.
- A dose of 5.3 Gy (Grays) to 8.3 Gy is considered lethal but not immediately incapacitating. Personnel will have their performance degraded within 2 to 3 hours, and will remain in this disabled state at least 2 days. However, at that point they will experience a recovery period and be effective at performing non-demanding tasks for about 6 days, after which they will relapse for about 4 weeks. At this time they will begin exhibiting symptoms of radiation poisoning of sufficient severity to render them totally ineffective. Death follows at approximately 6 weeks after exposure.
- •Delayed effects may appear months to years following exposure. Most effects involve tissues or organs. Include life shortening, carcinogenesis, cataract formation, chronic radiodermatitis, decreased fertility, and genetic mutations. [347]

Radiological / Dirty Bomb Radiological Dispersal Device (RDD)

Definition of a Radiological Dispersive Device: The U.S. Department of Homeland Security defines a radiological dispersive device (RDD) as a combination of a conventional explosive device with radioactive material, and is designed to scatter this radioactive material over a general area. A RDD is also called a "dirty bomb". The context is that of terrorist(s) use to cause psychological fear and economic disruption. It is also possible that a terrorist could rig up a device using an aspirator to disperse the radioactive material in the form of a fine powder or aerosol suspension into an intake air system without using an explosive, and for that reason, responders should be alert to any possibility. A different threat is posed by radiological weapons, which are more weapons of mass disruption than mass destruction. Radiological weapons can use plutonium or highly enriched uranium but can rely simply on radioactive materials, of which there are millions of sources used in medical and industrial facilities worldwide. The immediate destructive effect of a radiological or "dirty" bomb is only as great as its conventional explosive, and even the radiation effects of such a bomb are likely to be limited. The more harmful effects of disruption and economic damage would be prompted by public alarm and the necessity of evacuating and decontaminating affected areas. The ubiquity of radiological materials and the crude requirements for detonating such a device suggest a high likelihood of use. This puts a premium on educating the public about the limited consequences of radiological weapons in order to mitigate some of the alarm and uncertainty that would be unleashed in the event of an attack.

Radiological Dispersal Weapons (RDWs): Radiological weapons use conventional explosives such as dynamite and C-4 to disperse radioactive materials over large areas. The most common conception for their use is explosives surrounded by radioactive material in the form of pellets, powder, or even a radioactive gas. The area of dispersal would depend on the size of the explosion. Victims not injured in the explosion would receive life-threatening levels of radiation exposure. The radiation would inhibit or prevent emergency response teams from aiding the victims, and, depending on the size of the explosion, contaminate large areas for years pending expensive removal operations. Alternatively, a source of radioactive material, such as a nuclear reactor or spent-fuel storage depots, could be targeted with large explosive devices to disperse very high levels of radioactivity into the atmosphere and the surrounding area. Radiological weapons, although not as destructive as nuclear explosive weapons, also pose a serious danger, particularly as a terrorist threat. These are weapons that use conventional explosives, such as dynamite, to disperse radioactive materials, including the highly radioactive waste material from nuclear power reactors or other non-weapon sources. They may be attractive weapons for terrorists owing to the relative ease of their acquisition and use and mass disruption potential. A terrorist act involving the dispersal of radioactive materials would contaminate a wide area, making the treatment of casualties more difficult, exposing many people unhurt in the initial explosion to death and injury from radioactivity, and rendering large areas uninhabitable, pending sizable removal and cleansing operations. As for chemical and biological agents, the invisible and uncertain danger from these weapons would cause widespread fear and horror.

"There have been several incidents over the past 20 years which indicate the dirty bomb threat is real. Chechnyan rebels directed a TV reporter to a park in central Moscow in 1995. When she reached there she found a package containing about 15lbs of explosives and cesium-137. This was the first known appearance of a dirty bomb. Saddam's Iraq tested a crude radiological device in 1987, according to frequently cited intelligence reports. Operatives for Osama bin Laden in Sudan tried and failed to buy enriched uranium produced in South Africa on the black market. American-led forces discovered some documents in Afghanistan which contained detailed information on the making and use of a dirty bomb in fall of 2001. Police arrested Jose Padilla (Abdullah al Muhajir). Apparently, he received \$10,000 from Al Qaeda to carry out a dirty bomb explosion. A large number of radioactive items that can be used to make dirty bombs are unaccounted for in the USA and Russia. About 280 confirmed cases of illicit trafficking in radioactive materials since 1993 been reported."

Testimony of Dr. Gordhan N. Patel President, JP Laboratories, Inc. Before the House Committee on Government Reform, Subcommittee on National Security, Emerging Threats and International Relations on "Counterterrorism Technology: Picking Winners and Losers" September 29, 2003 ,p 5 Is A Dirty Bomb Threat Real?

According to US military reporting on the effects RDDs, there are no official casualty predictions for radiological dispersal weapons (RDWs). This because of the very nature of the weapon, verification of the use of the weapon may prove difficult. RDWs do not produce a nuclear yield; but spread nuclear contamination. While such weapons would produce far less immediate damage than devices that result in nuclear detonations, radiological weapons have enormous potential for economic damage, (cost of cleanup & disposal) and psychological/ intimidation. Food and water contamination can be a problem, and add to the response burden in any major attack.

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There Are Two Types Of Radiological Weapons: A radiological dispersal device (RDD) includes any explosive device utilized to spread radioactive material upon detonation. Any improvised explosive device could be used by placing it in close proximity to radioactive material. A Simple RDD spreads radiological material without the use of an explosive. Any nuclear material (including medical isotopes or waste) can be used in this manner.

A Salted Bomb: *From the expression "to salt the earth", means to render an area uninhabitable for generations.* This is a variation of a nuclear weapon designed to produce large quantities of radioactive fallout, rendering a large area uninhabitable. The term is derived both from the means of their manufacture, which involves the incorporation of additional elements to a standard atomic weapon. Salted versions of both fission and fusion weapons can be made, by a change in the materials used in their construction. The idea is to increase the normal production of radioactive fallout by placing inside the weapon a quantity of an element that can be converted to a highly radioactive isotope by neutron bombardment. When the bomb explodes, the element absorbs neutrons released by the nuclear reaction, and is converted to its radioactive form. The explosion and mushroom cloud scatters the radioactive material over a wide area, leaving the targeted area highly radioactive and uninhabitable to humans far longer than an area affected by typical nuclear weapons. [350]

An attacking military entity in theory could use artillery, aerial bomb, or a variety of missiles including cruise missiles. The overwhelming majority of countries in the Middle East / Africa region have some form of WMD-related research, development or weaponization program. [351] Moreover and more ominously, WMD, specifically chemical weapons, have in the past been used in the Middle East.[352] Having already crossed the WMD taboo threshold, and in light of the deep-rooted political tensions and frequent resort to the use of force, the potential for conflict crisis using some kind of CBRN weapon in the Middle East is all too real.

RADIOLOGICAL

ENRICHED URANIUM

MEDICAL ISOTOPE WASTE ?

IRRADIATED REACTOR WASTE ?

IRRADIATED ZIRCONIUM MUNITIONS



349). Radiological Weapons as Means of Attack Anthony H. Cordesman

<http://csis.org/files/media/CSIS/pubs/pubspubs/radiological%5B1%5D.pdf>

350). Nuclear, Biological, and Chemical Warfare ,Bhushan, K.; G. Katyal India: APH Publishing. pp. 75-77 The idea originated with Hungarian-American physicist Leo Szilard, in February 1950. His intent was not to propose that such a weapon be built, but to show that nuclear weapon technology would soon reach the point where it could end human life on Earth.

() Section 1.0 Types of Nuclear Weapons Nuclear Weapons Frequently Asked Questions Version 2.16: 1 May 1998

<http://nuclearweaponarchive.org/Nwfaq/Nfaq1.html>

351). Building a Weapons of Mass Destruction Free Zone in the Middle East: Global Non-Proliferation Regimes and Regional Experiences, UNIDIR/2004/24, pp. 25, 29. See also Center for Nonproliferation Studies, Weapons of Mass Destruction in the Middle East (updated 29 September 2006) <http://cns.miis.edu/research/wmdme/index.htm>

352). Center for Nonproliferation Studies, Weapons of Mass Destruction Capabilities in the Middle East, <http://cns.miis.edu/research/wmdme/capable.htm>

Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, Covering 1 January to 31 December 2011



Act, Chemical, Biological, Radiological, and Nuclear Terrorism

Several terrorist groups, particularly Al Qaeda, are in the Arabian Peninsula, probably remain interested in chemical, biological, radiological, and nuclear (CBRN) capabilities, but not necessarily in all four of those capabilities. A number of the 33 US Department of State-designated foreign terrorist organizations worldwide have previously expressed interest in one or more of these capabilities, mostly focusing on low-level chemicals and toxins. Some terrorist groups see employing (CBRN) materials as a high-impact option for achieving their goals, as even if they do not produce many casualties they would have a psychological impact. We believe some of these terrorists aim to use these agents against Western targets, especially in Iraq and Afghanistan. We continue to be concerned about Al Qaeda's intent to conduct unconventional attacks against the United States. While counterterrorism actions have disrupted Al Qaeda's near-term efforts to develop a sophisticated CBRN attack capability, we judge the group is still intent on its acquisition.

Key Suppliers: North Korea and entities in Russia and China continue to sell technologies and components in the Middle East and South Asia that are dual use and could support WMD and missile programs. North Korea is among the world's leading suppliers of ballistic missiles and related technologies. Chinese companies have been associated with nuclear and missile programs in Pakistan and missile programs in Iran. The problem of secondary proliferation continues to expand, as more countries that previously imported weapons and technologies begin indigenous production and export of those systems. As their domestic capabilities grow, traditional recipients of WMD and missile technology also are capable of supplying technology and expertise. In addition, independent companies, scientists, and engineers may provide WMD- and missile related assistance.

China

Chinese entities- including private and state-owned firms-continue to engage in WMD-related proliferation activities. The United States in recent years has imposed sanctions on several Chinese companies for sales of WMD- and ballistic missile-related technologies to states of concern. Although China has export control legislation that largely mirrors Missile Technology Control Regime (MTCR) controls, enforcement continues to fall short. Chinese entities- primarily private companies and individuals continue to supply a variety of missile-related items to multiple customers, including Iran and Pakistan. China continues to offer for sale SRBMs that fall below the 300-kilometer range/500 kilogram payload threshold for MTCR Category I systems. China's state-owned export firms remained a primary supplier of advanced conventional weapons to Pakistan, which still represents China's most important partner in military technology cooperation.

North Korea

North Korea remains committed to selling missiles and related technologies to foreign customers. Over the years, it has exported ballistic missile-related equipment, components, materials, technical expertise, and/or full missile systems to countries in the Middle East, South Asia, and North Africa. North Korea has demonstrated a willingness to sell complete ballistic missile systems and components that have enabled other states to acquire longer-range capabilities earlier than would otherwise have been possible and to acquire the basis for domestic development efforts. North Korea's relationships with Iran and Syria remain strong and we assess North Korea continues to seek new customers and reengage with previous customers. North Korea provided assistance to Syria's covert nuclear effort starting in the late 1990s and retains the potential for exporting nuclear materials or technology.

Russia

Russian entities remain key suppliers of nuclear equipment and technology to many civilian nuclear programs. Russia continues to provide assistance to Iran's civilian nuclear power program, by providing IAEA- safeguarded nuclear fuel and expertise to enable completion of Iran's Bushehr Nuclear Power Plant. • Russia has been the primary provider of assistance to India's civilian nuclear programs. Russia has constructed two 1 ,000-megawatt light water nuclear reactors at Kudankulam. China remains one of Russia's largest customers for nuclear-related equipment. Russia and China in 201 0 signed several contracts related to the planned construction of the third and fourth reactors at China's Russian-designed Taiwan nuclear power plant. Russian entities also remained a source of dual-use biotechnology equipment and related expertise.

 Countries with Nuclear, Biological, or Chemical Weapons or Offensive Research Programs			
Country	Nuclear	Chemical	Biological
Algeria	?		
Egypt	?	W	
Libya	? R*	W*	W*
Israel	?	W	?
Syria	? R	W	W
Iraq	R Destroyed by UN	W* Destroyed by UN	W* Destroyed by UN
Iran	? R	W	W
North Korea	W	W	W
Pakistan	W	W	W
Sudan		R	?
Saudi Arabia		R	

Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, Covering 1 January to 31 December 2011
 The Director of National Intelligence hereby submits this report in response to a congressionally directed action in Section 721 of the FY 1997 Intelligence Authorization
<http://www.fas.org/irp/threat/wmd-acq2011.pdf>

According to a 2010 State Department Report, Russian entities "continued to supply sensitive missile-related items, technology, and expertise to several programs of concern" from 20004-2008. The report added, however, that "available information" did not indicate that Russia "acted inconsistently with the MTCR." The vast former Soviet biological, chemical, and nuclear weapons complexes, including their former scientists, are also seen as a potential source of arms, materials, and know-how for other regimes or non-state actors. Consequently, the America (U.S. is spending several hundred million dollars each year in Russia to help secure / destroy these deadly arsenals) and other countries have many programs dedicated to mitigating this potential threat by helping Russia, as well as other former Soviet states, secure or destroy facilities, materials, and weapon systems, as well as gainfully employ former scientists in non-arms related work. [353]



Dual use materials are products/ technologies normally used for civilian purposes but can also be used in WMD production

China's missile trade and cooperation with Iran has been a subject of substantial proliferation concern in Washington since the 1980's. China's missile exports and assistance to Iran have generally fallen into two areas: the provision of anti-ship cruise missiles and related technology, and technical assistance for Iran's ballistic missile program, as well as some exports of complete ballistic missiles. Chinese ballistic and cruise missile exports and assistance to Iran could provide the material and technical base for Iranian development and deployment of missiles that could be used in the delivery of weapons of mass destruction. China first began exporting missiles to Iran in 1985, during the Iran-Iraq war, when China supplied weapons and military technology to both sides. In 1986-1987, China transferred HY-2 (Silkworm) anti-ship cruise missiles to Iran, causing the United States to issue a protest to Beijing and to temporarily freeze liberalization of high technology exports to China.[354]

353). Arms Control and Proliferation Profile: Russia <http://www.armscontrol.org/factsheets/russiaprofile>
 354). Chinas Missile Exports and Assistance to Iran Overview <http://www.nti.org/db/china/miranpos.htm>

From China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues Shirley A. Kan Specialist in Asian Security Affairs February 3, 2011 Congressional Research Service 7-5700 RL31555 p 3-9

Washington for several decades has been concerned about the PRC (People's Republic of China) proliferation in WMDS, related dual purpose materials and missiles that could deliver them. Recipients of China's technology reportedly include Pakistan, North Korean, Iran and Syria among others. China has refused to become a signatory member of the MTCR (Multilateral Export Control Regimes) or the Australia Group (AG) (on chemical and biological weapons) China did not join the 93 countries in signing the International Code of Conduct against Ballistic Missile Proliferation in The Hague on November 25, 2002. China has not joined the Proliferation Security Initiative (PSI) announced by President Bush on May 31, 2003. PRC weapons Proliferation has persisted, aggravating trends that result in more ambiguous technical assistance (vs. transfers of hardware), longer range missiles, more indigenous capabilities, and secondary (i. e., retransferred) proliferation. *The Director of Central Intelligence (DCI) noted that, for July-December 1996, "China was the most significant supplier of WMD-related goods and technology to foreign countries."*



Chemical Sales to Iran Concerning chemical weapons, the Washington Post of March 8, 1996, reported that U.S. intelligence, for over one year, was monitoring transfers of precursor chemicals and chemical related equipment from China to Iranian organizations affiliated with the military or the Revolutionary Guards. According to the report, the equipment included glass-lined vessels for mixing the caustic precursors and special air filtration equipment to prevent poison gas leaks.

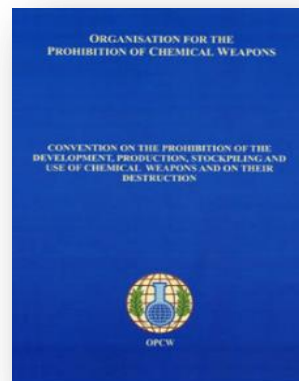
There are multifold political and economic reasons for China's and Russia's behavior. Withstanding is the fact that Iran would aim its nuclear weapons at Europe, America and their allies.

Iran was also buying PRC technology for indigenous and independent production. Confirming long-suspected PRC transfers, on May 21, 1997, the Clinton Administration imposed sanctions on two PRC companies, five PRC citizens, and a Hong Kong company for transfers to Iran contributing to chemical weapon proliferation. U.S. sanctions, banning U.S. government procurement and imports, were imposed under the AECA and EAA, as amended by the Chemical and Biological Weapons Control and Warfare Elimination Act of 1991 (P.L. 102-182). On November 21, 2000, the Clinton Administration agreed to waive missile proliferation sanctions, resumed processing licenses to export satellites to China, and discuss an extension of the bilateral space launch agreement, in return for another PRC promise on missile nonproliferation.

However, PRC proliferation activities continued. The Bush Administration imposed sanctions on 20 occasions on various PRC "entities" (including state-owned entities) for troublesome transfers related to missiles and chemical weapons to Pakistan, Iran, and Syria. Since 2009, the Obama Administration has imposed sanctions on four occasions on PRC entities for missile or other weapon proliferation. In February and April 2009 and July 2010, the United States imposed sanctions on PRC entities and Li Fangwei for missile proliferation in Iran. Also, in July 2009, the State Department reportedly had concerns that Q.C. Chen (a PRC person previously sanctioned for weapons proliferation) arranged for the sale of a test chamber to Iran's Defense Industries Organization that could be useful for testing missile parts. The test chamber was made by Voetsch China (a PRC subsidiary of a German firm) and was not controlled by the MTCR.

The Chemical Weapons Convention: Brief Background ,In 1992, after a decade of long and painstaking negotiations, the Conference on Disarmament agreed to the text of the Chemical Weapons Convention (CWC), which was then adopted by the General Assembly at its forty-seventh session, on 30 November 1992, in its resolution entitled Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction ([A/RES/47/39](#)).

The most complex and comprehensive disarmament treaty ever to be adopted, the Chemical Weapons Convention (CWC) is intended to provide robust assurance that chemical weapons will not be developed, produced, stockpiled, used or transferred. The Chemical Weapons Convention only affects signer countries and large efforts it cannot prevent development and assembly of up to several hundred weapons and warheads. The steady expansion of petrochemical, industrial process plants, and insecticide plants will make it progressively easier to produce chemical weapons without extensive imports of tell tale feedstocks. [355]



Proliferating nations such as Iran, Syria, North Korea and others have paid highly detailed attention to US counter-proliferation and ATBM (anti -ballistic missile) efforts at the technical level, and the lessons of previous wars. They seek to steadily improve concealment, denial, and countermeasures. Arms control along with CBRN proliferation control is seen as an extension of conflict and rivalry by Washington by other means; not as a valid security option.

- The need to purify and stabilize mustard and nerve agents is now well known, as is the need for more lethal warhead technology. All major proliferators have nerve gas technology.
- The BWC has no enforcement provisions and no near to mid-term prospects of acquiring them.
- Advances in biotechnology, food processing systems, and pharmaceuticals mean all regional states will soon be able to covertly mass produce dry storage biological weapons in optimal aerosol form.

Dual use technology now allows states to carry out virtually all aspects of weapons design and manufacture including simulated tests. All credible regional proliferators already have long -range strike aircraft and a wide range of unconventional delivery options. We must fully realize that most Mid-East / African countries have not developed military employment doctrine beyond the prestige of acquiring deadly arsenals of CBRN. Their deadly arsenals are an extension of their International political agendas, from efforts to intimidation neighbors, to force concessions, and political gain in the international arena. These states engage in concealment, denial, and compartmental secrecy measures. Their understanding of the full devastating nature of CBRNs, comprehending military employment of these deadly arsenals lethality's is terribly limited. This is largely due to WMDs forces are mostly covert and often compartmented from other forces. These countries ruling elite are direct control of WMDs forces, with little real military experience or true military operational CBRN education. Outside of Israel, most of Africa/Mid-east states command and control of their deadly arsenals are not left in the hands of the most professional / competent military personnel. Those mainly chosen are based on their loyalties and ties to the regime. From this command & control structure any actual deployment of CBRNs will be crisis driven. Utilization of these deadly arsenals and escalation will be more a product of the attitudes and decisions of narrow ruling political elite than any part of the military command chain. Risk taking will often be leader-specific and based on perceptions of a crisis shaped more by internal political attitudes than an objective understanding of a military situation. [356]

355). Basic Facts on Chemical Disarmament Introduction Brief History of the Treaty <http://www.opcw.org/news-publications/publications/history-of-the-chemical-weapons-convention/#c4126>

356). Weapons of Mass Destruction in the Middle East Regional Trends, National Forces, Warfighting Capabilities, Delivery Options, and Weapons Effects Anthony H. Cordesman <http://dev.csis.org/publication/weapons-mass-destruction-middle-east-regional-trends-national-forces-warfighting-capabil>

Since any actual deadly arsenal utilization will be crisis driven, it stands a good chance at being irrational or reckless, restraint in attacking civilian targets or mass employment against armed forces may be limited. Regimes may also take existential risks in escalating if they feel they are likely to lose power. The use of militant proxies or militant Islamists and unconventional delivery means may well be improvised without warning.

Weapons of Mass Destruction in the Middle East Regional Trends, National Forces, Warfighting Capabilities, Delivery Options, and Weapons Effects Anthony H. Cordesman p7

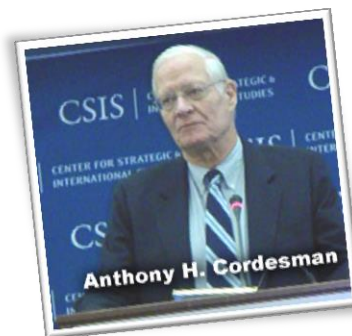
Authoritarian leaders or elites who will never take the time to fully understand the technology and effects of Weapons of Mass Destruction for sudden crisis decisions , are they themselves the heart of the problem.

	Nuclear	Biological	Chemical
Feed materials	Uranium ore, oxide widely available; plutonium and partly enriched uranium dispersed through nuclear programs, mostly under international safeguards.	Potential biological warfare agents are readily available locally or internationally from natural sources or commercial suppliers.	Many basic chemicals available for commercial purposes; only some nerve gas precursors available for purchase, but ability to manufacture them is spreading.
Scientific and technical personnel	Requires wide variety of expertise and skilful systems integration.	Sophisticated research and development unnecessary to produce commonly known agents. Industrial microbiological personnel widely available.	Organic chemists and chemical engineers widely available.
Plant construction and operation	Costly and challenging. Research reactors or electric power reactors might be converted to plutonium production.	With advent of biotechnology, small-scale facilities now capable of large-scale production.	Dedicated plant not difficult. Conversion of existing commercial chemical plants feasible but not trivial
Comments	Black-market purchase of ready-to-use fissile materials or of complete weapons very possible.	Biological organisms are less expensive and easier to produce than nuclear material or many of the chemical warfare agents.	Legitimate commercial chemical plants and facilities can produce the required warfare agents.

Anthony H. Cordesman Arleigh A. Burke Chair in Strategy Securing the Gulf Key Threats and Options for Enhanced Cooperation February 19, 2013 csis.org



"The fact remains, however, that the most demanding set of threats is the current and growing range of those posed by Iran:"



Terrorism and Civil Unrest: There is a history of Iranian-linked terrorism and civil unrest dating to the infancy of the Islamic Republic. Bahrain in particular has alleged that numerous uprisings, attempted coups, and recent bombings have been linked to Iranian support for Shia factions in that country. Kuwait also has a history of dealing with Iranian-linked terrorism as early as the 1980s, with another attempted attack recently uncovered. Plots in Bahrain and Kuwait have been linked to both Hezbollah and the Islamic Revolutionary Guards Corps (IRGC) Quds Force.

Support to Other Violent Non-State Actors: As has been the case with Hezbollah in Lebanon and Shia groups in Iraq, Iran has been accused of providing material support to violent non-state actors (VNSAs) in the Arabian Peninsula. The IRGC Quds Force is accused of meeting with and providing arms to Houthi militants in Yemen, which have been battling the US-backed regimes of Yemen and Saudi Arabia.

Threat to Maritime Trade: The security of maritime commerce for much of the Arabian Peninsula is contingent upon safe passage through the Strait of Hormuz. The threat of Iranian mines, small boat attacks, and anti-ship missiles is a serious risk to regional commerce.

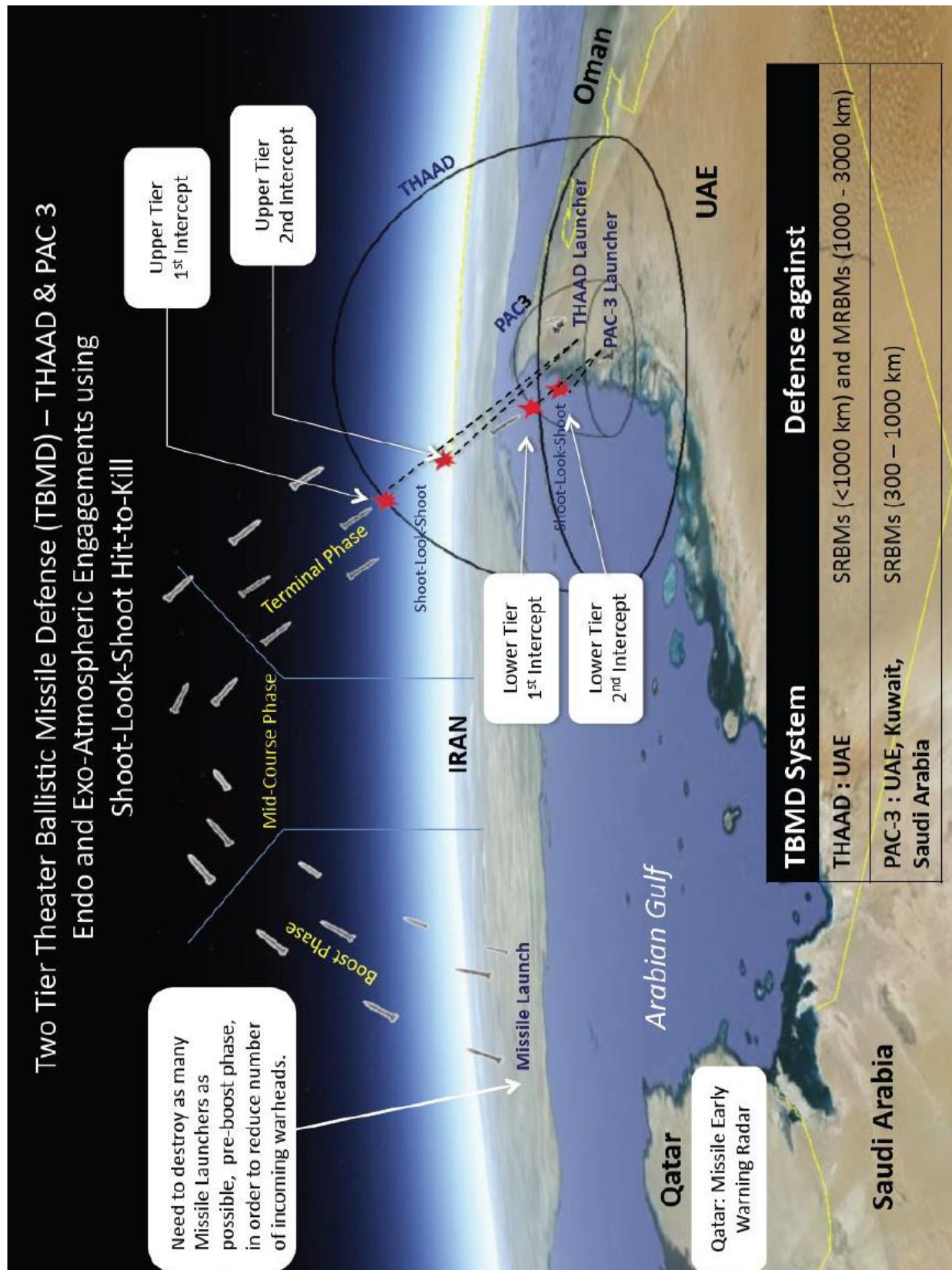
Missile Threat: Iran's airpower capabilities are limited by sanctions and the ageing nature of the country's fixed-wing air force. However, Iran has compensated for these shortcomings with short to intermediate range missile capabilities that put major population centers and critical infrastructure on the Arabian Peninsula in range of Iranian strikes.

Nuclear Threat: The GCC Ministerial meeting in December 2012 made it clear that the leaders of the Arab Gulf states support Iran's right to make peaceful use of nuclear power but are deeply concerned about the growing evidence that it is developing a nuclear weapons breakout capability and has plans to arms its missile forces with nuclear weapons.

- ***No single area presents a more challenging future military threat to the Arab Gulf states than Iran's acquisition of long-range missiles and movement towards acquiring nuclear weapons.***

The changes in the Iranian threat and the threat of terrorist and extremist movements creates a broad spectrum of areas where the GCC needs to be able to react in real-time or near-real-time to threats ranging from long-range missiles to asymmetric naval attacks to complex attacks by terrorists and extremists.

The highest priorities for such efforts include measures that could play a critical role in deterring – and defending against – Iran. In many cases, the GCC would have only 7-15 minutes of warning of a major air or missile attack, or would need integrated maritime and air surveillance to determine the status of Iran's asymmetric forces and whether they were deploying to present a threat or involved in complex operations.



Organization for the Prohibition of Chemical Weapons: Libya

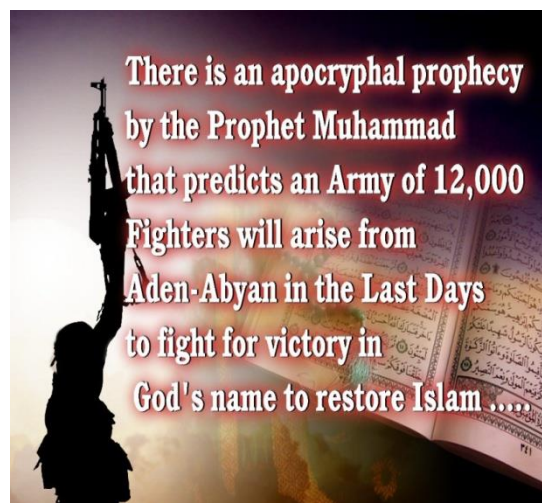
Implications of the Arab Awakening for CW in Libya and Syria By the time the Libyan revolution drew to a close, the OPCW estimated that Libya was still in possession of roughly 45 percent of its sulfur mustard and 60 percent of its raw ingredients (precursor chemicals), whose existence had been declared but not yet destroyed. In January 2012 the OPCW inspected Libya for the second time since the revolution; it confirmed that Qaddafi had an undeclared stockpile of chemical shells. The fact that the regime had not disclosed the existence of these two sites raised additional concerns over the existence of other undeclared Chemical warfare agents, dual purpose resources and production facilities. In addition, there is International concern that components of the arsenal might have fallen or will into the wrong hands, namely, terrorist groups both within Libya and abroad, as have the MANPADS and other related military hardware. At this time the UN and OPCW does not see a problem.[358] However because of the production methods for chemical weapons in the MENA (Middle East North Africa) which use lower end technology just transporting chemical munitions, requires safe guards. These can be slow leaking chemical munitions and even normally have some leakage when transported. As such require special transport and decontamination before use. For this reason is why such munitions have not turned on the black-market at this time. [359]

The MENA, even all of Africa are in upheaval; there are wars, conflicts being played out in almost every corner. Much of this fueled by the tide from the Arab Spring. Within this world wind of radical Islamic entities are CBR weapons, just right out of reach of most, held by a few of them but are in ever in increasing arsenals in the hands of MENA countries . Such state sponsors of terrorism such as Syria and the Islamic Republic of Iran come to the forefront of dangers of CBRN deadly arsenals. Their allies such as Sudan, North Korea cannot be dismissed. We must become fully cognizant of their religious driven irregular –asymmetrical wars they are waging with their militant proxies such as Hamas, Hezbollah and others. Tehran more than likely at this point has a nuclear weapon and is desperately driven to become a significant nuclear power. (This subject and more are covered in subsequent chapters. At one time, Iran was a principal ally of America and friend to Israel. So what happened? The 1979 Iran Revolution and the rise of Khomeinism, (this subject is dealt with in Chapter 1, The Rise of the Islamic Republic of Iran).

Prophet said: *'An army of twelve-thousand will come out of Aden-Abyan (Yemen). They will give victory to Allah and His messenger; they are the best between myself and them'.*" [Musnad Ahmad, (Vol. 1, pg. 333) No. 3079 and Tabarani in Al-Kabeer (Vol. 11, pg. 56) No. 11029]

Narrated Thauban: "The Prophet peace be upon him said: 'The nations shall gather and team up against you (i.e., Muslims) as the predators gather and team up against their preys. A questioner asked: 'Is it because of us being low in numbers at that day?' The Prophet replied: 'No, you that day shall be in great numbers, but you will be as powerless as the foam of the water on the surface of the river, and Allah shall remove any fear from your enemies toward you, and He shall put in your hearts a corruption.' A questioner asked: 'O Apostle of Allah, what is the corruption?' The Prophet replied: 'The love of life's amusements and the fear of death.' (Translation of Sunan Abu Dawud, The Book of Fierce Battles - The Gathering of all Nations against Islam, Book 37, Number 4297)"

358). Regional Proliferation and the "Arab Spring": Chemical Weapons in Libya and Syria Benedetta Berti and David Friedman Strategic Assessment | Volume 15 | No. 4 | January 2013 [http://cdn.www.inss.org.il/reblazecdn.net/upload/\(FILE\)1361102515.pdf](http://cdn.www.inss.org.il/reblazecdn.net/upload/(FILE)1361102515.pdf)
359). Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, And Nuclear Contamination Avoidance Fm 3-11.3 February 2006 Army, Marine Corps, Navy, Air Force Distribution Restriction: Approved for public release; distribution is unlimited



Western governments are paralyzed with economic and feeble political policies in the face of the MENA crisis, and buried from the International onslaught of radical Islam. Of paramount is Tehran's unchecked hand and free reign of terror in Sudan with the ongoing genocide, the current slaughter of Christians, and the call for a tiny country for a few million people to be wiped off the map, Israel. The small state of Israel where every man, woman and child are issued a gas-masks. Yet this terrifying fact is quickly shuffled under mind numbing international obfuscations, white washing governmental Realpolitik. Thousands of rockets and mortars have been fired into that tiny country of Israel, and it's a daily occurrence. Yet Washington officials mirror the global obfuscation consensus, and can only say, "Israel do nothing, ", and "show restraint." However as we have seen restraint has only fuel the crisis. Genocide is being committed in the name of religion, these actors want to wage their Holy Wars with the tools of CBRN, the spears of ballistic and cruise missiles, to UAVs.

"Mass murders and eliminations ultimately are far-flung transformative political campaigns that—even if not always so conceived—leave a more thoroughgoing mark on societies and set more profound processes of change in motion than virtually any other kind of politics or individual program. For many societies afflicted by such politics, eliminationist and exterminationist programs are the most profound of any political program that takes place within their extended time period, rivaling or exceeding even the effects of major economic growth. In many instances, these transformative effects are part of a visionary goal of creating a new society, but even when not linked to calls to transformative arms, they radically transform the societies, often beyond recognition, albeit in a somewhat different manner, anyway,"

"How do we break out of this suffocating, mass murder—abetting cynicism and inertia? In principle, it should not be difficult. The world's non-mass-murdering countries are wealthy and powerful, having prodigious military capabilities (and they can band together). The countries perpetrating mass murder and eliminationist politics, or tempted to do so, are overwhelmingly poor and weak (and each stands alone). Many could easily be stopped with a little military power and probably with other available, easily employable means. The powerful countries seriously applying their resources would radically change potential perpetrators' cost-benefit calculus, heavily tilting the scales toward noneliminationist political options,"

Understanding Genocides Transformative Politics, Transformative Results

From the book Worse Than War: Genocide, Eliminationism, and the Ongoing Assault on Humanity by Daniel Jonah Goldhagen. Excerpted by arrangement with Public Affairs, a member of the Perseus Books Group. Copyright 2009

There needs to be a deeper realization of the emerging geo-strategic Islamic militant forces fueled by the Arab Spring fundamentalist frenzy. The deadly threat matrix of these nonaligned militant Islamic extremists' groups is their advocating Islamic solidarity for attacks to destroy their perceived common enemy, Israel, America and the West.