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An Arms Control Process for the Middle East

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Introduction to a Political Window of Opportunity

Introduction

• Arms transfer to the Middle East are not the sole cause of the regional problems. In fact the acquisition of arms has been the product of the unresolved political settlement of the Arab-Israeli conflict as well as other conflicts in the region. Over the past five decades there have been a number of arms control proposals and attempts for the Middle east. One main weakness of these proposals was that they were not integrated into a political process.

• The continued Arab-Israeli conflict made it practically impossible to formulate and implement formal arms control agreements, resulting in a failure from the beginning. Therefore, in any move towards arms control and regional security in the region, the linkage between both conventional and non-conventional weapons and the ongoing peace process must be made.

• A peaceful solution to the Arab – Israeli conflict should proceed alongside any arms control negotiations, specially in the establishment of a Weapons of Mass destruction Free Zone (WMDFZ) in the region. It is quite evident that peace cannot be achieved while still being threatened by a weapons of mass destruction capability of a neighboring country, nor can a WMDFZ be achieved without the context of a comprehensive Israeli-Palestinian peace settlement. This has been recognized by the Obama administration as being a "vital national security interest of the United States".

• The position of many countries in the region is that they find it difficult to enter serious arms control negotiations until some form of regional peace is fully established. This stems from their perception that nations in the region still consider military force as the only viable source to achieve their policy objectives. The danger from this underlying reasoning, if perceived as the only alternative to preserving a regional security balance, is that it could give rise to an uncontrollable arms race and to a parallel proliferation of weapons of mass destruction.

• Any massive rearmament will surely create an unrestricted arms race in the Middle East which will automatically be accompanied by the proliferation of weapons of mass destruction. The fear is that the proliferation of weapons of mass destruction could give rise to states announcing a so-called "in-kind" deterrence or "the right to retaliate in kind". Unless controlled this arms race will give rise to another military conflict with catastrophic human and environmental consequences.

• No one country can try to cope with the threat of proliferation alone or in isolation from a regional security arrangement. Thus the Middle East Peace Process is pivotal to any Arms Control & Regional Security process. Wider regional cooperation in controlling the proliferation of Weapons of Mass Destruction and Theater Ballistic Missiles will be very dependent on any ongoing Middle East Peace Process. If no progress is made in the peace process then no effective regional cooperation can take place, consequently the proliferation of WMD, terrorism use of WMD, and Ballistic Missiles will rise.

•Achieving security is not a zero sum game, in other words a state or group of states cannot achieve security at the expense of neighboring countries security. Nor can a state in the region any longer seek to gain military superiority with respect to individual states within the region, or a military posture of dominance versus neighboring countries.

• This study addresses the proliferation threat of WMD and ballistic missiles in the Middle East region and the possible use of Weapons of Mass Destruction by Transnational Terrorists. It then outlines the possibility of an Arms Control and Regional Security process being started as an outcome of the options available to deal with Iran's nuclear program.

• The study looks into how the concepts and measures that were developed in the Multilateral Arms Control and Regional Security process that took place in the 90s as part of the 1991 Madrid based Middle East Peace Process can still be applied in the region, and can be considered as initial steps for the establishment of a Middle East Weapons of Mass Destruction Free Zone.

• In conclusion, it could be stated that the political window of opportunity is here, arms control tools are available, what is then needed is a carefully integrated and managed Arms Control and Regional Security process that can be started by the U.S. and Russia, keeping in mind that progress in the Palestinian – Israeli negotiations towards a two state solution, and progress in the Israeli-Syrian peace negotiations, will be pivotal for the success of any Arms Control process.

Political Window of Opportunity

On April 5, 2009, in Prague, President Obama presented an ambitious three-part strategy to address the international nuclear threat:
1) proposing measures to reduce and eventually eliminate existing nuclear arsenals;
2) strengthening the Non-proliferation Treaty and halting proliferation of nuclear weapons to additional states; and
3) preventing terrorists from acquiring nuclear weapons or materials.

On Iran he said:

> **"Iran has yet to build a nuclear weapon. And my Administration will seek engagement with Iran based upon mutual interests and mutual respect, and we will present a clear choice. We want Iran to take its rightful place in the community of nations, politically and economically. We will support Iran's right to peaceful nuclear energy with rigorous inspections. That is a path that the Islamic Republic can take. Or the government can choose increased isolation, international pressure, and a potential nuclear arms race in the region that will increase insecurity for all."**

On preventing terrorists from acquiring nuclear weapons or materials, the President said:

> **"This is the most immediate and extreme threat to global security. One terrorist with a nuclear weapon could unleash massive destruction. Al Qaeda has said that it seeks a bomb. And we know that there is unsecured nuclear material across the globe. To protect our people, we must act with a sense of purpose without delay.**
>
> **Today, I am announcing a new international effort to secure all vulnerable nuclear material around the world within four years. We will set new standards, expand our cooperation with Russia, and pursue new partnerships to lock down these sensitive materials.**
>
> **We must also build on our efforts to break up black markets, detect and intercept materials in transit, and use financial tools to disrupt this dangerous trade. Because this threat will be lasting, we should come together to turn efforts such as the Proliferation Security Initiative and the Global Initiative to Combat Nuclear Terrorism into durable international institutions. And we should start by having a Global Summit on Nuclear Security that the United States will host within the next year."**

In the month of April, 2010, the United States published the 2010 U.S. Nuclear Posture Review, New U.S. Russia START Treaty,
and convened the Nuclear Security Summit in Washington D.C.

- **Nuclear Posture Review. April 6, 2010:**

The report brings to the forefront the most urgent dangers: nuclear proliferation and nuclear terrorism.

- **Transnational terrorist groups seeking to acquire and use nuclear weapons**
- **States pursuing nuclear weapons in defiance of the international community**

Enhance regional security architectures to strengthen deterrence of regional aggression and reassure allies and partners of U.S. commitment to their defense.

Reinforce strategic stability with Russia and China

- **U.S. and Russia still have more nuclear weapons than needed for stable deterrence.**

Findings and Recommendations support five key objectives:

1. **Preventing nuclear proliferation and nuclear terrorism**
2. **Reducing the role of nuclear weapons**
3. **Maintaining strategic deterrence and stability at reduced nuclear force levels**
4. **Strengthening regional deterrence and reassurance of U.S. allies and partners**
5. **Sustaining a safe, secure, and effective nuclear arsenal.**

(Source: U.S. DoD 2010 Nuclear Posture Review (NPR) Fact Sheet April 6, 2010)

- **New START Treaty, April 8, 2010:**

Treaty between the U.S. and Russia establishing lower limits for nuclear forces down to 1,550 deployed strategic warheads and 700 deployed ICBMs, SLBMs, and heavy bombers equipped for nuclear armaments.

It also will limit to 800 the total number of deployed and non-deployed ICBM and SLBM launchers and heavy bombers equipped for nuclear armaments (50% lower than START I).

(Source: New START Treaty and US National Security Interests. Bureau of Verification Compliance and Implementation. April 8, 2010)

- **National Security Summit. April 12/13, 2010:**

With 47 nations, as well as the U.N., the IAEA, and European Union, attending in Washington DC, the aim of the summit was to improve the world's ability to secure all the unaccounted for plutonium and enriched uranium in the world within the next four years, in order to prevent terrorists, criminals, or other unauthorized actors from acquiring nuclear materials.

The objective is to ensure that terrorists never gain access to plutonium or highly-enriched uranium, the challenge is how to lock down over 2000 tons of plutonium and highly enriched uranium that exist in dozens of countries with a variety of peaceful as well as military uses. Combined, this represents enough nuclear material for approximately 17,000 nuclear weapons.

- **Nuclear Non-proliferation Treaty (NPT):**

Finally, the U.S. President urged all countries, including Israel to sign the international Nuclear Non-proliferation Treaty (NPT). President Obama said "Whether we're talking about Israel or any other country, we think that becoming part of the NPT is important", he went on to say "And that, by the way is not a new position. That's been a consistent position of the United States government even prior to my administration".

(Source: Obama: Israel should sign the Nuclear Non-proliferation Treaty. Haaretz, April 15, 2010)

Recommended first steps to start an ACRS process

• For actual negotiations and implementation by the parties for an Arms Control process, we can follow the call by President Obama that international treaties and agreements should be strengthened, in particular the NPT. The parties should begin by signing, ratifying and adhering to all global arms control agreements pertaining to weapons of mass destruction.

• With respect to Verification and Monitoring a combination of international and regional systems that complement each other could be established.

• Other agreements such as the Missile technology Control regime (MTCR), Comprehensive Test Ban Treaty (CTBT) and Fissile Material Cut-Off (the objective would be to halt the production of plutonium and highly enriched uranium HEU for nuclear weapons) should also be adhered to by all states and should be applied as a law in the respective countries.

• These international agreements and treaties as well as export controls should be viewed as a "means to an end" in establishing a Weapons of Mass Destruction Free Zone, and not "an end" by themselves.

• Due to the dual-use capability and nature of many of the technologies and material in the manufacturing and development of Weapons of Mass Destruction (WMD) and their delivery systems, it is important that Export Control Measures are implemented in the course of implementing non-proliferation policies. Export Control can deny WMD or material used to produce such weapons that might fall into the hands of terrorists. Border control, in states that are known to produce nuclear weapons, and end user certificates from parties procuring potential dual purpose technologies can reduce the possibilities that such weapons and material would flow towards states and non-state actors of proliferation concern.

• When addressing the "supply and demand" sides for WMD, the technical hurdles to produce such weapons should be taken into consideration. Due to the complexity and expense of the processes needed to develop nuclear weapons, the "supply" side has to be addressed for such weapons. While few states are known to have nuclear weapons capability, those that have nuclear reactors should be addressed. With tight security measures at these plants and export controls, as well as all material under IAEA safeguards, no nuclear material would theoretically fall into the hands of terrorist organizations, or in the hand of states that are developing a capability to produce nuclear weapons.

• By contrast, due to the relative ease in which biological, chemical, and radiological weapons can be produced in a vast number of open laboratories and facilities that are designated as purely civilian, the "demand" side should be addressed for such weapons. This implies the need to identify and to destroy terrorist organizations that are pursuing the production or possession of these weapons.

The Arms Control

Pre-Negotiations Starting Steps

• A review of the Madrid 1991 Multilateral Arms Control and Regional Security (ACRS) process would present us with a wealth of arms control and regional Security measures that were already negotiated and developed for the region.

• As a starting point, states should present their "National Views on Long Term Objectives on Arms Control and Regional Security", as was initially proposed in the Multilateral ACRS working group. This will help provide a clearer understanding to their respective security concerns and threat perceptions as well as clarifying intentions. Combined with declaratory statements, basic guiding principle such as the ACRS Statement, can become the common initial political-military basis upon which a new multilateral working can start work to establish codes of conduct (rules of the road).

• An educational set of working groups discussing the various WMD Treaties and Agreements, such as the Biological Weapons Convention, Chemical Weapons Convention, Nuclear Non-Proliferation Treaty, Comprehensive Test Ban Treaty , Fissile Material Cut-off, and the Missile Technology Control Regime.

Negotiations Stage

• We must recognize that there are a number of pre-requisites for the establishment of a Zone Free of WMD. To mention just a few:

- **identifying the relevant participants;**
- **indentifying the defined zone;**
- **examining the pre-conditions for negotiations and implementation;**
- **ascertain the linkages between the various issue-areas (nuclear, biological and chemical);**
- **modes of managing the linkage;**

• Subsequently, region specific arms control Confidence and Security Building Measures can be developed.

• Studying alternative methods of verifying compliance with prospective arms control agreements, regional vs international verification systems and how they could complement each other.

• It should be noted that within the 1991 Madrid Based ACRS process, every effort was made to insure that flexibility will be maintained in order that when additional parties, Iraq, Libya, Iran, and Syria, would join the process, their constructive suggestions would be taken into account. It would be impossible to implement comprehensive CSBMs as well as structural arms control in the Middle East region without their active participation.

Proliferation of Weapons of Mass Destruction and Ballistic Missiles in the Middle East Region and South Asia

Iran

SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
Shahab-1	Shahab-3	Shahab-5	Shahab-6
Shahab-2	Shahab-4	-	-
Mushak-120	Ghadr-101	-	-
Mushak-160	Ghadr-110	-	-
Mushak-200	IRIS	-	-
-	Sajil	-	-

Syria

SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
SCUD-B	-	-	-
SCUD-C	-	-	-
SCUD-D	-	-	-
SS-21b	-	-	-

Israel

SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
-	Jericho II	-	Jericho III

Pakistan

SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
Shaheen I	Shaheen II	-	-
Hatf I	Ghauri I	-	-
Hatf II	Ghauri II	-	-
Hatf III	Ghauri II	-	-
M-11	-	-	-

India

SRBM < 1000 km	MRBM 1,000 – 3,000 km	IRBM 3,000 – 5,500 km	ICBM > 5,500 km
Agni I	Agni II	Agni III	Surya
Prithvi I			
Prithvi II			

States with Nuclear Weapons

Israel	Pakistan	India	Iran (Potential)

Iran is the only state between the four that has signed and ratified the NPT Treaty.

SRBM	Short- Range Ballistic Missile	< 1000 km
MRBM	Medium-Range Ballistic Missile	1,000 – 3,000 km
IRBM	Intermediate-Range Ballistic Missile	3,000 – 5,500 km
ICBM	Intercontinental-Range Ballistic Missiles	> 5,500 km

Nuclear Power to Nuclear Proliferation

Nuclear Power and Nuclear Proliferation

- **Nuclear Power: Meeting the Global Energy Demand.**
  Global Electricity demand is expected to increase by more than 50% by 2025. Nuclear power is found to be a primary carbon-free energy source for meeting this extensive global energy expansion.

- **Risk: Proliferation and Nuclear Weapons**
  The technologies used in peaceful nuclear power programs overlap with those used in the production of fissionable material for nuclear weapons.

Pathways from Nuclear Power to Nuclear Weapons

- **Theft:**
  Nuclear material is stolen.

- **Sale:**
  Covert sale of nuclear material or enrichment and reprocessing technologies.

- **Diversion:**
  Diverting uranium or spent fuel to a clandestine operation for conversion into weapons grade material.

- **Break Out:**
  NPT signatory state gains nuclear technology or stockpiles of fissile material, then renounces the NPT and pursues nuclear weapons.

Terrorism and Weapons of Mass Destruction

• One important aim of the U.S. invasion of Afghanistan was to destroy and eliminate the main bases of al-Qaida and its central command structure. The 9/11 attacks demonstrated that transnational terrorism is becoming more lethal, and that it can produce a fundamental political and strategic impact. The threat of terrorist use of WMD is still possible and perhaps inevitable given the goals of al-Qaida.

• The threat of terrorist use of weapons of mass destruction (WMD), is a real one that represents a very serious threat to the U.S. and other nations that are potential targets of sub-national terrorist groups or networks. Transnational terrorism and the potential acquisition by terrorists of weapons of mass destruction are part of the 'asymmetric' dynamics of the new threats that have emerged and have thrust the international community into a new era of warfare.

• As far as is presently known, terrorist groups do not have in their possession nuclear weapons. However they could have the capability sometime soon given that knowledge about these kinds of weapons are available worldwide. Recent terrorist attacks have shown a rise in the tendency towards the use of mass-causality weapons for which WMD could be very well suited.

• The attempted terrorist attacks to simultaneously bomb locations in Jordan, in April 2004, using conventional explosives to disperse toxic chemical material, clearly demonstrates the deliberate planning for use of toxic chemical material in terrorism. Jordanian security forces foiled the attack on Jordanian and U.S. targets with a preemptive raid on the facilities used by the terrorists. Reports estimate that approximately 20 tons of chemicals were confiscated, which could have caused tens of thousands of casualties. The intent for the indiscriminate nature of the terrorist attacks was clear and projected how fast and how large a future attack using mass destruction bombs would occur.

• For radiological attacks a study was conducted by the Federation of American Scientists in which the destructive effects of various types of radiological bombs were analyzed. The case studies consisted of Cobalt, Cesium and Americium bombs. The conclusion was that "While radiological attacks would result in some deaths, they would not result in the hundreds of thousands of fatalities that could be caused by a crude nuclear weapon. Attacks could contaminate large urban areas with radiation levels that exceed the Environment Protection Agency (EPA) health and toxic material guidelines".

• Terror intends to cause a psychological impact on a target population that diminishes morale, dispenses doubt, and degrades the resolve to resist a terrorist's objective. Recruitment is the life-blood of a terrorist organization, and they use multiple methods to entice new members.

• We can safely assume that al-Qaida and other terrorist groups have the capability and intent to develop and employ a radiological dispersal device, as well as obtaining biological agents such as anthrax, and chemical weapons such as Sarin. Presently, it is doubtful that al-Qaida has the capability to produce or even possesses nuclear weapons, although acquisition remains a goal.

• Terrorists will seek to acquire and use weapons of mass destruction for spectacular attacks with catastrophic disruption, damage, or destruction. In addition to mass casualties and panic, the terrorist will seek a U.S. Government response perceived to be advantageous to the terrorist's objectives. Therefore, there should be an ample cause of concern for a WMD terrorist attack on the United States or on a European country.

• The terrorist threat and intended use of WMD is real. If this type of attack occurs, warning times will be very short, and the number of people involved can be comparatively small.

• The danger in any WMD threat is not limited only to the human fatalities and causalities, but includes the very wide psychological impact and socio-economic disruption that could be high, especially if an effective national emergency response preparation system has not been developed. Even a somewhat low level WMD attack could cause considerable damage to a civil society, it could take the inhabitants of the area under attack considerable time to get back to a somewhat normal level of life.

• Countries that recognize their own deficiencies in conventional military capabilities are demonstrating an increasing interest in "asymmetric strategies" that include terrorism with WMD. Therefore, state-sponsored/supported terrorists will have all the resources that will help them assemble and conduct successful attacks producing mass causalities. The level of terrorist destruction and disruption has emerged in recent years as a significant asymmetric form of conflict.

• The United States Government assesses that al-Qaida and its affiliated network of transnational terrorists is the most serious international threat to it. Economic targets such as commercial aviation, energy sector, or mass transportation and other "soft" targets such as public gatherings will most probably continue to be the focus as the main targets .

The Comparative Effects of Biological, Chemical and Nuclear Weapons.

	Area Covered (sq. km.)	Estimated Fatalities					
		Washington DC	NYC	Paris	London	Berlin	Karachi
Chemical: 300 kg of Sarin nerve gas with a density of 70 milligrams per cubic meter	0.22	110	720	780	1,120	840	4,160
Biological: 30 kg of Anthrax Spores with a density of 0.1 milligrams per cubic meter	10	4,930	32,680	35,500	51,000	38,300	189,000
Nuclear: One 12.5 kiloton nuclear devise achieving an over pressure of 5psi	7.8	3,840	25,490	27,690	39,780	29,870	147,420
1.0 megaton hydrogen bomb	190	93,670	620,920	674,500	969,000	727,700	3,591,000
Using one aircraft dispensing 1,000 kg of Sarin nerve gas or 100 kg of Anthrax spores.							
Clear sunny day, light breeze:							
Sarin Nerve Gas	0.74	360	2,420	2,630	3,770	2,830	13,990
Anthrax Spores	46	22,680	150,330	163,300	234,600	176,180	870,000
Overcast day/night, moderate wind:							
Sarin Nerve Gas	0.8	390	2,610	2,840	4,080	3,060	15,120
Anthrax Spores	140	69,020	457,520	497,000	714,000	536,200	2,646,000
Clear Calm Night:							
Sarin Nerve Gas	7.8	3,840	25,490	27,690	39,780	29,870	147,420
Anthrax Spores	300	147,900	980,400	1,065,000	1,530,000	1,149,000	5,670,000

Possible Arms Control process as an outcome to the Options in dealing with Iran's nuclear program

• Diplomacy and Dialogue:

Early in his administration, Obama had said he would give the Iranians until the end of 2009 to change their policy on nuclear weapons development. But the end of 2009 came, and the Iranians continued their policy. However, Obama is still trying to make Diplomacy and Dialogue the priority in dealing with the Iranian Nuclear program.

Outcomes:

- **Diplomacy and Dialogue Successful**

  Diplomacy and dialogue between Iran and the P5+1 (five permanent members of the UNSC plus Germany) make a breakthrough and come to an agreement to ship 70% (1,200 kg) declared Low Enriched Uranium (LEU) to Russia for further 20% enrichment and then to France for processing into fuel rods that can be used in the Medical Research Reactor facility in Tehran. In this way the deal reduces the LEU in Iran below the quantity needed which when enriched further could become weapons grade Highly Enriched Uranium (HEU). *Leading to an agreement to start an Arms Control and Regional Security process in the region with Israel participating.*

- **Diplomacy and Dialogue Not Successful**

  In the event that the offers presented are either rejected or the process is inconclusive or unsuccessful, the U.S. will work to impose tough sanction, described by some as "crippling" sanctions on Iran.

• Sanctions:

The U.S. and its allies are trying to rally support, in particular with China and Russia, for new tougher sanctions against Iran over its refusal to stop further enrichment. Most probably the U.N. sanctions resolution would target Iran's Revolutionary Guards Corps which controls centers and companies that are linked to nuclear weapons proliferation.

Outcomes:

- **Sanctions Successful**

  Iran will cave in due to the international sanctions and will go back to the initial agreement with the P5+1. *Leading to an agreement to start an Arms Control and Regional Security process in the region with Israel participating.*

- **Sanctions not successful**

  Iran will not cave in, and sanctions will not pressure Iran into changing its policy or bring the regime down. Could actually strengthen the Revolutionary Guard Corps. Iran continues with the enrichment process of producing HEU until it reaches to the stage where it is convinced it has the option to "breakout" of the NPT, and move forward in the production of a nuclear weapon whereby it can then be considered a "Nuclear Threshold State". Could lead to the option of a Military Strike against Iran's nuclear facilities.

• Military Strike against Iran's Nuclear Facilities

The U.S. is the only country that can launch a successful Military Strike, if all peaceful options have been exhausted and Iran has left no other means to convince it to stop or change its course in pursuing Nuclear Weapons, The U.S. should alone determine what the timeline could be if Iran does pursue the path to develop nuclear weapons.

Two possible outcomes:

- **U.S. launches a highly successful military strike against Iran's Nuclear facilities however knowing very well that the action of a military strike could be very destabilizing for the entire Middle East region, with an Iranian military response.**

- **U.S. does not launch a military strike but finally decides it could be willing to live with a nuclear Iran. *Could start an Arms Control and Regional Security process in the region with Israel participating.***

• Iranian military response to a Military Strike against it

- **Immediate retaliation using its Shehab III BMs on Israeli military, civilian and nuclear sites including the use of CBR warheads.**
- **Give rise to regional instability through conflict as well as terrorism.**
- **Destabilizing Iraq through the Shia against U.S. presence, and further arming insurgency groups when possible.**
- **Support and upgrade Taliban capabilities in Afghanistan.**
- **Increase threat of asymmetric attacks against American interests and allies in the region. Attack U.S. military bases that are active and stationed in the Gulf States**
- **Use proxy groups such as Hezbullah or Hamas to attack Israel proper with suicide bombings and rocket attacks.**
- **Target U.S. and Western shipping in the Gulf, and attempt to disrupt the flow of oil through Straits of Hormuz.**
- **Withdraw from NPT Treaty and start accelerated nuclear weapons program.**

Regional Implications in accepting Iran as a Nuclear State, or as a "Nuclear Threshold State"

• Strengthen Iran as a regional power in the region leading Iran to demand that it has a say in any Political and Security Arrangements in the Arab Gulf Region, Iraq, Afghanistan and the Middle East Peace Process.

• Increase the dangers of and Arms Race and Weapons of Mass Destruction Proliferation in the Middle East region.

• The U.S. will need to deprive Iran of any advantages it hopes to gain by possessing nuclear weapons by:

- **Having a more active political and military role in the region**
- **Providing more defense assistance to the states in the region**
- **Extend a nuclear deterrent regime to the region, in the hope that this negates the need for the Arab countries to acquire nuclear weapons.**
- **Increase sanctions regime on Iran to increase the costs of developing and possessing nuclear weapons.**

• As a means to reduce tensions, preventing war due to misunderstanding and miscalculation, and to reduce the ability to use military forces for the purpose of political intimidation, the U.S. and its allies should start thinking about introducing an *Arms Control and Regional Security process in the region with Israel participating.*

Arms Control and Regional Security process in the region with Israel participating

•The U.S. should continue trying to make diplomacy and engagement the priority in dealing with the Iranian Nuclear Program, and will have to try to make Comprehensive Verification of Iran's Nuclear Development Program as one of the priorities in any diplomatic dialogue, while trying at the same time to persuade Iran to stop its enrichment program. One platform could be the start of an Arms Control and Regional Security process the region with Israel participating.

• However, in this area the U.S. will have to walk and negotiate along a very fine line between Israel's WMD and Ballistic Missiles capabilities and the Iranian Nuclear development program. The U.S. must recognize that both are very closely inter-related and are fueling each other. So the U.S. should be prepared to address both issues simultaneously while trying not to be perceived as though it has double standards when it comes to Israel.

The Madrid 1991 Middle East Peace Process
Multilateral Arms Control and Regional Security

The Madrid 1991 Middle East Peace Process

• The Middle East Peace Process was initiated under the co-sponsorship of the United States and Russia, by the convening of an international conference in Madrid in October 1991. Subsequently the Middle East Peace Process was conducted in two parallel forums: Bilateral and Multilateral. The Bilateral negotiations was conducted in four independent tracks: Palestinian – Israeli, Syria – Israel, Lebanon – Israel, and Jordan – Israel. The basis of the negotiations was outlined in the letters on invitation to the Madrid Middle East Peace Conference, based on UNSCRs 242 and 338. The Lebanese invitation was based on UN Resolutions 425 and 426, regarding South Lebanon. The final outcome was envisioned to be a Comprehensive, Just and Lasting Peace.

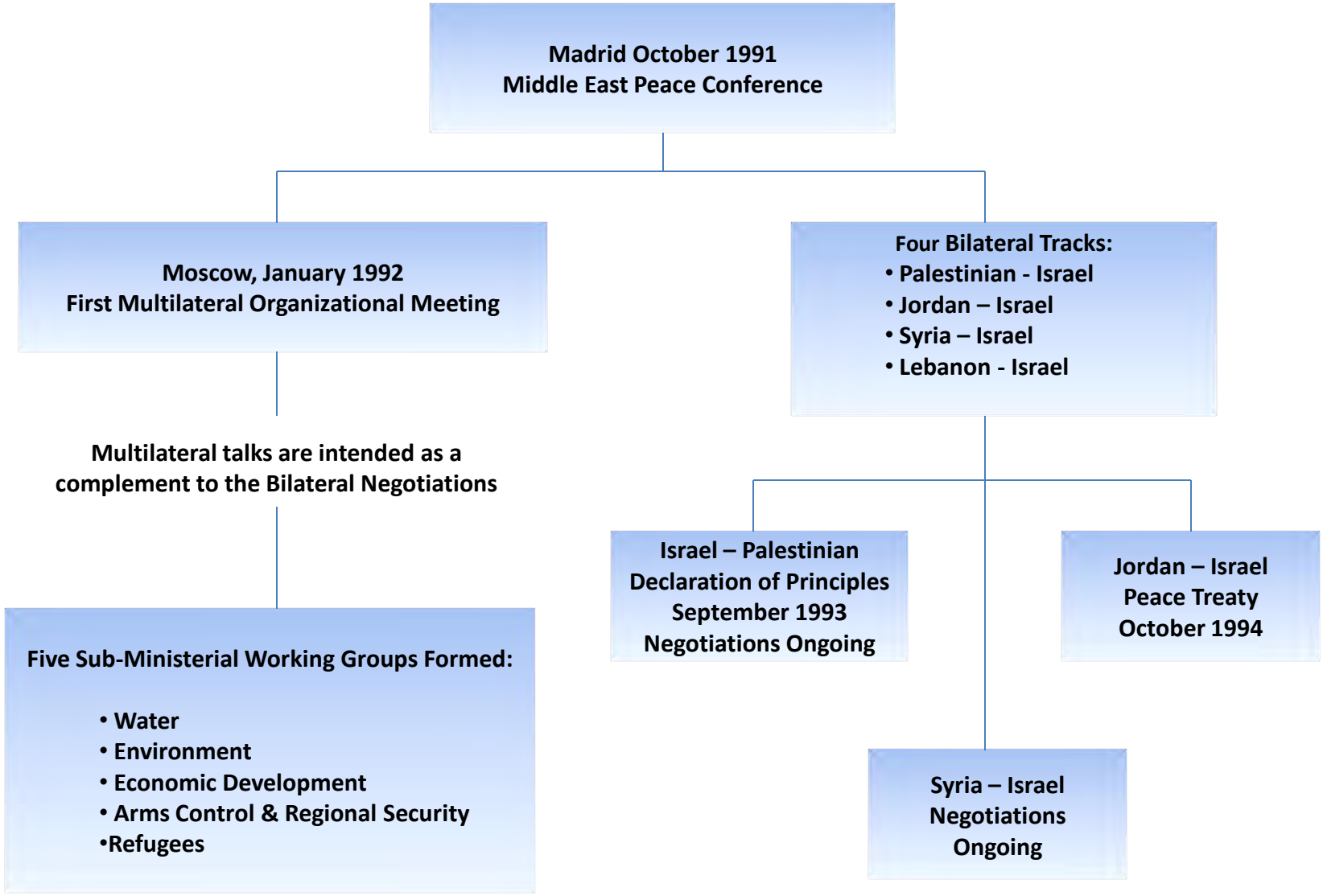
• The first organizational meeting for the Multilateral Middle East Peace negotiations took place in Moscow on January 1992. The U.S. Secretary of State James Baker set the initial guidelines for the working groups. In his own words:

> **"What we are embarking upon here in Moscow is in no way a substitute for what we are trying to promote in the bilateral negotiations. Only the bilateral talks can address and one day resolve the basic issues of territory, security and peace which the parties have identified as the core elements of a lasting comprehensive peace between Israel and its Arab neighbors. In short, the multilateral talks are intended as a complement to the bilateral negotiations; each can buttress the other".**
>
> **In the afternoon session of the same day, Secretary Baker's concluding remarks were:**
> **" We should not forget the potential for the multilateral talks to help create a political environment in which the bilateral talks are more likely to accomplish what we all want in the areas of peace, territory and security.**
>
> **We should take full advantage of the experience, the expertise and resources of others, both inside and outside the region.**
>
> **While keeping our horizons and ambitions broad, it might be best if we were to focus initially on some small, practical steps that provide a foundation on which we can build"**

• Consequently, five working groups were formed: Water chaired by the U.S., Environment chaired by Japan, Economic Development chaired by the European Union, Refugees chaired by Canada, and Arms Control and Regional Security chaired by Russia and the U.S. Each working group consisted of regional and extra-regional parties.

• It should be pointed out that Syria and Lebanon decided not to attend the Multilateral negotiations. The political decision was based on whether a breakthrough in their bilateral negotiations with Israel was made, for then they would consider attending the Multilaterals. Iraq, Libya, and Iran were not invited by the U.S. to attend the talks.

The Middle East Peace Process



Arms Control and Regional Security (ACRS) Process

• Arms Control can be considered to be any measure that reduces the likelihood of war as an instrument of policy or that limits the destructiveness and duration of war should it break out. It is not only technical, but is also of a political nature. Thus, arms control does not only mean arms reductions or disarmament, but also encompasses any measure that strengthens regional security and diminishes the use of military force as an instrument of national policy.

• In general arms control can be categorized as into "Structural" and "Operational" Arms Control. The Structural component takes aim at scaling down manpower and military equipment, conventional and non-conventional (nuclear, biological and chemical), ultimately producing agreements to make major reductions in forces.

• Operational Arms Control , on the other hand, are efforts carried out in the context of the Organization for Security and Cooperation in Europe (OSCE). These talk focus on Confidence and Security Building Measures (CSBMs), rather than on the reduction in force structures.

• CSBMs have the following objectives: the prevention of war due to misunderstanding or miscalculation; to reduce the possibility of surprise attack; and finally reducing the ability to use military forces for the purposes of political intimidation and carrying out foreign policy. Thus the need for transparency and predictability.

• We can further categorize CSBMs into two levels: Technical Military CSBMs, and Political-Military CSBMs. Technical- Military CSBMs are technical military measures which are at the tactical operational level of military policy. Whereas Political-Military CSBMs can be considered to be declarations of intent concerning the planned use of military force, which in effect is a declaratory posture regarding intentions. Hence we can say that CSBMs are arrangements designed to enhance confidence and address security concerns at both levels of operational military planning and national security policy.

• Within the context of arms control and proliferation, in particular weapons of mass destruction and their delivery systems – surface to surface ballistic missiles – each state's threat perception has become one of the determining factors of it's own definition of the Middle East region, its national security objectives, force structure, and military doctrine.

Arms Control

- Can be considered to be any measure that reduces the likelihood of war as an instruments of policy or that limits the destructiveness and duration of war should war break out.
- It is not only technical but also of a political nature.

Structural Arms Control

- Reduction and scaling down of military manpower and equipment, conventional and non-conventional.
- Change in Order of Battle and in Force Structure Posture.
- Ultimately producing agreements to make major reductions in military forces.

Operation Arms Control

(Confidence & Security Building measures CSBMs)

- Prevention of war by misunderstanding or miscalculation, hence the need fro greater transparency thereby predictability.
- To reduce the possibility of surprise attack.
- Reduce the ability to use military forces for the purpose of political intimidation.

Political Military CSBMs

- CSBMs at the National Security Policy Level.
- Impose constraints on the behavior of the parties and the use of offensive military capabilities.
- Declarations of Intent concerning the planned use of forces.

Technical Military CSBMs

- CSBMs at the Operational Level of military doctrine consisting of air, land and sea measures to promote transparency and openness.
- Put constraints on offensive military activities and capabilities.

• As was stated, Arab-Israeli peace negotiations first convened in Madrid in October 1991, it was based on letters of invitation and assurances that the whole Peace Process is to be based on United Nations Security Council Resolutions 242 and 338, on the principle of Land for Peace. So in essence the final goal was stated and defined from the beginning. The process is how to get there. Presently the goal is based on a two state solution in which Palestinians and Israelis live side by side in peace and security.

• It is not a "Process" whereby Jordan, Syria, Lebanon, Palestinians and Israel would sit together and try to reach some common goal, and that we should think of some forms of CSBMs that could help the respective parties in achieving some form of a peace accord.

• On the contrary the process is more of an "End Game" based, whereby the goal was clearly defined and is based on a political solution, and at present the modalities to achieve the goal of a just, lasting and comprehensive peace based on a two state solution should be what is to be worked out.

• It must be made very clear that to think of post peace treaty normalization measures as CSBMs that will get the parties to start negotiations will clearly not work out and might actually backfire on the whole process. There exist different CSBMs for different phases of peace negotiations.

• After a political solution is reached and the region moves into the implementation phase, that is when security arrangements and verification and monitoring on the agreed upon final borders will take place, coupled with Confidence and Security Building Measures (CSBMs) in both bilateral and multilateral settings.

• For technical – military CSBMs to be applied effectively in type and scope they require political and legal frameworks that are binding such as the Arab Peace Initiative which is based upon a Palestinian – Israeli two state solution, and a Syria – Israel Peace Treaty. Technical Military CSBMs that are not politically and legally binding can end up being symbolic in nature and broken at any time. In effect causing more damage than if they were never applied.

• The ACRS process in the 90s had addressed CSBMs in their entirety, and how their gradual implementation could, in the political arena, reduce the levels of threat a state perceives as well as its own security concerns.

Examples of CSBMS that were addressed at the ACRS process

Technical – Military CSBMs:

- Pre-notification of certain military activities and exercises.
- Exchange of military information
- Develop Maritime CSBMs
- Establish a communications network system.

- Pre-notification of Certain Military Activities:
  - Information on yearly major exercises and large scale transfer of land forces.
  - Pre-notification of certain military activities should include the scope and thresholds.
  - The number of days in advance that a notification should take place.

- Exchange of Military Information:
  - Information on aggregate numbers on military personnel
  - Information on the administrative and organizational charts of military establishments
  - Sharing information submitted to the U.N. register
  - Information on basic threat perceptions and security concerns
  - Military contacts and dialogue for purpose of mutual familarization and confidence building
  - Information on the acquisition of military equipment through transfer, procurement and indigenous production
  - Information on overall military holdings
  - Information on military stockpiles and storage
  - Information on defense budgets
  - Information on research and development in the military field
  - Information on the location of certain military forces
  - Information on relevant areas relating to weapons of mass destruction and their delivery systems
  - Information on the military use of outer space
  - Information on the organizational structure of force levels.
  - Establishment of a regional data base bank.

Maritime:

- **A finalized operational aspects of the elements of an "Incidents at Sea Text"**
- **Search and Rescue**
- **A framework for Maritime CSBMs**

There was a consensus between regional countries that the implementation of the above finalized operational measures will be on a voluntary basis.

Political – Military CSBMs:

- **National long term objectives on arms control and regional security.**
- **Regional Security Environment and Threat Perceptions.**
- **The parties to develop a Statement on Arms Control & Regional Security.**
- **Delineation of the Middle East region for the purpose of arms control.**
- **Develop elements to start arms control negotiations.**
- **Dialog on Military Doctrines and Concepts of Deterrence.**
- **Development of a declaratory posture regarding intentions.**
- **Negotiations on political, economic and diplomatic actions to prevent proliferation by dissuading or impeding access to or distribution of Weapons of Mass Destruction and ballistic Missile technology, material and expertise.**
- **Calling on all parties to sign and ratify the NPT, CWC, BWC and other treaties such as the Comprehensive Test Ban Treaty (CTBT) and the Missile Technology Control Regime (MTCR).**
- **Start discussions on establishing a Weapons of Mass Destruction Free Zone (WMDFZ) in the region.**
- **Verification and Monitoring in Arms Control.**

Regional Security

• In an Arms Control negotiations, it should be agreed that the National Security of each state will be enhanced through measures of cooperation between the other states in the region.

• A Cooperative search for security – usually referred to as Strategies of Reassurance – rather than Competitive search for security – usually referred to as Strategies of deterrence – should be the fundamental criteria for security relationship between states.

• As regional parties build their partnership in peace and work towards enhancing security of the region, each should strike a balance between Deterrence and Reassurance. Reassurance to "strengthen" the Peace, and Deterrence to "protect" the peace from any external threats. A deterrence that is based on a qualitative conventional capability for self-defense that ensures self-reliance.

Regional Security Arrangement Requirement:
• A future security arrangement that put "prevention" before "intervention" and "reaction".

• A security arrangement that stresses preventing threats before they arise, rather than merely being prepared to respond to them militarily if and when they substantiate.

• Within this context cooperative security can integrate military and non-military measures into a comprehensive security regime framework that can organize responses to possible sources of conflict. Clearly cooperative and collective security are mutually reinforcing.

Regional Security Arrangements:
• Move from Confrontational to Cooperative Security
• Develop Codes of Conduct between states.
• Establishing an Effective Counter-Terrorism Network in the region.
• Establishing a Weapons of Mass Destruction Free Zone (WMDFZ) in the region.
• Move from Conflict Resolution & Management to Conflict Prevention.
• Establish dialogue between the Middle East and other Regional Security Frameworks; Europe; Asia, and Africa.
• Establish Regional Security Centers. In the ACRS process one of the aims was to establish Regional Centers in: Qatar, Jordan and Tunis.

Regional Security Requirements

- Conflict Management
- Conflict Resolution
- Crisis Management
- Early Warning
- Peaceful Settlement of Disputes
- Peace Keeping Activities
- Preventive Diplomacy
- Conflict Prevention

Move from:
▪Confrontational Security Policy
(Offensive Military Doctrine)

To:
▪Cooperative Security Policy
(Defensive Military Doctrine)

Requires:
▪An active regional role plus
Extra-Regional participation.

• In essence it can be stated that the purpose of an RSC is to enhance security and stability in the Middle East region, and should ultimately include functions of crisis management, conflict resolution and conflict prevention.

• Strategies for the prevention of crisis fall into two broad categories:

- Operational Prevention
  Measures applicable in the face of immediate crisis.

- Structural Prevention
  Measures to ensure that crisis do not arise in the first place, if they do that they do not recur.

• **In the ACRS plenary session held in Tunis in December of 1994, the plenary accepted the offer of Jordan to host the central Regional Security Center, Tunis and Qatar will also be establishing RSC related facilities. The following initial functions for the center were proposed:**

- **Facilitate and provide a venue for seminars on topics that support the ACRS process,**
- **Facilitate training and education in support of the ACRS process,**
- **Facilitate and support work on Arms Control and CSBMs, agreed upon or being pursued in the ACRS process,**
- **In conjunction with other activities, function as an integral part of the ACRS communications and data bank system, and facilitate the ongoing compatibility of these institutions.**

The ACRS working group drew up a "Statement on Arms Control and Regional Security"

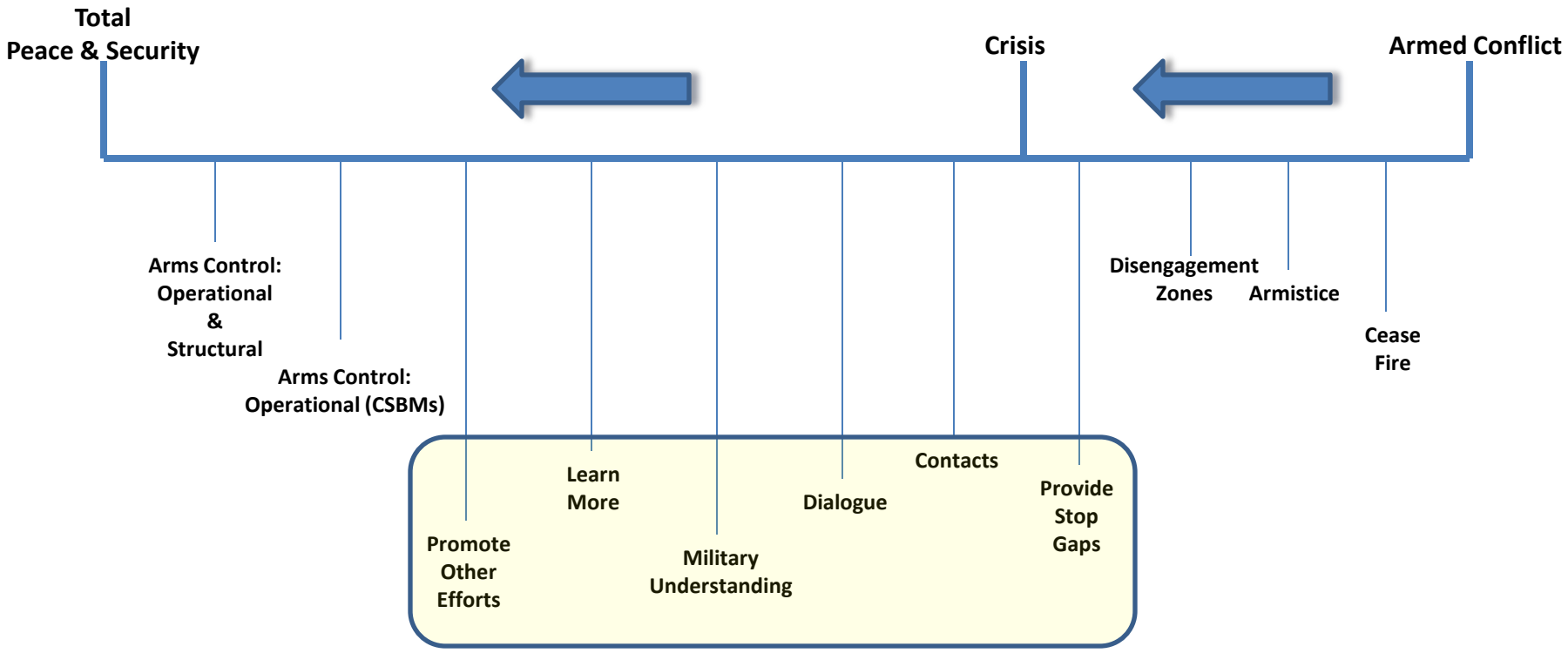
• **The statement became an important milestone in the ACRS working group. For this had established in writing a region wide common political basis upon which the working group can formulate codes of conduct, subsequently generating and implementing region specific operational and structural arms control measures.**

• **The Statement consisted of three main components:**

- **Fundamental principles governing security relations among regional participants in the arms control and regional security working group.**
- **Guidelines for the Middle east Arms Control and regional Security process.**
- **Statements of Intent on Objectives for the Arms Control and Regional Security process.**

• **It was quite evident that the ACRS agenda of work was becoming comprehensive. However, it might not have immediately satisfied the concerns of some participating states, but it certainly became a dynamic vehicle in which threat perceptions, security concerns, military doctrines, and other conceptual and operational measures were analyzed between the participants, thereby raising the level of security awareness.**

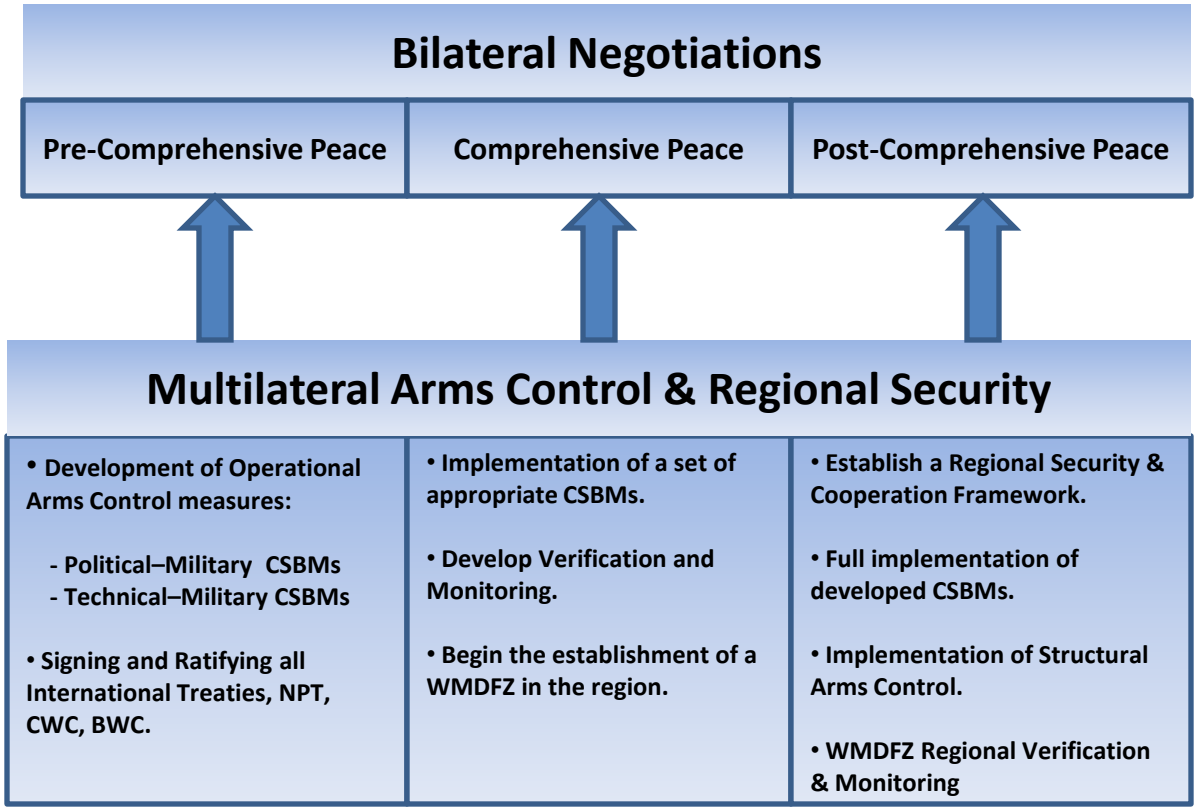
RSC Spectrum of Objectives



Regional Security Center (RSC) is an integration of functions

- **System Requirements:**
  - **Reliable Data Base**
  - **Efficient Communications Network**
    - **Time is a critical element**
    - **Quick response**
    - **Processing & Dissemination of information without delays**
    - **Near real time situation awareness**

Arms Control Implementation Stages Integrated with an Arab Israeli Peace



This systematic methodology when coupled to the time-table of any progress in the bilateral negotiations will have achieved its purpose which is to support and reinforce the Bilateral Negotiations that form the very heart of the ongoing Middle East Peace Process.

Definition of the Middle East Region for the purpose of Arms Control

Definition of the Middle East for the purposes of Arms Control:

• There exist a number of criteria upon which the definition of the region is based upon, typically they include the presence of military or political conflicts, geographic factors, natural boundaries, cultural, ethnic, demographic and historic factors. To some the region of the Middle East can be categorized into sub-regions based on conflict situations as:

- **The central sub-region, referring to states directly involved in the Arab-Israeli conflict;**
- **The Gulf (GCC States) sub-region;**
- **The Maghreb sub-region;**
- **The Southern tip of the Arabian peninsula sub-region.**

• In this type of categorization one complicating factor is that states in the region have taken part in armed conflict in more than one sub-region.

• With regard to the regional dimension in the Arms Control process, it was suggested that it could be more feasible in the initial stage to keep the geographic definition of the region as a flexible one. The regional parties that attended the Multilateral negotiations plus the states that were not initially invited such as Iraq, Iran, Libya and Sudan could join in and be considered as a group of states with political, security and economic links, and can be considered to define the region. In short the region can then be defined to be from Morocco to Iran and from Syria to Yemen.

• If stability and security can be achieved in a region by promoting arms control measures, this will have a positive effect on other regions. For this very reason security concerns of peripheral states as well as other neighboring regions should be taken into consideration throughout the process.

• For instance, given the South Asia Countries: Afghanistan, Bangladesh, British India Ocean Territory, India, Maldives, Nepal, Pakistan, and Sri Lanka, any Arms Control Measures between the two Nuclear States in this region, India and Pakistan, will have an effect on the Middle East Region.

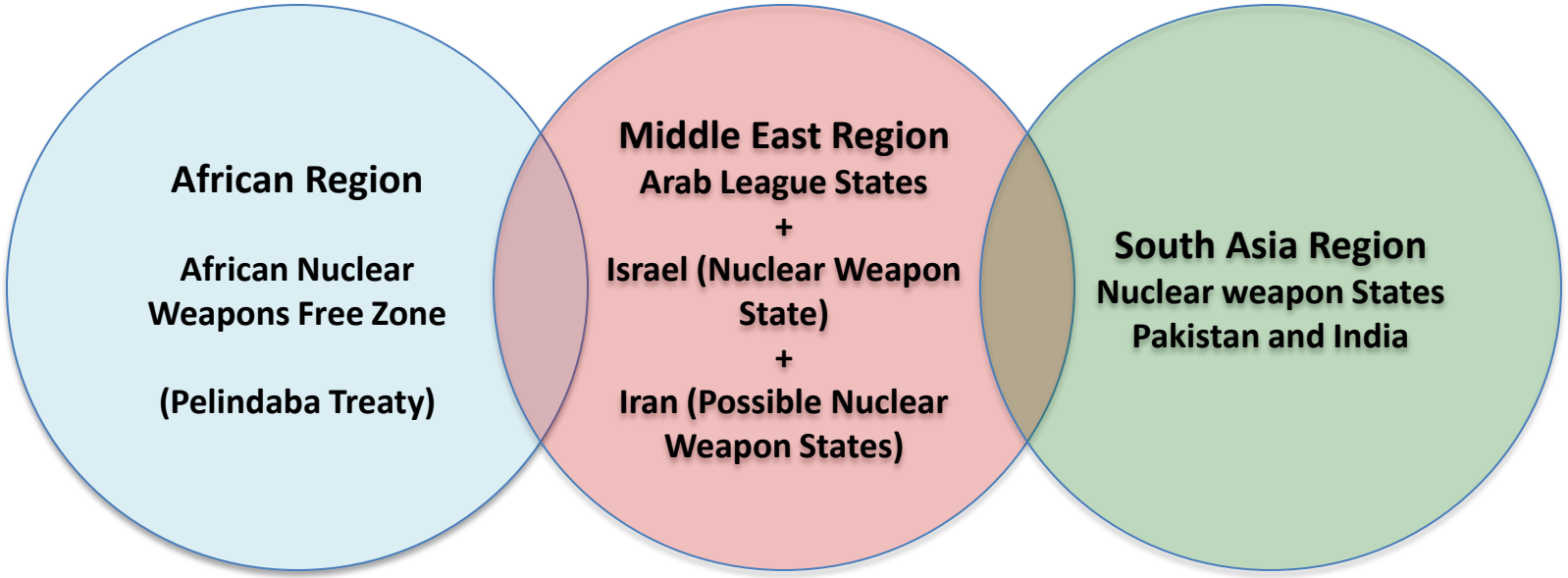
• Once CSBMs are identified and analyzed they would then be shelved until political circumstances are determined to be appropriate to analyze if any can be applied in order to help push the peace process forward.

• Regional arms control measures cannot be imposed by outsiders. They must be fully negotiated and agreed upon by states within the defined region to determine type, scope and area of application. After agreements are reached between the parties, they subsequently can be expanded to attract and include other states.

• Promoting arms control measures in one region could have a stabilizing effect in other regions, consequently to global security. Therefore when adopting arms control measures, states of a region have to take into account security concerns of peripheral and extra-regional states. . For instance, the Middle East Region and the South Asia Region and the African Nuclear Weapon Free Zone (The Pelindaba Treaty)

• Algeria, Egypt, Djibouti, Libya, Mauritania, Morocco,, Somalia, Sudan, and Tunisia are member states to the African Nuclear Weapons Free Zone (Pelindaba Treaty) and members of the Arab League in the Planned Middle East Nuclear Weapons Free Zone. (MENWFZ). States in two overlapping defined regions or zones can certainly be members in the two.

Three Overlapping Regions that will have Common Security Concerns



Appendices III and IV show the Nuclear and Missile Sites and the Range overlap of the various Ballistic Missiles that the countries possess.

The Middle East as a Weapons of Mass Destruction Free Zone (MEWMDFZ)

The Middle East as a Weapons of Mass Destruction Free Zone (MEWMDFZ) for Regional Security

In 1974 Iran supported by Egypt proposed the establishment of a Nuclear Weapon Free Zone in the Middle East. Since then the UN General Assembly has adopted, on a yearly basis, a resolution recommending the establishment of a NWFZ in the Middle East region. Since 1980, the resolution has been supported every year by the Arab States, Iran and Israel.

In 1975 the United Nations General Assembly defined the concept of a Nuclear Weapon Free Zone as follow:

I. Definition of the concept of a nuclear weapon free zone.

1. A nuclear weapon free zone shall, as a general rule, be deemed to be any zone, recognized as such by the General Assembly of the United Nations, which any group of States, in the free exercise of their sovereignty, has established by virtue of a treaty or convention whereby:

a) The statute of total absence of nuclear weapons to which the zone shall be subject, including the procedure for the delimitation of the zone, is defined;

b) An international system of verification and control is established to guarantee compliance with the obligations deriving from the statute.

II. Definition of the principal obligations of the nuclear weapon States towards nuclear weapon free zones and towards the States included herein

1. In every case of a nuclear weapon free zone that has been recognized as such by the General Assembly, all nuclear weapon States shall undertake or reaffirm, in a solemn international instrument having full legally binding force, such as a treaty, a convention or a protocol, the following obligations:

a) To respect in all its parts the statute of total absence of nuclear weapons defined in the treaty or convention which serves as the constitutive instrument of the zone;

b) To refrain from contributing in any way to the performance in the territories forming part of the zone of acts which involve a violation of the aforesaid treaty or convention;

c) To refrain from using or threatening to use nuclear weapons against the States included in the zone.

Reference: "A Zone Free of Weapons of Mass Destruction in the Middle East" UNIDIR 1996, Jan Prawitz and James leonard

" Nuclear Weapon Free Zones in the 21st Century" UNIDIR 1997, Edited by Pericles Gasparini Alves and Daiana Belinda Cipollone.

" Arms Control Association. http://www.armscontrol.org/"

In 1978 The Final Document of the Tenth Special Session of United Nations General Assembly reads:

"The establishment of nuclear weapon free zones on the basis of arrangements freely arrived at among the States of the region concerned constitutes an important disarmament measure.

The process of establishing such zones in different parts of the world should be encouraged with the ultimate objective of achieving a world entirely free of nuclear weapons. In the process of establishing such zones, the characteristics of each region should be taken into account. The States participating in such zones should undertake to comply fully with all the objectives, purposes and principles of the agreements or arrangements establishing the zones, thus ensuring that they are genuinely free from nuclear weapons.

With respect to such zones, the nuclear weapon States in turn are called upon to give undertakings, the modalities of which are to be negotiated with the competent authority of the zone, in particular:

(a) To respect strictly the status of the nuclear weapon free zone;
(b) To refrain from the use or threat of use of nuclear weapons against the States of the zone."

Each nuclear weapon free zone (NWFZ) treaty includes a protocol for the five nuclear weapon states recognized under the Nuclear Non-Proliferation Treaty (NPT) - China, France, Russia, United Kingdom, and the United States of America – that is to be signed and ratified.

These protocols, which are legally binding, call upon the nuclear weapon States to respect the status of the zones and not to use or threaten to use nuclear weapons against treaty states-parties.

Such declarations of non-use of nuclear weapons are referred to as "negative security assurances".

• In 1990, Egypt proposed the establishment of a Weapons of Mass Destruction Free Zone in the Middle East. The aim was to introduce this in parallel to the NWFZ proposal, it expanded the scope to include nuclear, chemical and biological weapons and their delivery systems.

• In May 1995, during the Review and Extension Conference of the NPT, the parties adopted a resolution recognizing that the Middle East Peace Process was contributing to " a Middle East Zone Free of Nuclear Weapons as well as other Weapons of Mass Destruction", and further calling upon all States in the region to take practical steps towards "the establishment of an effectively verifiable Middle East Zone Free of Weapons of Mass Destruction, Nuclear, Chemical and Biological, and their delivery systems".

Five such Nuclear Weapon Free Zones (NWFZs) exist today:

- **Latin America (the 1967 Treaty of Tlatelolco).**
- **The South Pacific (the 1985 Treaty of Rarotonga)**
- **Southeast Asia (the 1995 Treaty of Bankok)**
- **Africa (the 1996 Treaty of Pelindaba)**
- **Central Asia (the 2006 Treat of Semipalatinsk)**

In addition to NWFZs, there are treaties banning the deployment of nuclear weapons in:

- **Antartica Treaty**
- **Mongolia (declares itself, and is internationally recognized, as a single state nuclear weapon free zone)**
- **On the Seabed Treaty**
- **In Outer Space Treaty**
- **The Moon Agreement**

Appendix I

Country Members of The League of Arab States (The Arab League)

The League of Arab States
(22 Member States)

Algeria	Bahrain	Comoros	Kuwait
Egypt	Iraq	Jordan	Morocco
Lebanon	Libya	Mauritania	Saudi Arabia
Oman	Palestine	Qatar	Tunisia
Somalia	Sudan	Syria	
United Arab Emirates	Yemen	Djibouti	

Appendix II

ACRS
Statement on Arms Control and Regional Security (1995)

Preamble

The regional participants in the Arms Control and Regional Security working group, Reaffirming their respect for the Charter of the United Nations,

Bearing in mind the urgent necessity of achieving a just, lasting, and comprehensive peace settlement in the Middle East based on United Nations Security Council Resolutions 242 and 338, and conscious of the historic breakthroughs toward such a settlement since the 1991 Madrid Middle East Peace Conference, particularly the Israeli-Palestinian Declaration of Principles and the subsequent Agreement on the Gaza and Jericho Area, and the Jordan-Israel Peace Treaty of October 26, 1994,

Agreeing that all regional parties should pursue the common purpose of achieving full and lasting relations of peace, openness, mutual confidence, security, stability, and cooperation throughout the region,

Recognizing that the multilateral working groups, including the Arms Control and Regional Security working group, should continue to complement the bilateral negotiations and help improve the climate for resolving the core issues at the heart of the Middle East peace process, and that

the peace process also created the opportunity to cooperate in addressing additional issues of regionwide concern,

Embarking in this context on a process through the Arms Control and Regional Security working group to establish arms control and regional security arrangements aimed at safeguarding the region from the dangers and ominous consequences of future wars and the horrors of mass destruction, and enabling all possible resources to be devoted to the welfare of the peoples of the region, including such areas as economic and social development,

Recognizing the importance of preventing the proliferation of nuclear, chemical, and biological weapons and of preventing the excessive accumulation of conventional arms in enhancing international and regional peace and security,

Conscious that the arms control and regional security process seeks to achieve a stable balance among military capabilities in the region that takes into account quantitative and qualitative factors, and also recognizes the significance of structural factors, and that provides for equal security for all,

Welcoming the special role of the United States and Russia as active cosponsors of the Middle East peace process and calling on them and other extraregional states to provide continuing support for the objectives and arrangements of the arms control and regional security process,

Recognizing that the full realization of the objectives contained in this Statement would be facilitated by the involvement in the arms control and regional security process of all regional parties, and calling on all such parties to support the principles contained in this Statement and, in this connection, to join the arms control and regional security process at an early date,

Have adopted the following:

I. Fundamental Principles Governing Security Relations Among Regional Participants in the Arms Control and Regional Security Working Group

In their pursuit of a just, lasting and comprehensive peace in the Middle East, the regional participants will be governed in their security policies by the following fundamental principles, among others:

- The participants reaffirm their commitment to the principles of the Charter of the United Nations

- Participants must refrain from the threat or use of force and from acts of terrorism and subversion.
- Security requires that participants fulfill in good faith obligations under international law.
- Security must be based on respect for and acknowledgment of sovereignty, territorial integrity, and political independence, noninterference in internal affairs, and reconciliation and cooperation among participants.
- Arms control and regional security arrangements should be aimed at achieving equal security for all at the lowest possible level of armaments and military forces.
- Military means, while needed to fulfill the inherent right of self-defense, and to discourage aggression, cannot by themselves provide security.

Enduring security requires the peaceful resolution of conflicts in the region and the promotion of good neighborly relations and common interests.

II. Guidelines for the Middle East Arms Control and Regional Security Process

The regional participants recognize the following as guidelines for the arms control and regional security process:

- The arms control and regional security process, as an integral part of the Middle East peace process, should create a favorable climate for progress in the bilateral negotiations and complement them by developing tangible measures in parallel with progress in the bilateral talks.
- The arms control and regional security process should strive to enhance security and general stability on a regionwide basis, even beyond the scope of the Arab-Israeli conflict, by pursuing regional security and arms control measures that reduce tension or the risk of war.
- The scope of the process must be comprehensive, covering a broad range of regional security, confidence- and security-building and arms-control measures that address all threats to security and all categories of arms and weapons systems.

- The arms control and regional security process should not at any stage diminish the security of any individual state or give a state a military advantage over any other.
- The basic framework of the process is to pursue a determined, step-by-step approach which sets ambitious goals and proceeds toward them in a realistic way.
- The basis for decision making on each issue in the arms control and regional security process should be consensus by the regional participants directly concerned.
- Each regional arrangement adopted in the arms control and regional security process should be the result of direct regional negotiations and should be implemented by all those regional parties relevant to the arrangement.
- Strict compliance with arms control and disarmament measures adopted within the framework of the arms control and regional security process is essential to the integrity of that process and for building confidence among the regional participants.

- All arms control and disarmament measures adopted by regional participants within the framework of the arms control and regional security process will be effectively verifiable by the regional parties themselves and should include, where appropriate, mutual on-site inspection and other rigorous monitoring techniques and mechanisms, and such verification could be complementary with verification measures in international arrangements.

III. Statements of Intent on Objectives for the Arms Control and Regional Security Process

In the context of achieving a just, secure, comprehensive, and lasting peace and reconciliation, the regional participants agree to pursue, inter alia, the following arms control and regional security objectives:

- preventing conflicts from occurring through misunderstanding or miscalculation by adopting confidence- and security-building measures that increase transparency and openness and reduce the risk of surprise attack and by developing regional institutional arrangements that enhance security and the process of arms control;

- limiting military spending in the region so that additional resources can be made available to other areas such as economic and social development;
- reducing stockpiles of conventional arms and preventing a conventional arms race in the region as part of an effort to provide enhanced security at lower levels of armaments and militarization, to reduce the threat of large-scale destruction posed by such weapons, and to move toward force structures that do not exceed legitimate defense requirements;
- promoting cooperation among regional participants in the peaceful uses of outer space, including the pursuit of appropriate means of sharing the benefits from satellite systems, of ensuring that outer space and other environments will not be used for acts of aggression by regional participants, and of enhancing the security of regional participants; and
- (language proposed by Israel) establishing the Middle East as a mutually verifiable zone free of nuclear, chemical, biological weapons and ballistic missiles in view of their high destructive capacity and their potential to promote instability in the region.

- (language proposed by the United States) establishing the Middle East as a zone free of all weapons of mass destruction, including nuclear, chemical, and biological weapons and their delivery systems—since such weapons, with their high destructive capacity and their potential to promote instability in the region, pose a grave threat to security—through a combination of regional arrangements, such as weapons-free zones, and international arrangements, such as the BWC, the NPT, and the CWC.
- (language proposed by Egypt) establishing a zone free of all weapons of mass destruction, including nuclear, chemical, and biological weapons and their delivery systems, since such weapons, with their high destructive capacity and their potential to exacerbate the arms race in the region, pose the greatest threat to its security.
  that all parties of the region will adhere to the NPT in the near future.

Regional participants will be guided in their conduct by the principles embodied in this Statement and will refrain from actions or activities that are inconsistent with its guidelines or principles and that preclude the attainment of its objectives.

Appendix III

Nuclear and Missile Sites

Iran Nuclear Sites

(Source:NTI)

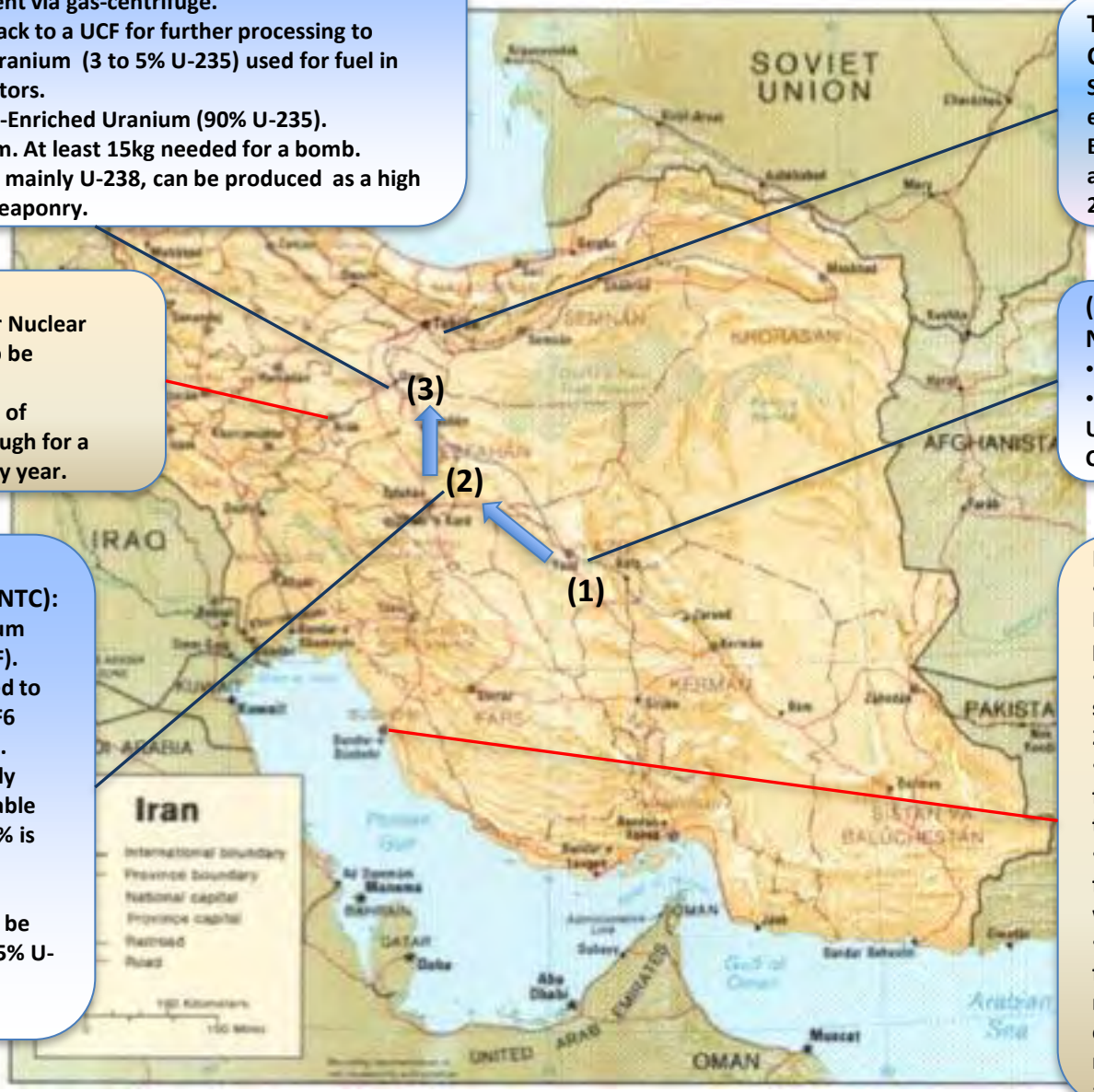
Iran: Nuclear Fuel Cycle

(3) Natanz:
- Uranium Enrichment. UF6 produced at Esfahan is transported to this facility for enrichment via gas-centrifuge.
- The UF6 is then sent back to a UCF for further processing to produce low-enriched uranium (3 to 5% U-235) used for fuel in light-water nuclear reactors.
- Side Products are: High-Enriched Uranium (90% U-235). Weapons-grade Uranium. At least 15kg needed for a bomb. Also Depleted Uranium, mainly U-238, can be produced as a high density metal used in weaponry.

Tehran Nuclear Research Center(TNRC):
Small scale uranium laser enrichment pilot plant. Established in 2000 and apparently dismantled in 2003.

Arak:
- 40 MW(t) Heavy Water Nuclear Reactor. Programmed to be operational by 2011.
- Can produce about 8kg of Plutonium per year, enough for a 20KT nuclear bomb every year.

(1) Yazd, Saghand, Narigan, Zarigan:
- Mining Uranium Ores
- Milling to produce U3O8 Uranium Oxide (Yellow Cake)



(2) Esfahan Nuclear Technology Center (ENTC):
- Industrial-Scale Uranium Conversion Facility (UCF). The U3O8 is transported to ENTC to convert it to UF6 (Uranium Hexafluoride).
- Natural Uranium is only 0.7% U-235, the fissionable isotope. The other 99.3% is U-238 which is not fissionable.
- The Uranium needs to be enriched between 3 to 5% U-235 to be used in Light Water Reactors.

Bushehr:
- 1000 MW(t) Light Water Reactor for Electric Power production.
- Built by Russia and scheduled to be online in 2009.
- Russia will supply the fuel. Also spent fuel rods to be returned to Russia.
- 3 to 5% U-235 is needed for use as a fuel in light water reactors.
- The Uranium fuel for fission reactors will not make a bomb; it takes enrichment to over 90% necessary for weapons applications.

Iran: Missile Sites

(Source:NTI)

Targets

Israel: Nuclear Facilities

Yodefat:
Possible assembly and dismantling

Haifa:
Rafael-Israel Armament Development Authority. Reported Nuclear Design and Assembly.

Soreq:
Nahal Soreq Nuclear Research Center (MAMAG) 5 MW safeguarded pool type reactor; possible weapon design and Research Facility.

Tirosh:
Possible Storage Facility

Eilabun:
Possible Storage Facility

Dimona
Negar Nuclear Research Center (KAMAG):
Houses a Reactor, Enrichment and Reprocessing Facilities.

Mishor Rotern:
Negar Phosphates Chemical Company.
Uranium Mining from Phosphate Deposits.

(Source: Anthony Cordesman. Israeli Weapons of Mass Destruction" CSIS June 2, 2008)

Targets

Israel: Missile Facilities

Haifa:
Rafael-Israel Armament Development Authority. Reported Nuclear Missile Design and Development.

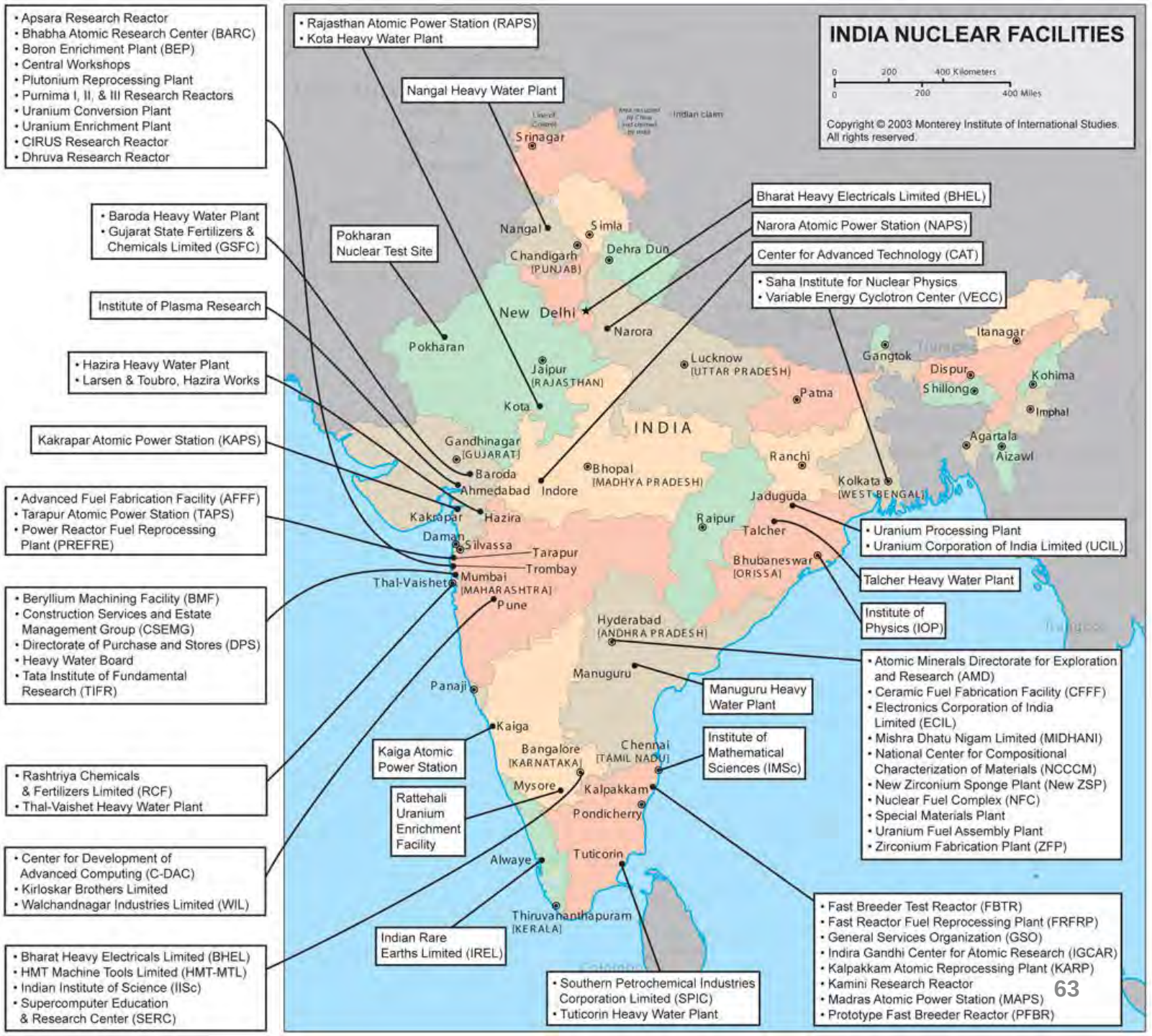
Tel Aviv:
Israel Space Agency and Israel Aircraft Industries.

Palmachim Airbase:
Missile Test Range and Space Launch Facility.

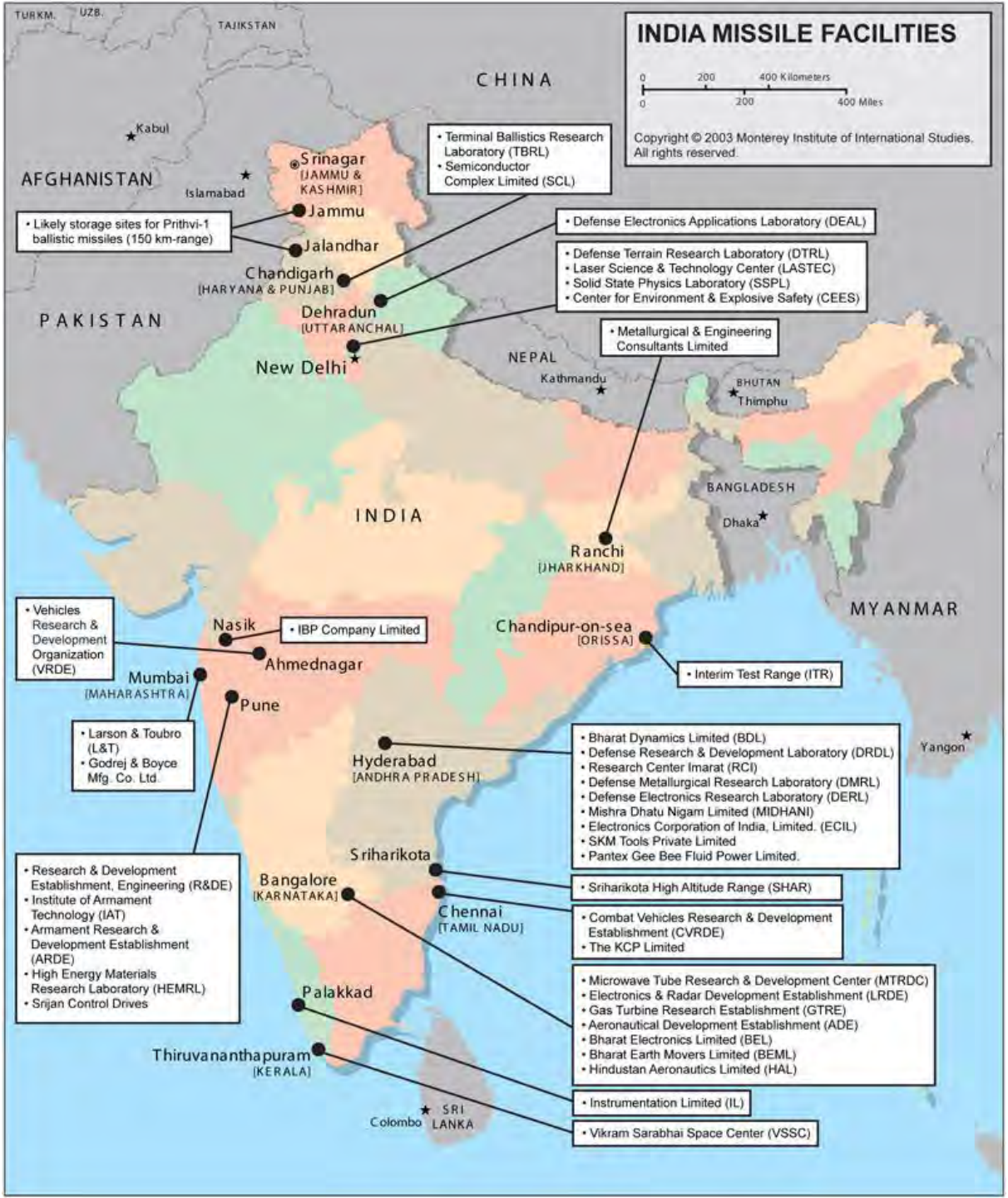
Be'er Yaakov:
Missile Assembly Facility; Arrow, Jericho and Shavit Missiles.

Kfar Zeharya:
A.K.A. Hirbut Zachariah/Sdot Micha. Jericho I missiles, possible Jericho II.

(Source: Anthony Cordesman. Israeli Weapons of Mass Destruction" CSIS June 2, 2008)


INDIA NUCLEAR FACILITIES
0 200 400 Kilometers
0 200 400 Miles
Copyright © 2003 Monterey Institute of International Studies. All rights reserved.
• Apsara Research Reactor
• Bhabha Atomic Research Center (BARC)
• Boron Enrichment Plant (BEP)
• Central Workshops
• Plutonium Reprocessing Plant
• Purnima I, II, & III Research Reactors
• Uranium Conversion Plant
• Uranium Enrichment Plant
• CIRUS Research Reactor
• Dhruva Research Reactor
• Rajasthan Atomic Power Station (RAPS)
• Kota Heavy Water Plant
Nangal Heavy Water Plant
Bharat Heavy Electricals Limited (BHEL)
Narora Atomic Power Station (NAPS)
Center for Advanced Technology (CAT)
• Saha Institute for Nuclear Physics
• Variable Energy Cyclotron Center (VECC)
• Baroda Heavy Water Plant
• Gujarat State Fertilizers & Chemicals Limited (GSFC)
Pokharan Nuclear Test Site
Institute of Plasma Research
• Hazira Heavy Water Plant
• Larsen & Toubro, Hazira Works
Kakrapar Atomic Power Station (KAPS)
• Advanced Fuel Fabrication Facility (AFFF)
• Tarapur Atomic Power Station (TAPS)
• Power Reactor Fuel Reprocessing Plant (PREFRE)
• Beryllium Machining Facility (BMF)
• Construction Services and Estate Management Group (CSEMG)
• Directorate of Purchase and Stores (DPS)
• Heavy Water Board
• Tata Institute of Fundamental Research (TIFR)
• Rashtriya Chemicals & Fertilizers Limited (RCF)
• Thal-Vaishet Heavy Water Plant
• Center for Development of Advanced Computing (C-DAC)
• Kirloskar Brothers Limited
• Walchandnagar Industries Limited (WIL)
• Bharat Heavy Electricals Limited (BHEL)
• HMT Machine Tools Limited (HMT-MTL)
• Indian Institute of Science (IISc)
• Supercomputer Education & Research Center (SERC)
• Uranium Processing Plant
• Uranium Corporation of India Limited (UCIL)
Talcher Heavy Water Plant
Institute of Physics (IOP)
• Atomic Minerals Directorate for Exploration and Research (AMD)
• Ceramic Fuel Fabrication Facility (CFFF)
• Electronics Corporation of India Limited (ECIL)
• Mishra Dhatu Nigam Limited (MIDHANI)
• National Center for Compositional Characterization of Materials (NCCCM)
• New Zirconium Sponge Plant (New ZSP)
• Nuclear Fuel Complex (NFC)
• Special Materials Plant
• Uranium Fuel Assembly Plant
• Zirconium Fabrication Plant (ZFP)
Manuguru Heavy Water Plant
Institute of Mathematical Sciences (IMSc)
Kaiga Atomic Power Station
Rattehali Uranium Enrichment Facility
Indian Rare Earths Limited (IREL)
• Fast Breeder Test Reactor (FBTR)
• Fast Reactor Fuel Reprocessing Plant (FRFRP)
• General Services Organization (GSO)
• Indira Gandhi Center for Atomic Research (IGCAR)
• Kalpakkam Atomic Reprocessing Plant (KARP)
• Kamini Research Reactor
• Madras Atomic Power Station (MAPS)
• Prototype Fast Breeder Reactor (PFBR)
• Southern Petrochemical Industries Corporation Limited (SPIC)
• Tuticorin Heavy Water Plant
Srinagar
Nangal
Simla
Chandigarh (PUNJAB)
Dehra Dun
New Delhi
Narora
Pokharan
Jaipur (RAJASTHAN)
Kota
Lucknow (UTTAR PRADESH)
Patna
Itanagar
Gangtok
Dispur
Shillong
Kohima
Imphal
Agartala
Aizawl
Ranchi
Kolkata (WEST BENGAL)
Jaduguda
Raipur
Talcher
Bhubaneswar (ORISSA)
Gandhinagar (GUJARAT)
Baroda
Ahmedabad
Indore
Bhopal (MADHYA PRADESH)
Kakrapar
Hazira
Daman
Silvassa
Tarapur
Trombay
Thal-Vaishet
Mumbai (MAHARASHTRA)
Pune
Hyderabad (ANDHRA PRADESH)
Manuguru
Panaji
Kaiga
Bangalore (KARNATAKA)
Chennai (TAMIL NADU)
Mysore
Kalpakkam
Pondicherry
Tuticorin
Alwaye
Thiruvananthapuram (KERALA)
INDIA

(Source:NTI)


INDIA MISSILE FACILITIES
0 200 400 Kilometers
0 200 400 Miles
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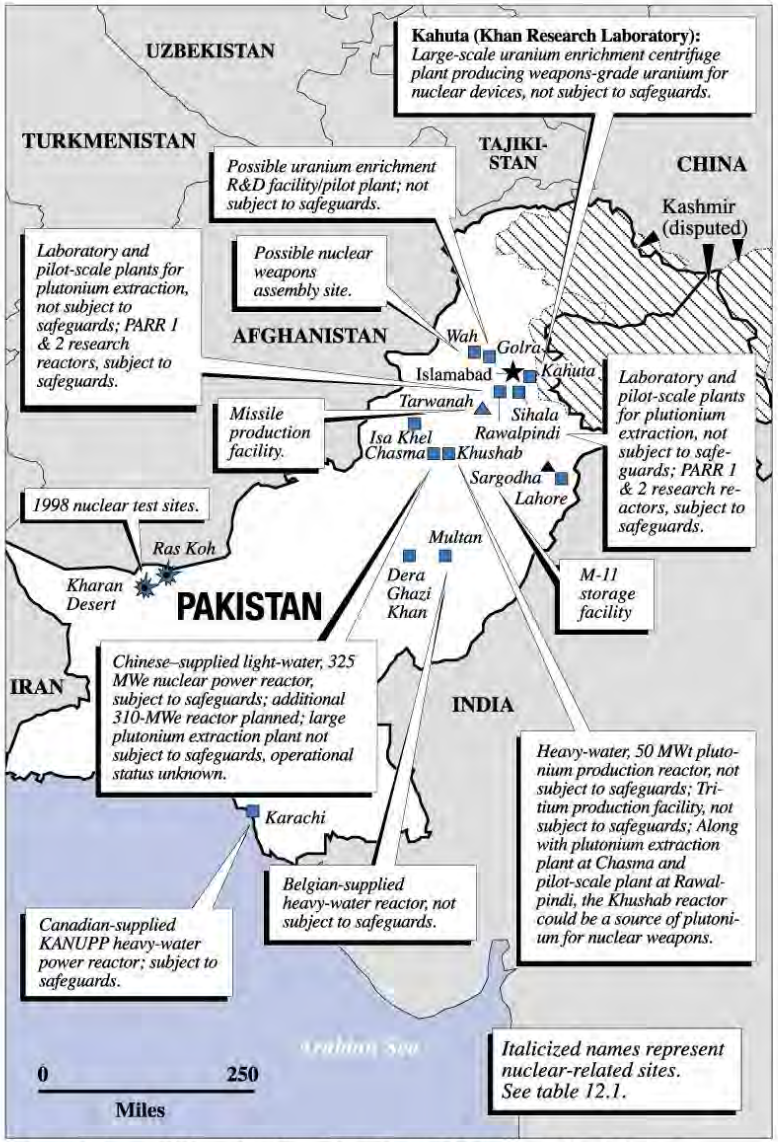
TURKM.
UZB.
TAJIKISTAN
CHINA
Kabul
AFGHANISTAN
Islamabad
PAKISTAN
Srinagar
[JAMMU & KASHMIR]
Jammu
Jalandhar
Chandigarh
[HARYANA & PUNJAB]
Dehradun
[UTTARANCHAL]
New Delhi
NEPAL
Kathmandu
BHUTAN
Thimphu
BANGLADESH
Dhaka
INDIA
Ranchi
[JHARKHAND]
MYANMAR
Yangon
Nasik
Ahmednagar
Mumbai
[MAHARASHTRA]
Pune
Chandipur-on-sea
[ORISSA]
Hyderabad
[ANDHRA PRADESH]
Sriharikota
Bangalore
[KARNATAKA]
Chennai
[TAMIL NADU]
Palakkad
Thiruvananthapuram
[KERALA]
Colombo
SRI LANKA
• Terminal Ballistics Research Laboratory (TBRL)
• Semiconductor Complex Limited (SCL)
• Likely storage sites for Prithvi-1 ballistic missiles (150 km-range)
• Defense Electronics Applications Laboratory (DEAL)
• Defense Terrain Research Laboratory (DTRL)
• Laser Science & Technology Center (LASTEC)
• Solid State Physics Laboratory (SSPL)
• Center for Environment & Explosive Safety (CEES)
• Metallurgical & Engineering Consultants Limited
• Vehicles Research & Development Organization (VRDE)
• IBP Company Limited
• Interim Test Range (ITR)
• Larson & Toubro (L&T)
• Godrej & Boyce Mfg. Co. Ltd.
• Bharat Dynamics Limited (BDL)
• Defense Research & Development Laboratory (DRDL)
• Research Center Imarat (RCI)
• Defense Metallurgical Research Laboratory (DMRL)
• Defense Electronics Research Laboratory (DERL)
• Mishra Dhatu Nigam Limited (MIDHANI)
• Electronics Corporation of India, Limited. (ECIL)
• SKM Tools Private Limited
• Pantex Gee Bee Fluid Power Limited.
• Research & Development Establishment, Engineering (R&DE)
• Institute of Armament Technology (IAT)
• Armament Research & Development Establishment (ARDE)
• High Energy Materials Research Laboratory (HEMRL)
• Srijan Control Drives
• Sriharikota High Altitude Range (SHAR)
• Combat Vehicles Research & Development Establishment (CVRDE)
• The KCP Limited
• Microwave Tube Research & Development Center (MTRDC)
• Electronics & Radar Development Establishment (LRDE)
• Gas Turbine Research Establishment (GTRE)
• Aeronautical Development Establishment (ADE)
• Bharat Electronics Limited (BEL)
• Bharat Earth Movers Limited (BEML)
• Hindustan Aeronautics Limited (HAL)
• Instrumentation Limited (IL)
• Vikram Sarabhai Space Center (VSSC)

(Source:NTI)



Appendix IV

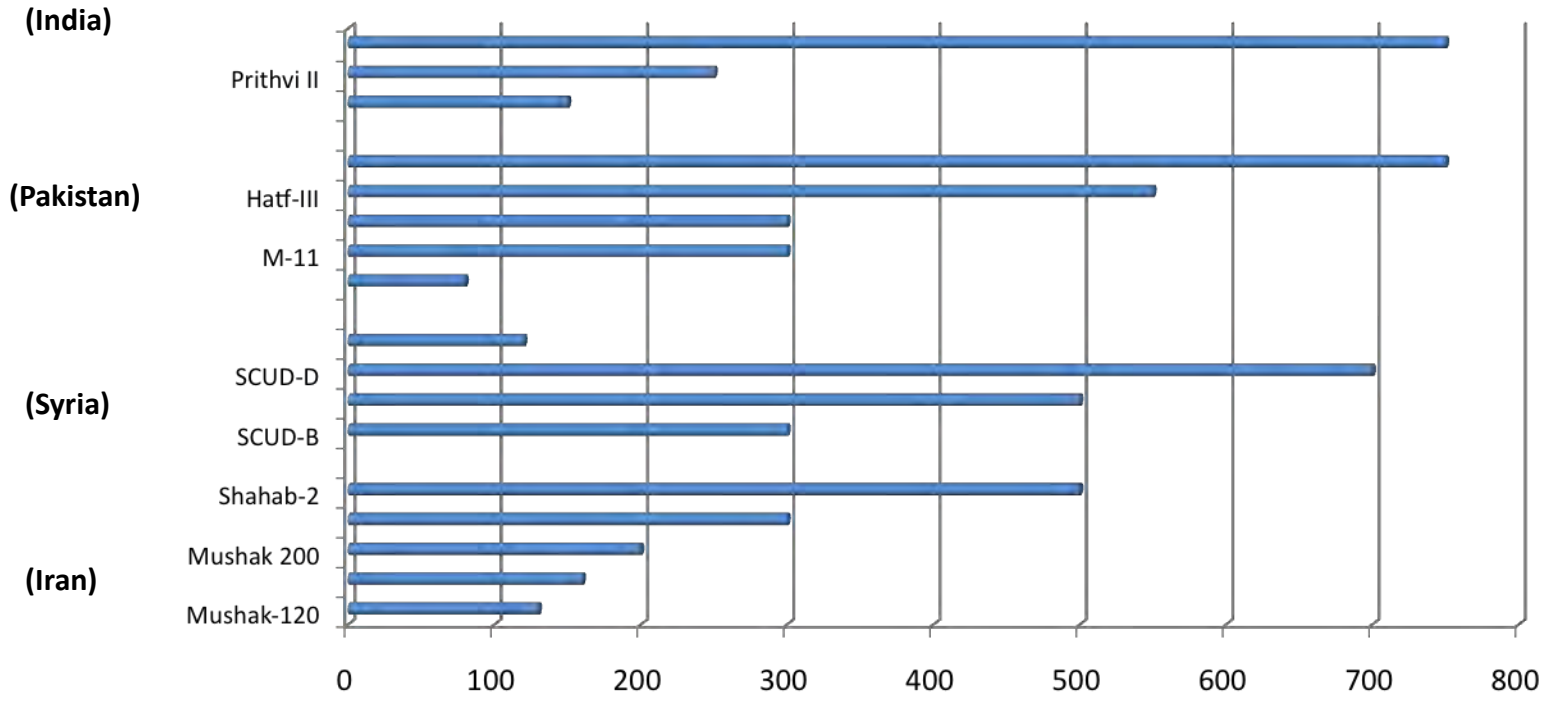
Ballistic Missile Ranges

Ballistic Missile Range Classifications

SRBM	Short- Range Ballistic Missile	< 1000 km
MRBM	Medium-Range Ballistic Missile	1,000 – 3,000 km
IRBM	Intermediate-Range Ballistic Missile	3,000 – 5,500 km
ICBM	Intercontinental-Range Ballistic Missiles	> 5,500 km

Strategic Ballistic Missile	Sufficient range to reach the enemy's vital strategic targets.
Tactical Ballistic Missiles	Insufficient range for strategic attacks.
Theater Ballistic Missiles (TBM)	Sufficient range to cover an entire Theater of War (i.e. less than 5,000 km)
Submarine-Launched Ballistic Missile (SLBM)	Launched from a Submarine, regardless of maximum range.

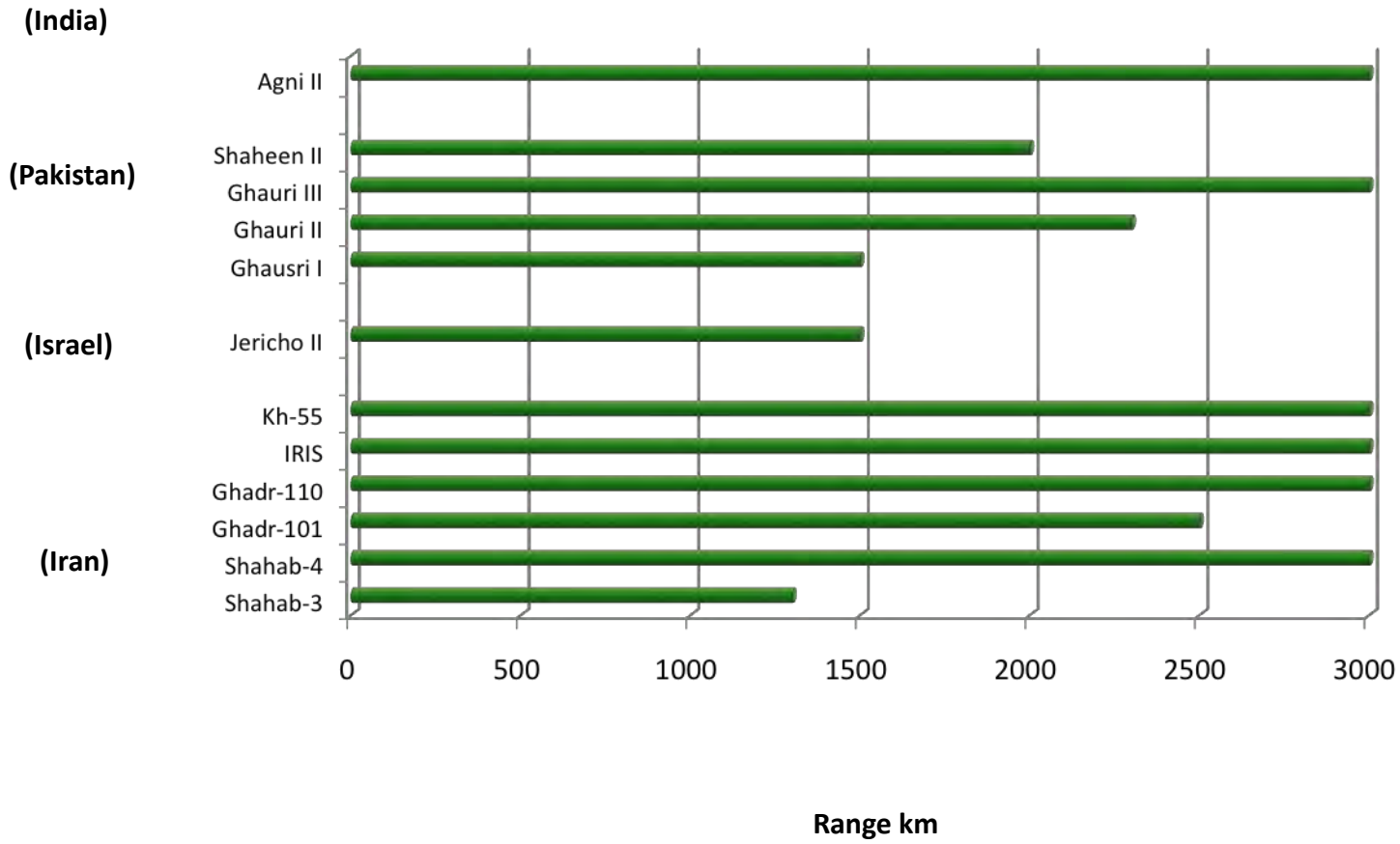
Short Range Ballistic Missiles
(SRBM < 1,000 km)



Range km

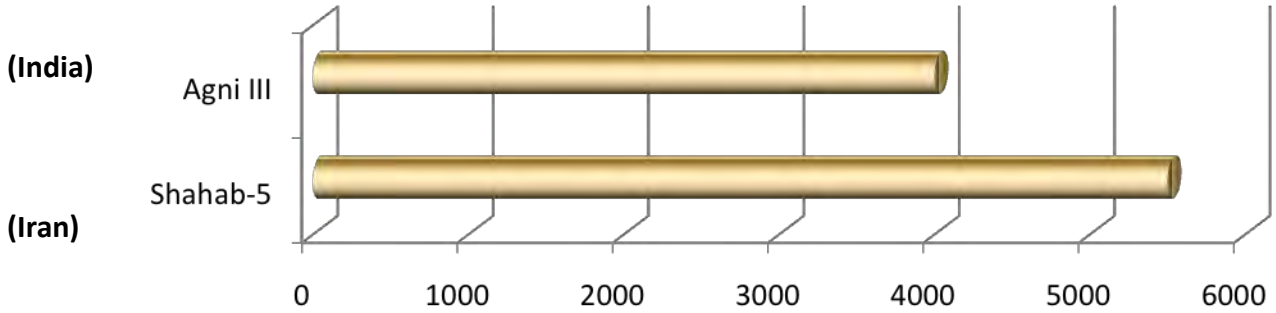
(Adapted from Anthony Cordesman CSIS)

Medium Range Ballistic Missiles
(MRBMs 1,000 – 3,000 km)



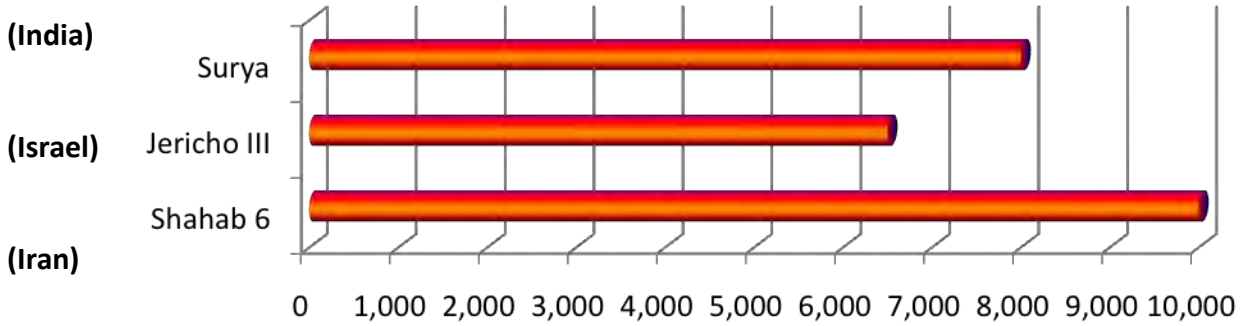
(Adapted from Anthony Cordesman CSIS)

Intermediate Range Ballistic Missiles
(IRBMs 3,000 – 5,500 km)



Range km

Inter-Continental Ballistic Missiles
(ICBMs > 5,000 km)



Range km

(Adapted from Anthony Cordesman CSIS)

Iran Ballistic Missiles

Designation	Progenitor Missiles	Class	Propellant	Payload (kg)	Range (km)	Estimated CEP
Mushak-120	CSS-8, SA-2	SRBM	Solid	500	130	130 m
Mushak-160	CSS-8, SA-2	SRBM	Liquid	500	160	160 m
Mushak-200	SA-2	SRBM	Liquid	500	200	200
Shahab-1	N. Korean SCUD B	SRBM	Liquid	987-1,000	300	450
Shahab-2	N Korean SCUD C	SRBM	Liquid	750-989	500	700
Shahab-3	N. Korea Nodong-1	MRBN	Liquid	760-1,158	1,300	1,300 m
Shahab-4	N. Korea Taep'o-dong-1	MRBM	Liquid	1,040-1,500	3,000	3,000 m
Ghadr 101	Pakistan Shaheen-1	MRBM	Solid	NA	2,500	2,500 m
Ghadr 110	Pakistan Shaheen-2	MRBM	Solid	NA	3,000	3,000 m
IRIS	China M-18	MRBM	Solid	760-1,158	3,000	3,000 m
Kh-55	Soviet AS-15 Kent	MRBM	Jet Engine	200kgt nuclear	2,900-3,000	2,900 – 3,000 m
Shahab-5	N. Korea Taep'o-dong-2	IRBM	Liquid	390-1,000	5,500	5,500 m
Shahab-6	N. Korea Taep'	ICBM	Liquid	270-1,220	10,000	10 km

(Source: Anthony Cordesman. CSIS)

Iranian Missile Developments

- Iranian missile capability likely to accelerate due to technology transfer and foreign assistance

"Iran continues to develop and acquire ballistic missiles that can hit Israel and central Europe" – General Maples, Director of U.S. Defense Intelligence Agency

Approved for Public Release

(Source: http://www.globalsecurity.org/wmd/world/iran/missile.htm)

Iranian Ballistic Missile Threat

Shehab 3/3A

Range (km)	Payload (kg)
1,350	1,158
1,400	987
1,500	760
1,540	650
1,560	590.27
1,580	557.33
1,600	550
1,780	240
2,000	0

(Source: Missile Defense Program Overview for the European Union, Committee on Foreign Affairs, Subcommittee on Security and Defense. Dr. Patricia Sanders. Executive Director. Missile Defense Agency)

Israel Ballistic Missiles

• Israel launched a Jericho II missile across the Mediterranean that landed about 250 miles north of Benghazi, Libya. The missile flew over 800 miles, and U.S. experts felt it had a maximum range of up to 900-940 miles (1,450 kilometers), which would allow the Jericho II to cover virtually all of the Arab world.

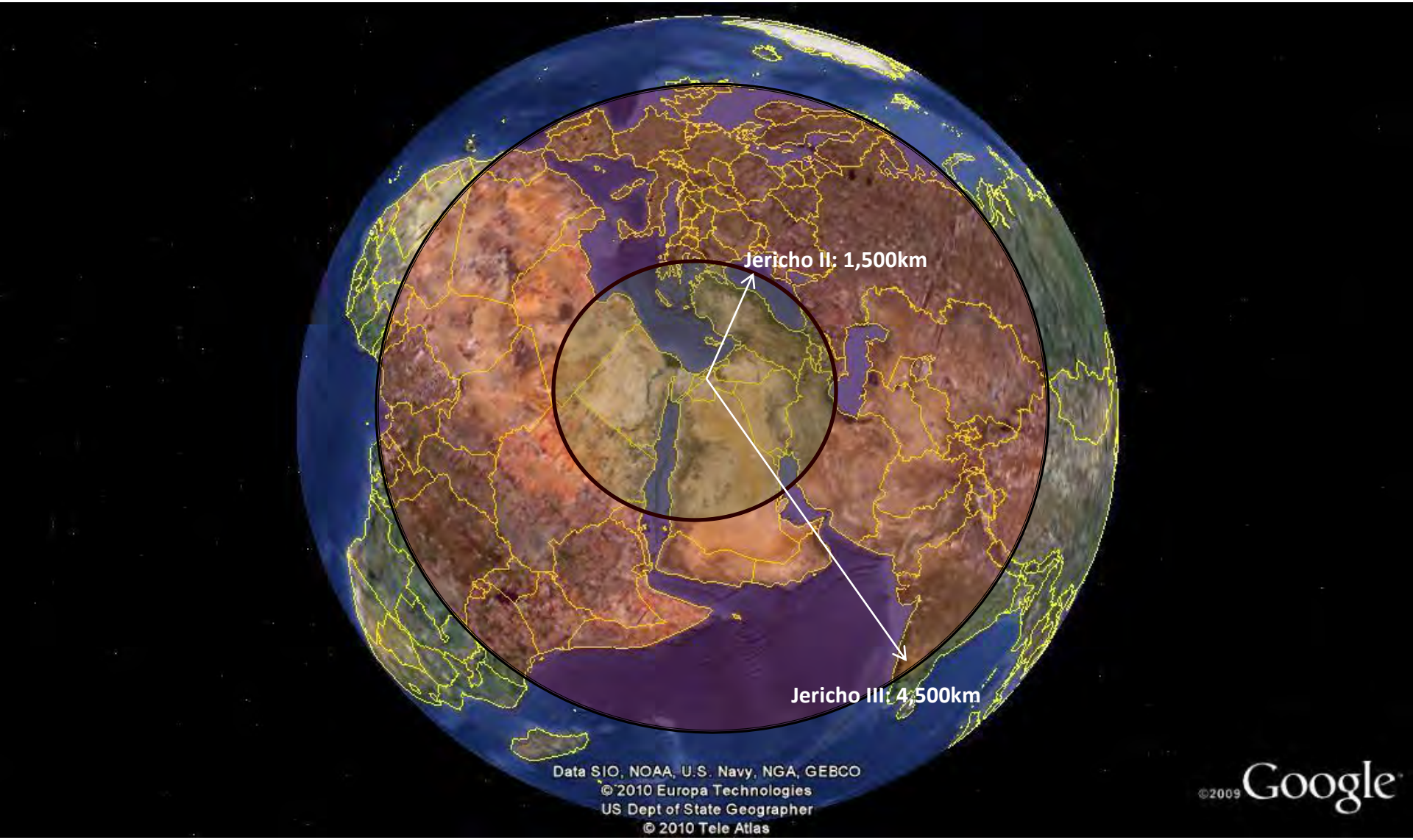
• The most recent version of the missile seems to be a two-stage, solid-fuel propellant with a range of up to 900 miles (1,500 kilometers) with a 2,200 pound payload.

• There are reports that Israel is developing a Jericho III missile, based on a booster it developed with South Africa in the 1980s. Jane's estimated that the missile has a range of up to 5,000 kilometers and a 1,000-kilogram warhead. This estimate is based largely on a declassified Defense Intelligence Agency estimate of the launch capability of the Shavit booster that Israel tested on September 19, 1988.

System	Class	Payload	Warhead	Range (km)	Estimated CEP
Jericho I	Short Range Ballistic Missile (SRBM)	Single Warhead	450 kg; Nuclear 20KT; HE	500 km	500 m (Obsolete)
Jericho II	Medium Range Ballistic Missiles (MRBM)	Single Warhead	Nuclear 1MT; HE	1,500 km	1.5 km
Jericho III	Intercontinental Range Ballistic Missile (ICBM)	Single Warhead	750 Kg	4,800 – 6,500 km	4.8 – 6.5 km

(Source: Israeli Weapons of Mass Destruction. An Overview Anthony H. Cordesman, CSIS, June 2008)

Israeli Ballistic Missile Coverage

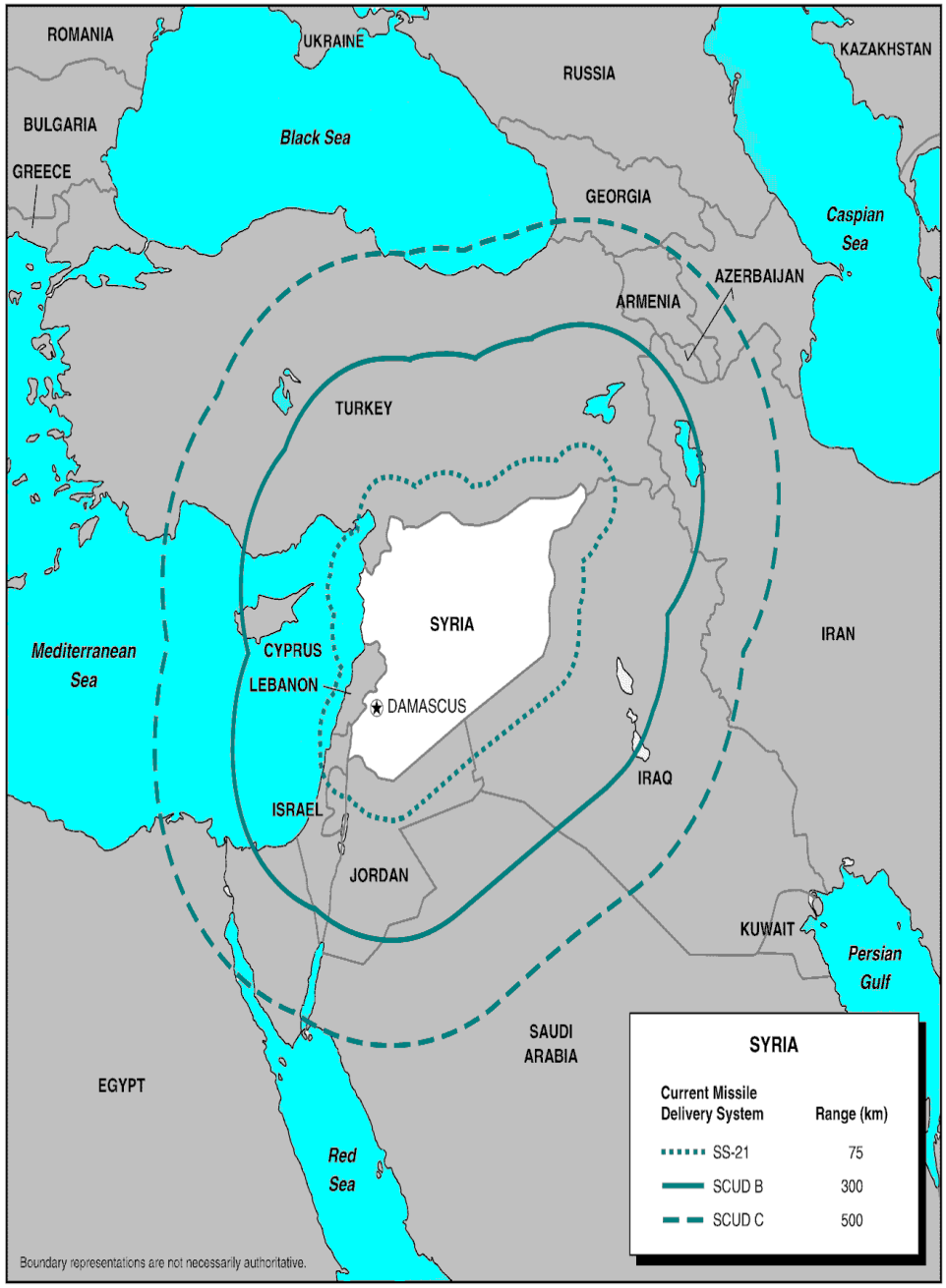


Syrian Surface To Surface Missiles (SRBMs)

SSM	Tels/Missiles	Single Warhead (kg)	Range (km)	Estimated CEP
SS-1c Scud B	18/200	985	300	450 m
SS-1d Scud C	8/120	500	500	700 m
SS-1e Scud D	+	NA	700	700 m
SS-21b Scarab (Improved Version)	18	482	120	120 m
Frog 7b	18	200 to 457	68	68 m

(Source: Anthony Cordesman. CSIS)

Estimated Ranges of Current Syrian Ballistic Missiles



Syria's missiles allow it to threaten all of Israel.

India Ballistic Missiles

Designation	Class	Propellant	Warhead (kg)	Range (km)	Estimated CEP
Prithvi I	SRBM	Liquid	1,000	150	150 M
Prithvi II	SRBM	Liquid	500-1,000	250	250 M
Dhanush	SLBM	Liquid	500	250	250
Agni I	SRBM	Solid	1,000	700-1,000	1 KM
Agni II	MRBM	Solid	1,000	2,500-3,000	3 KM
Agni III	IRBM	Solid	1,000	3,500-4,000	4 KM
Surya	ICBM	Solid	1,000	8,000	8 KM

(Source: www.fas.org)

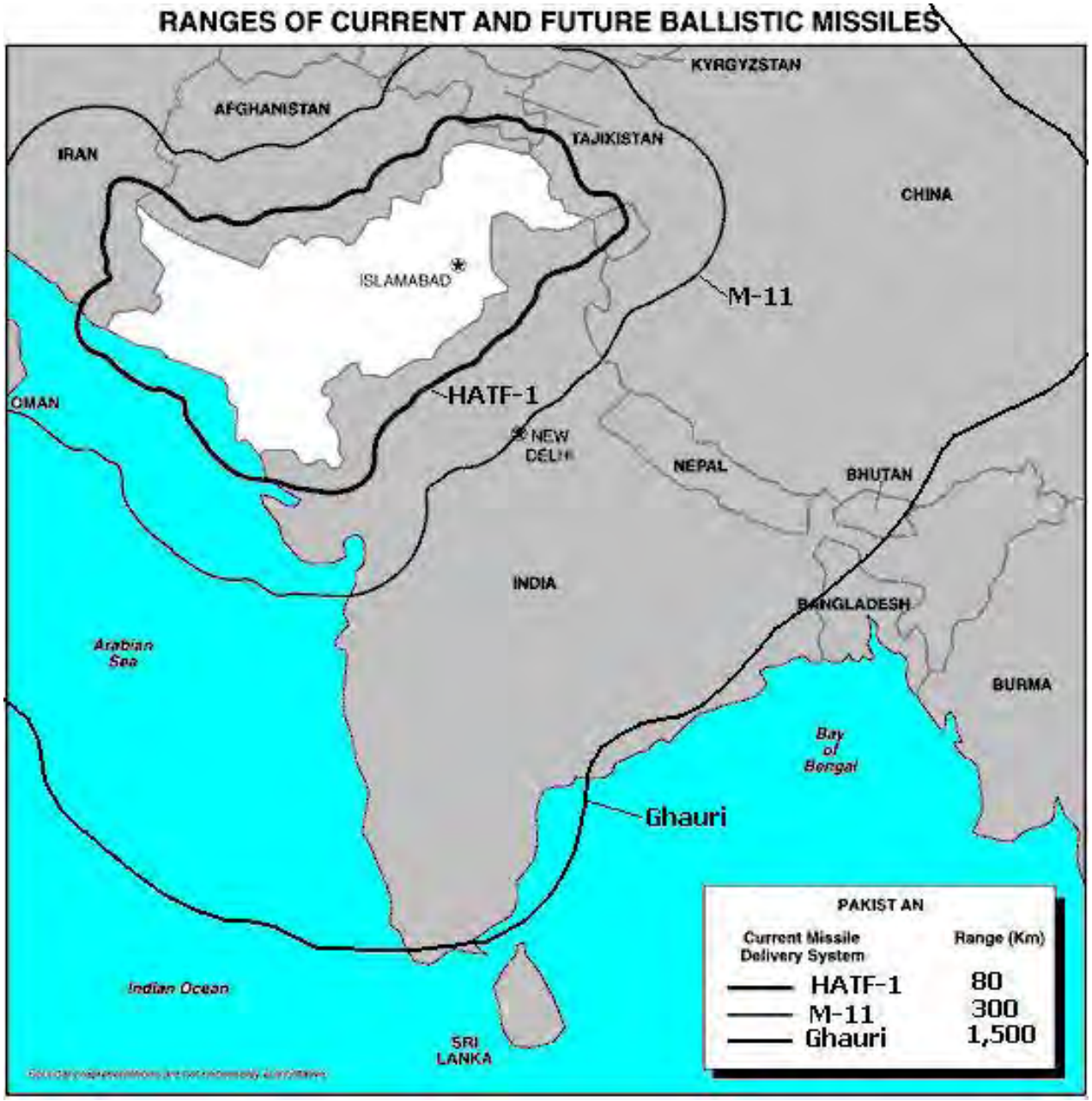
Estimated Ranges of Current and Potential Indian Ballistic Missiles

India continues to test and improve its ballistic missile force.

Pakistan Ballistic Missiles

Designation	Class	Propellant	Warhead (kg)	Range (km)	Estimated CEP
Haft I	SRBM	Solid	500 350	60-80 100	70 m 100 m
M-11	SRBM	Solid	700	300	300 m
Haft II	SRBM	Solid	500 300	280 300	300 m 300 m
Haft III	SRBM	Solid	500	550	550 m
Ghauri I	MRBM	Liquid	500-750	1,300-1,500	1.4 km
Ghauri II	MRBM	Liquid	1000	2,000 – 2,300	2.2 km
Ghauri III	MRBM	Liquid	1000	3,000	3.0 km
Shaheen I	SRBM	Solid	1000	750	750 m
Shaheen II	MRBM	Solid	1000	2,000	2.0 km

(Source: www.fas.org)


RANGES OF CURRENT AND FUTURE BALLISTIC MISSILES
KYRGYZSTAN
AFGHANISTAN
TAJIKISTAN
IRAN
CHINA
ISLAMABAD
M-11
HATF-1
OMAN
NEW DELHI
NEPAL
BHUTAN
INDIA
BANGLADESH
Arabian Sea
BURMA
Bay of Bengal
Ghauri
PAKISTAN
Current Missile Delivery System
Range (Km)
HATF-1 80
M-11 300
Ghauri 1,500
Indian Ocean
SRI LANKA

Appendix V

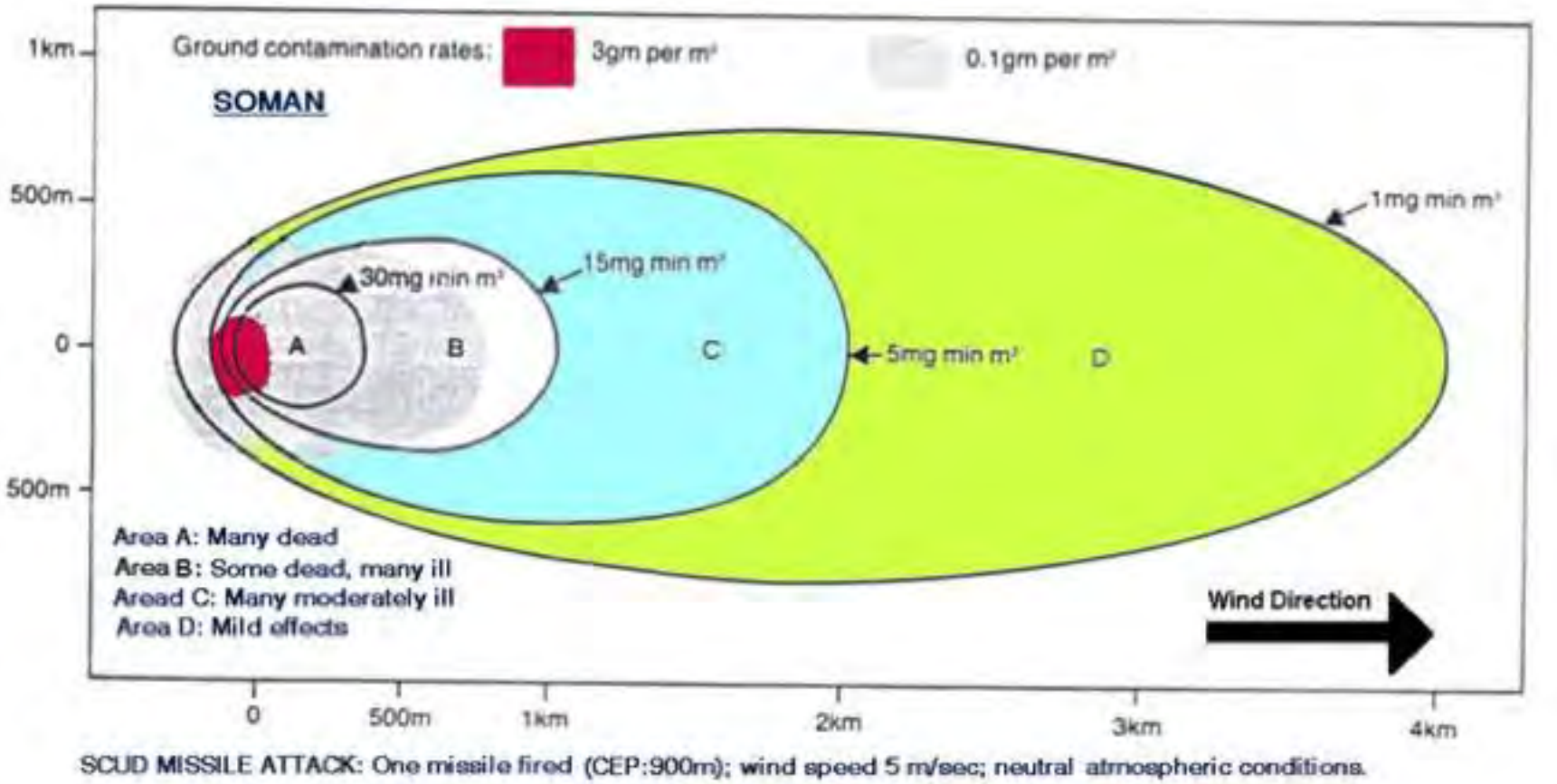
Chemical Terrorism

Chemical Weapons

Chemicals can be used to kill or incapacitate personnel and to deny use of areas, materiel, or facilities. Agents can be both lethal and non-lethal, and can be either persistent or non-persistent in effects. Terrorists have already used chemical weapons and although examples often display a basic use of chemicals, a tendency exists to demonstrate ever increasing death, damage, and psychological stress on a target.

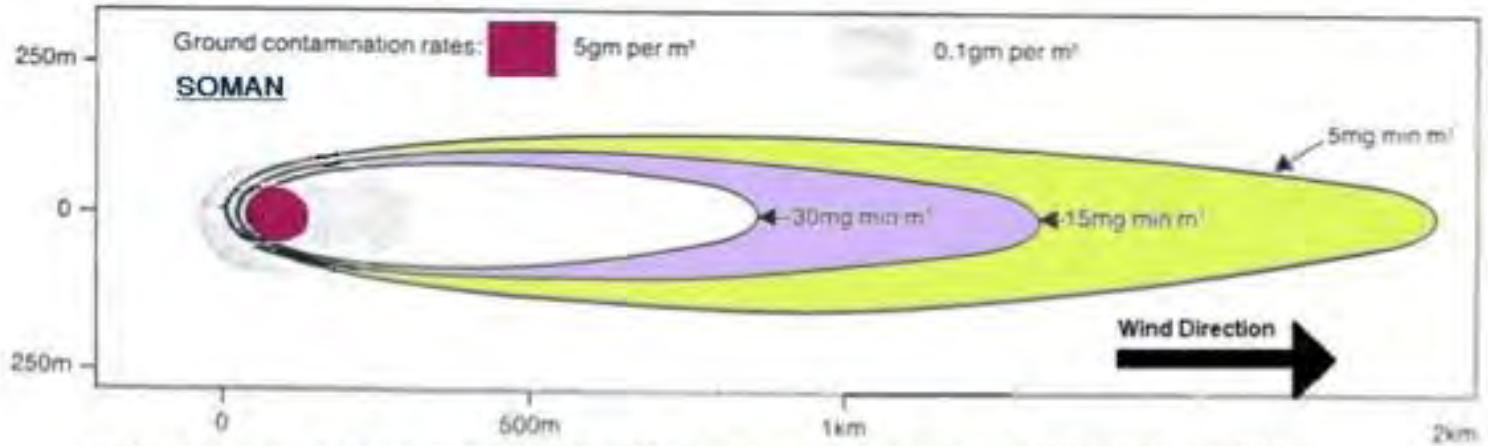
Agent	Known As	Route of Entry	Rate of Action	Persistency
Choking	Phosgene (CG) Chlorine (C)	Respiratory	Immediate	Minutes to Hours
Blood	Hydrogen Cyanide (HC) Cyanogen Chloride (CK)	Respiratory	Rapid (seconds)	Minutes to Hours
Blister	Mustard (H) Lewisite (L) Phosgene Oxime (CX)	- Skin - Inhalation - Eyes	Rapid	Hours to Days
Nerve	Tabun (GA) Sarin (GB) Soman (GD) VX	- Skin - Inhalation - Eyes	- Inhalation: Rapid - Skin: Seconds to minutes	Tabun: Minutes to Hours Sarin: Minutes to Hours Soman: Hours VX: Hours to Days

(Reference: US Army TRADOC Handbooks. A Military Guide to Terrorism in the 21st Century. 2007)



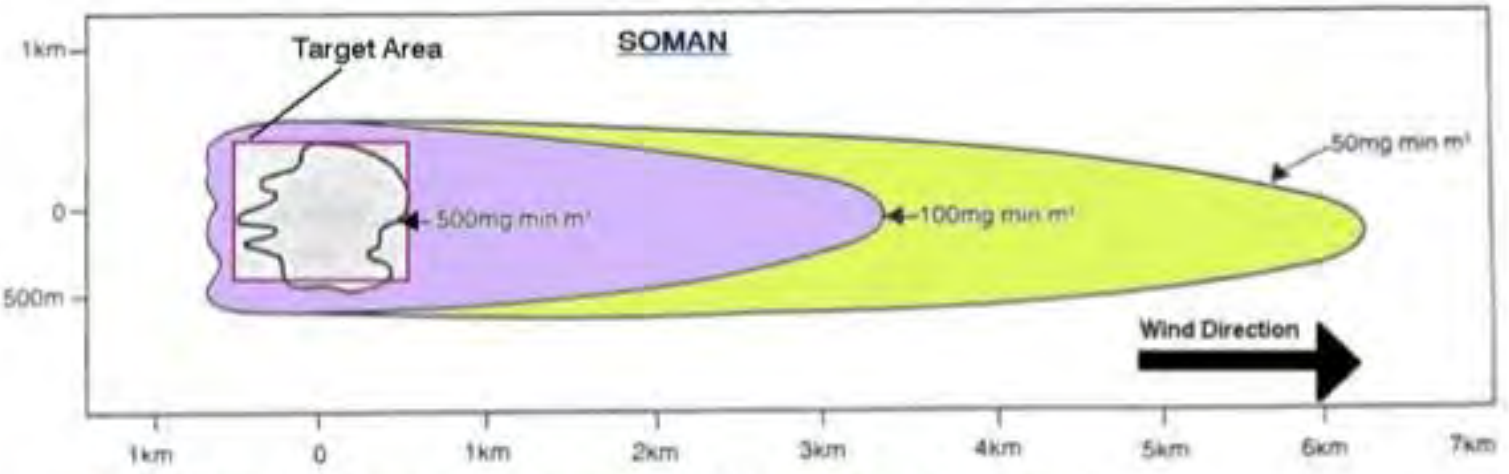
SCUD MISSILE ATTACK: One missile fired (CEP:900m); wind speed 5 m/sec; neutral atmospheric conditions.

SSM	Single Warhead (kg)	Range (km)
SS-1C (SCUD B)	985	300
SS-1D (SCUD C)	500	500



FROG Missile Attack: One missile fired (CEP: 400 m); windspeed 5 m/sec; neutral atmospheric conditions.

SSM	Single Warhead (kg)	Range (km)
Frog 7b	200 to 457	68



BM-21 MRL Attack: One battalion of 18 launchers (each 40 rockets) fired at target area 1 x 1 km; wind speed 3 m/sec; neutral atmospheric conditions.

Appendix VI

Biological Terrorism

Biological Weapons

• Biological Weapons are easier and cheaper to produce than either chemical or nuclear weapons, and the technology is readily available in open literature and on the Internet. Biological agents can be very lethal in comparison with other WMD agents or material. As one example assuming optimum conditions, about 1,800 pounds of chemical agent Sarin is required to inflict a large number of casualties over a square mile area, while only a quarter ounce of anthrax spores is required to achieve the same effect over the same area under ideal distribution conditions.

• Biological warfare agents include three basic categories: pathogens, toxins, and bioregulators. Pathogens are disease producing microorganisms such as bacteria, rickettsia, or viruses. Pathogens can occur naturally or can be altered with biotechnology. Toxins are poisons formed by a vegetable or animal, but can be produced synthetically also. Bioregulators affect cell processes in the body. Used as a bioweapon, they can cause severe adverse effects or death.

• Biological agents can be isolated from sources in nature, acquired from laboratories or bioweapons stockpiles, or synthesized or genetically manipulated in a laboratory.

Biological Weapons

Type	Agent	Incubation Period
Bacteria	Anthrax Tularemia Plaque	Typically 1-6 days, but up to 42 days 1-21 days (average 3-6 days) 1-7 days (usually 2-3 days)
Toxins	Botulism Ricin	12 hours to 5 days 18-24 hours
Viruses	Smallpox Ebola	7-17 days (average 12) 4-21 days
Rickettsia	Q fever	7-41 days

(Reference: US Army TRADOC Handbooks. A Military Guide to Terrorism in the 21st Century. 2007)

Biological Weapons Estimated Casualties Using Aerosol Delivery Mechanism

	Amount Released	Estimated Damage/Lethality
Anthrax	100 kg spores released over a city the size of Washington DC	130,000 – 3 million deaths
Plague	50 kg Y. pestis released over city of 5 million people	150,000 infected 36,000 deaths
Tularemia	50 kg F. tularensis released over city of 5 million people	250,000 incapacitated 19,000 deaths

Basis of Dose Calculations:

Wind Speed 5 meter/sec at 10 meters height
Release Height = 10 meters
Source Strength = 1 gram = 10 ^(12) spores
Breathing Rate = 30 L/min (as for a man engaged in light work)

Atmospheric Stability "Neutral" : Briggs "D"
Atmospheric Stability "Slightly Stable" : Briggs "E"

ID50 (Dose in spores to cause effect in 50% of a population) = 8,000

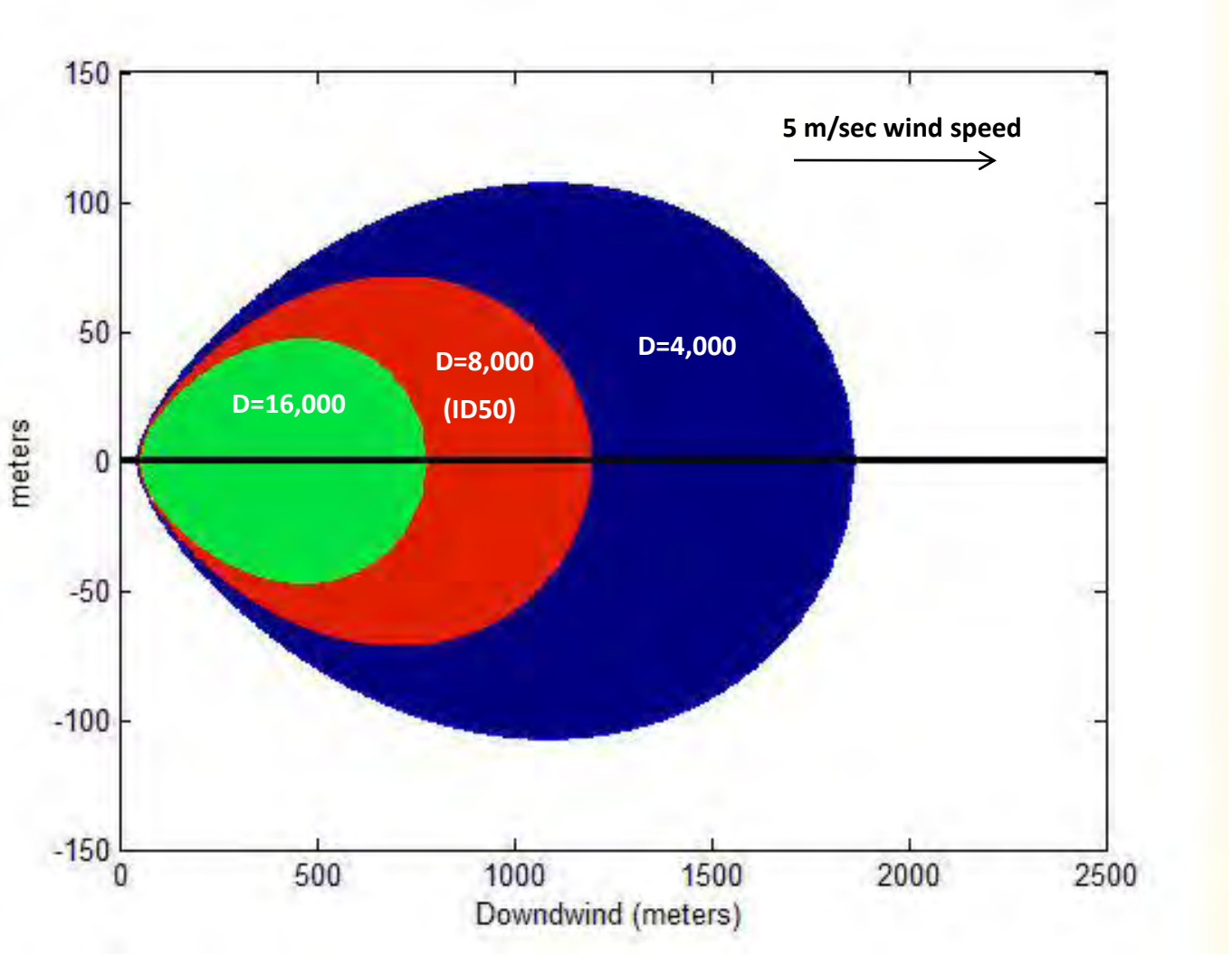
Briggs "D" ID50 Downwind Distance = 1,190 meters
Briggs "E" ID50 Downwind Distance = 1,900 meters

(Reference: Applied Science and Analysis Inc. The ASA Newsletter. 2001: "Note Regarding Source Strength" Matthew Meselson.)

Anthrax Centerline Dose (Spores)

Downwind Distance (km)	Briggs "D" (Atmospheric Stability - Neutral)	Briggs "E" (Atmospheric Stability – Slightly Stable)
0.5	32,610	62,100
1	10,620	21,940
2	3,580	7,470
3	1,950	4,160
4	1,290	2,830
5	940	2,140
6	730	1,720
7	600	1,440
8	500	1,250
9	430	1,100
10	375	990
20	160	530
30	100	390
40	72	320
50	57	270

1 gram Anthrax dose in spores



Dose in Spores to cause effect in 50% of population exposed (ID50) = 8,000 spores

Appendix VII

Radiological Terrorism
(Radiological Dispersal Device RDD)

“Dirty Bomb” Danger

• To date, the U.S. has not been attacked with a radiological weapon by terrorists. Nonetheless, theoretical case study examples illustrate the potential impacts of a radiological “dirty bomb.” Most injuries would probably occur from the heat, debris,
•radiological dust and force of the conventional explosion. A “dirty bomb” cannot create an atomic blast. Nonetheless, assumptions may appear too simple or too critical in stating the damage of a radiological event.

• Attack on a nuclear facility is another means to cause radiological contamination. Even with the redundant safeguards and security measures at nuclear facility locations, the possibility of terrorist assault and breach of these measures is not impossible. Considerable precautions and security measures are, in effect, to preclude successful attacks by vehicle borne explosive devices or aerial borne means.

• The simplest and the most primitive terrorist nuclear device would be a radiological weapon or radiological dispersal device, commonly called a "dirty bomb". It is not strictly speaking a nuclear weapon, as it does not involve a nuclear explosion. A dirty bomb would consist of a conventional high explosive—for example, Semtex, dynamite or TNT—and a quantity of a radioactive material.

Effects of a radiological weapon:

• The detonation of a dirty bomb is unlikely to cause a large number of casualties. Generally, any immediate deaths or serious injuries would most likely be caused by the detonation of the conventional explosive. The radioactive material in the bomb would be dispersed into the air but would soon be diluted to relatively low concentrations.

• If the bomb were exploded in a city, as it most likely would be, some people would probably be exposed to a dose of radiation. However, in most cases the dose would probably be relatively small. A low-level exposure to radiation would slightly increase the long term risk of cancer. The main potential impact of a dirty bomb is psychological—it would cause considerable fear, panic, and social disruption, exactly the effects' terrorists wish to achieve.

(Reference: US Army TRADOC Handbooks. A Military Guide to Terrorism in the 21st Century. 2007)

Radiological and Nuclear Devices

Device	Type of Weapon
Radiological Dispersal Device (RDD)	This is a conventional weapon designed to disperse radioactive material causing destruction and contamination as well as injury.
Improvised Nuclear Device (IND)	This is intended to cause a yield-producing nuclear explosion. Built from a modified nuclear weapon or components.

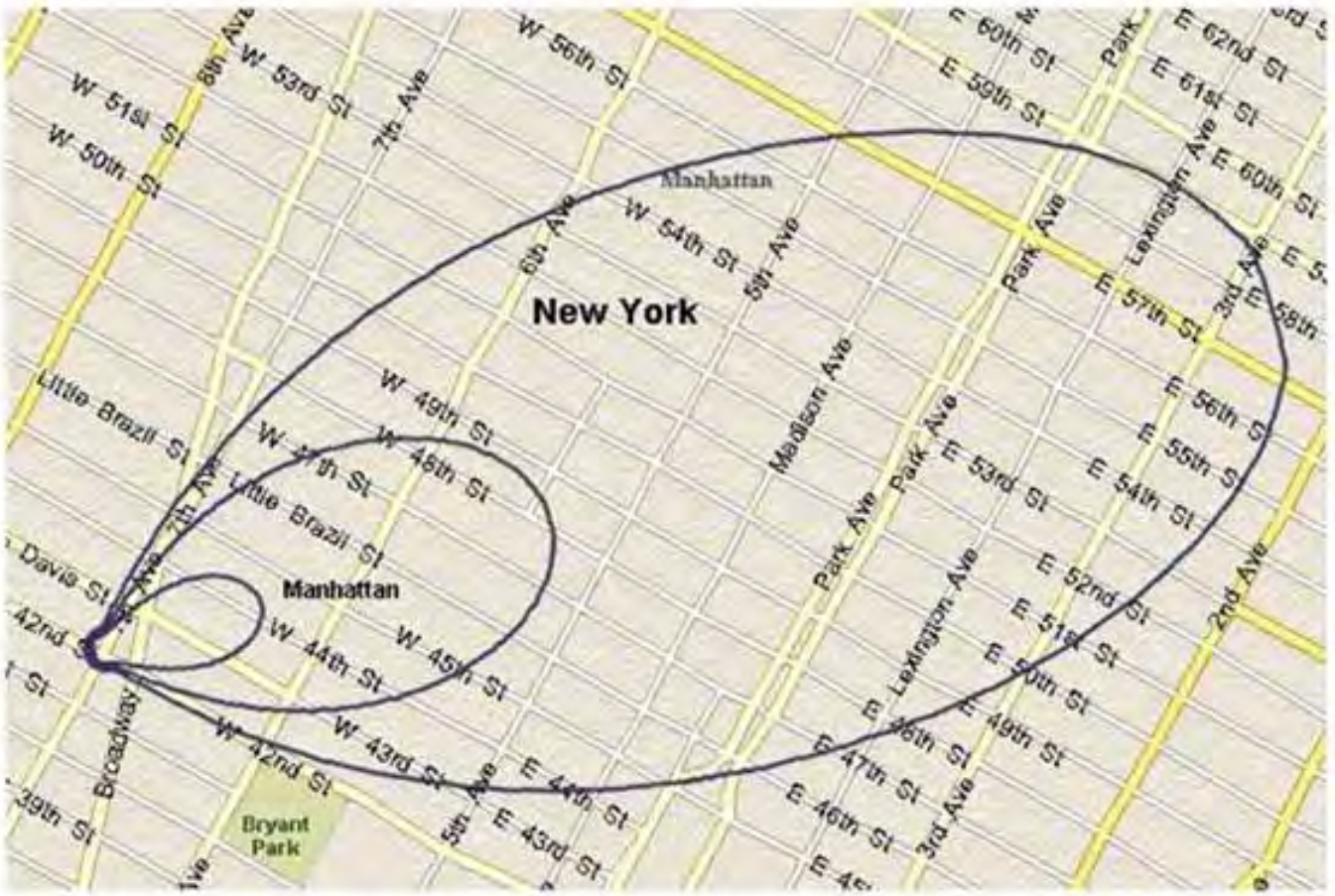
A Radiological Dispersal Device (RDD) is a conventional weapon designed to disperse radioactive material causing destruction and contamination as well as injury.

(Reference: US Army TRADOC Handbooks. A Military Guide to Terrorism in the 21st Century. 2007)

A Selected Sample of Radioactive Materials

Radioactive Material	Used In
Cobat-60 (Co-60)	• Cancer Therapy • Industrial Radiography • Industrial Gauges • Food Irradiation
Cesium – 137 (Cs-137)	• (Same uses as Cobalt – 60) • Well Logging
Iridium – 192 (Ir – 192)	• Industrial Radiography • Implants Cancer Therapy
Strontium – 90 (Sr – 90)	• Radioisotope • Thermoelectric Generators
Plutonium – 238 (Pu – 238)	• Research • Well Logging • Thermoelectric Generators
Americium – 241 (AM – 241)	• Industrial Gauges • Well Logging

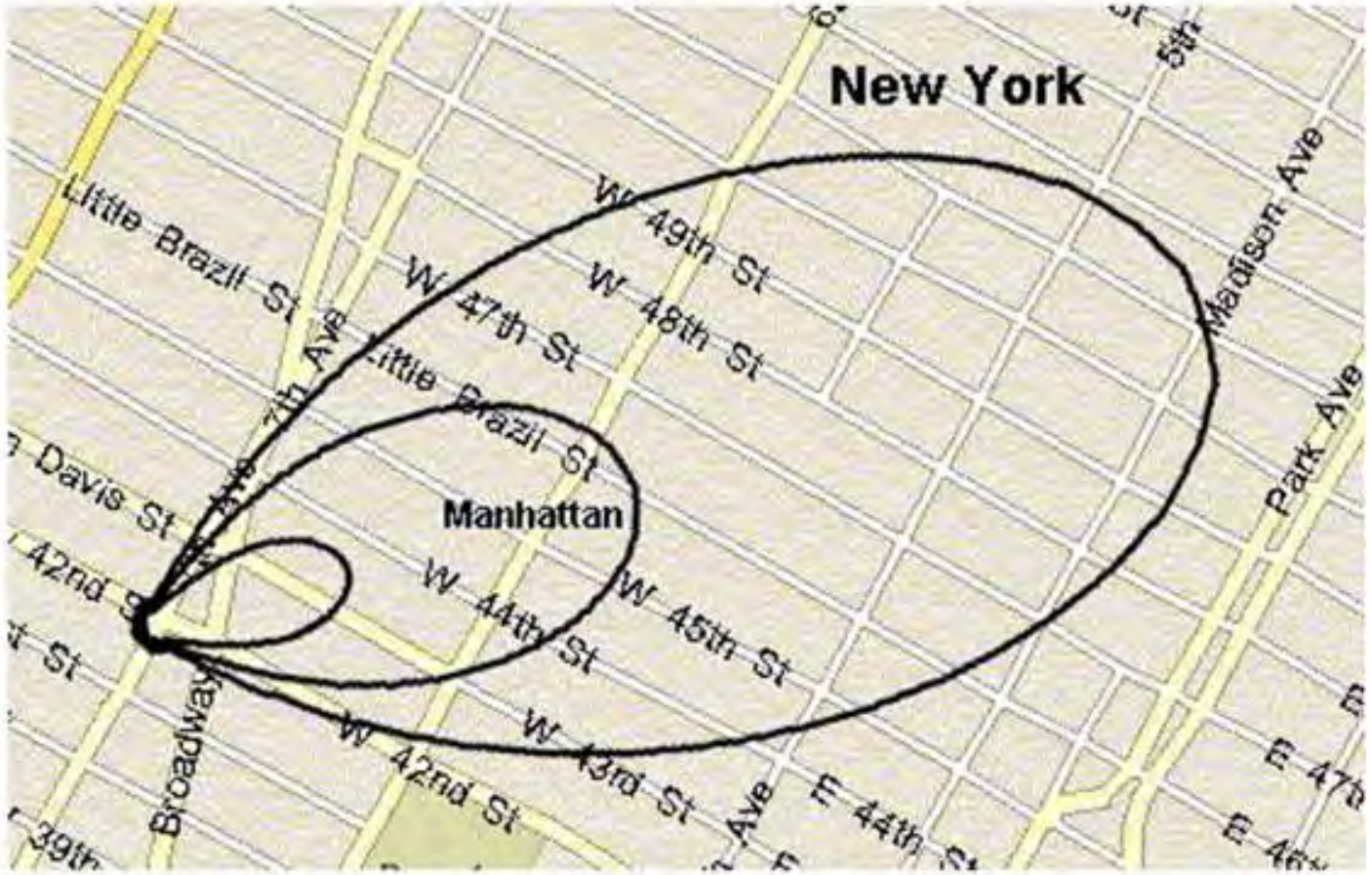
Figure 5: Contamination Due to Americium Bomb in New York City



Inner Ring:	One cancer death per 100 people due to remaining radiation
Middle Ring:	One cancer death per 1,000 people due to remaining radiation
Outer Ring:	One cancer death per 10,000 people due to remaining radiation
	EPA recommends decontamination or destruction

(Reference: Testimony of Dr. Henry Kelly, President Federation of American Scientists before the Senate Committee on Foreign Relations. March 6, 2002)

Figure 4: Immediate Effects Due to Americium Bomb in New York City



Inner Ring:	All people must receive medical supervision
Middle Ring:	Maximum annual dose for radiation workers exceeded
Outer Ring:	Area should be evacuated before radiation cloud passes

(Reference: Testimony of Dr. Henry Kelly, President Federation of American Scientists before the Senate Committee on Foreign Relations. March 6, 2002)

Figure 1: Long-term Contamination Due to Cesium Bomb in Washington, DC

Inner Ring:	One cancer death per 100 people due to remaining radiation
Middle Ring:	One cancer death per 1,000 people due to remaining radiation
Outer Ring:	One cancer death per 10,000 people due to remaining radiation
	EPA recommends decontamination or destruction

(Reference: Testimony of Dr. Henry Kelly, President Federation of American Scientists before the Senate Committee on Foreign Relations. March 6, 2002)

Figure 2: Long-term Contamination Due to Cobalt Bomb in NYC – EPA Standards

Inner Ring: One cancer death per 100 people due to remaining radiation
Middle Ring: One cancer death per 1,000 people due to remaining radiation
Outer Ring: One cancer death per 10,000 people due to remaining radiation
EPA recommends decontamination or destruction

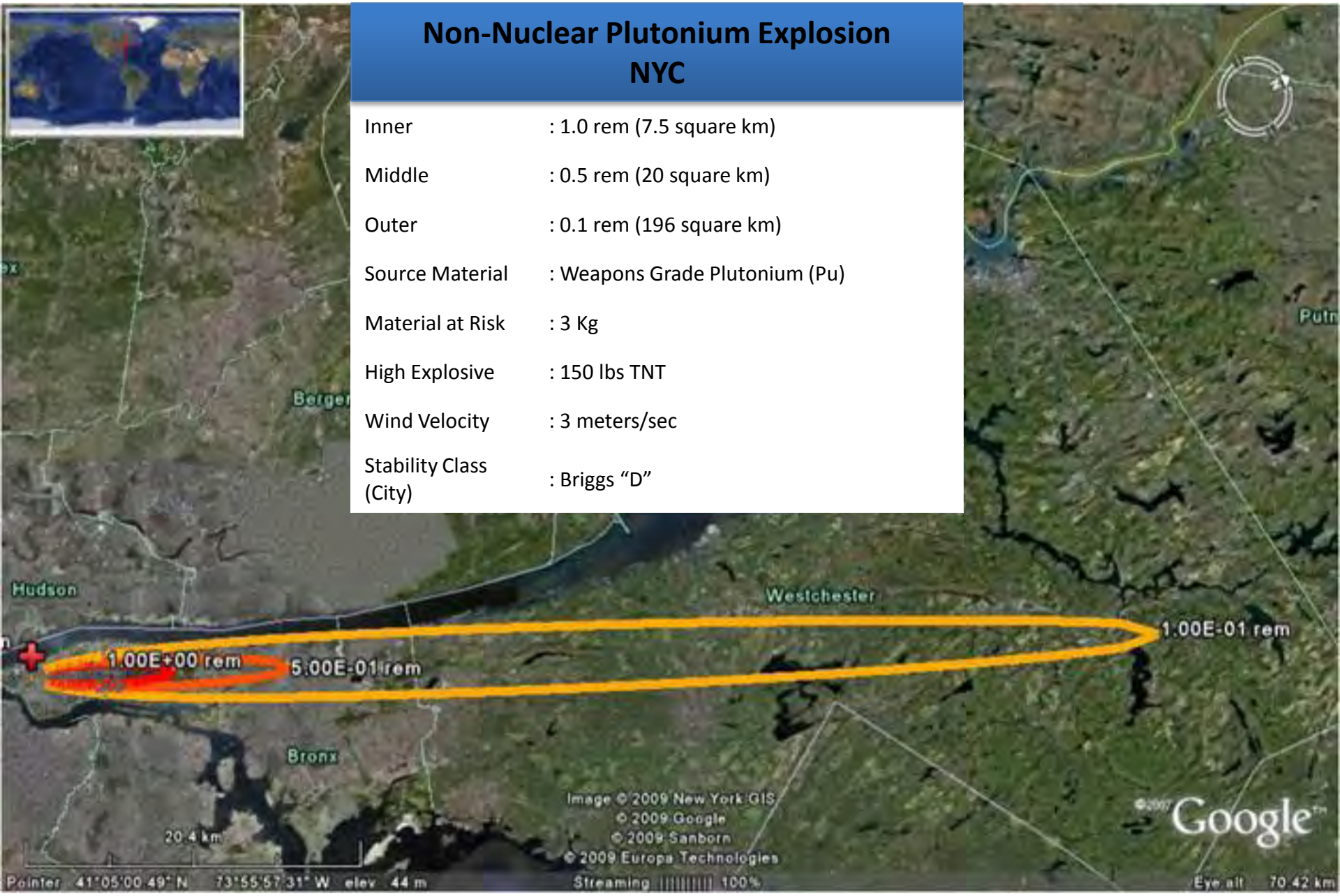
Figure 3: Contamination Due to Cobalt Bomb in NYC – Chernobyl Comparison

Inner Ring: Same radiation level as *permanently closed* zone around Chernobyl
Middle Ring: Same radiation level as *permanently controlled* zone around Chernobyl
Outer Ring: Same radiation level as *periodically controlled* zone around Chernobyl

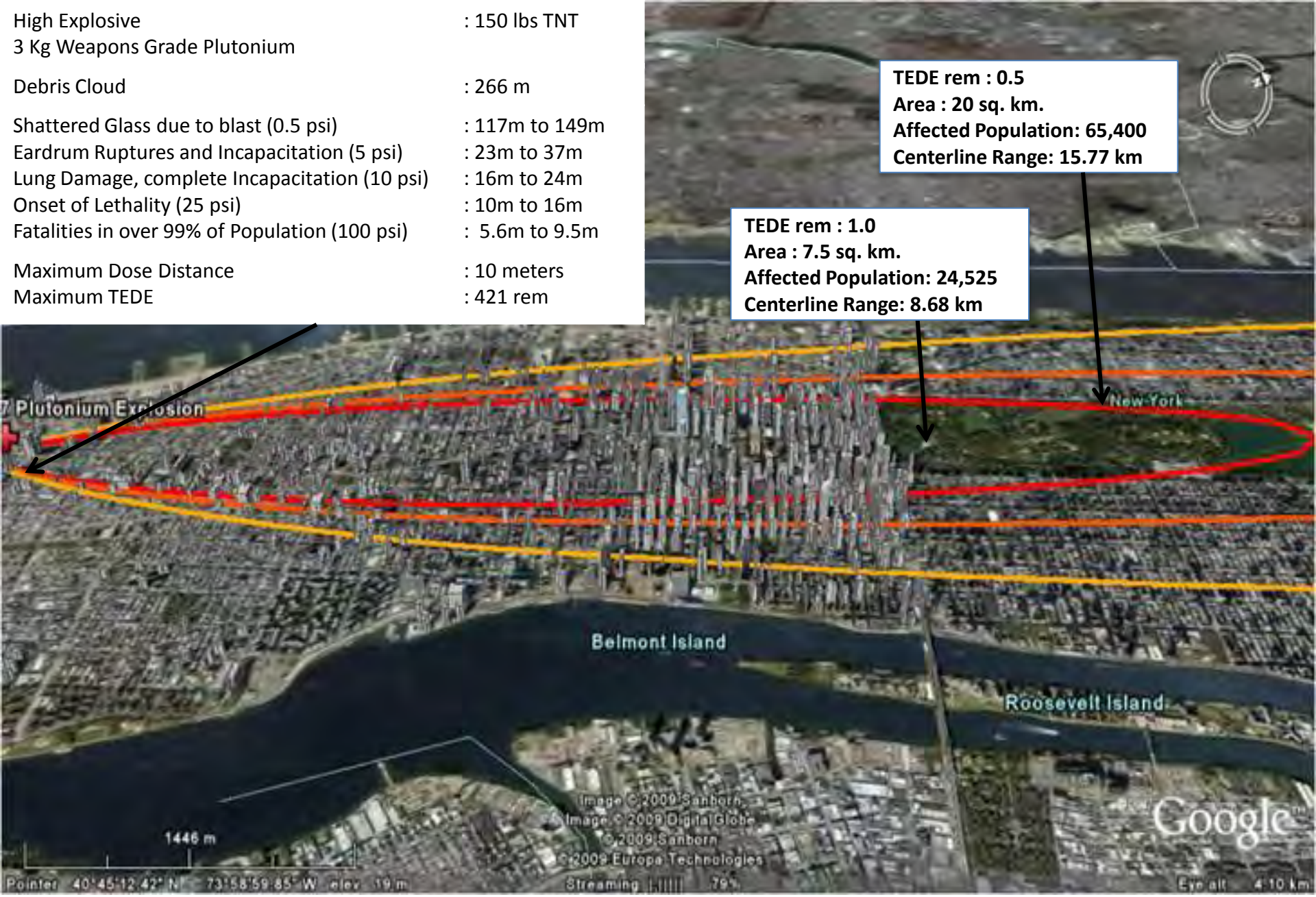
(Reference: Testimony of Dr. Henry Kelly, President Federation of American Scientists before the Senate Committee on Foreign Relations. March 6, 2002)

Non-Nuclear Plutonium Explosion
NYC

Inner	: 1.0 rem (7.5 square km)
Middle	: 0.5 rem (20 square km)
Outer	: 0.1 rem (196 square km)
Source Material	: Weapons Grade Plutonium (Pu)
Material at Risk	: 3 Kg
High Explosive	: 150 lbs TNT
Wind Velocity	: 3 meters/sec
Stability Class (City)	: Briggs “D”



High Explosive	: 150 lbs TNT
3 Kg Weapons Grade Plutonium	
Debris Cloud	: 266 m
Shattered Glass due to blast (0.5 psi)	: 117m to 149m
Eardrum Ruptures and Incapacitation (5 psi)	: 23m to 37m
Lung Damage, complete Incapacitation (10 psi)	: 16m to 24m
Onset of Lethality (25 psi)	: 10m to 16m
Fatalities in over 99% of Population (100 psi)	: 5.6m to 9.5m
Maximum Dose Distance	: 10 meters
Maximum TEDE	: 421 rem



Non-Nuclear Uranium Explosion NYC

Inner Population affected	: 0.001 rem (0.005 square km) : 16
Middle Population affected	: 0.0001 rem (0.11 square km) : 360
Outer Population affected	: 0.00001 rem (2.9 square km) : 9,480
Source Material	: Uranium (U)
Material at Risk	: 3 Kg
High Explosive	: 100 lbs TNT
Wind Velocity	: 2 meters/sec
Stability Class (City)	: Briggs “D”

Appendix VIII

Improvised Nuclear Devise “IND”

Nuclear Weapons

• The use of a sophisticated nuclear weapon is a possible attack scenario but would require extraordinary terrorist financial and technical resources. More likely scenario deals with nuclear material and sabotage or a siege-hostage situation at a nuclear facility. This type scenario aligns more correctly with a radiological incident. The potential effects would be catastrophic to a surrounding area and population. Depending on the degree of radioactive fallout related to wind patterns, contaminated area could be an ecological disaster for decades.

• Some groups may have State sponsors that possess or can obtain nuclear weapons, but there is no credible evidence at this time of terrorists successfully acquiring nuclear weapons or sufficient material to make them.

•An Improvised Nuclear Device (IND) is intended to cause a yield-producing nuclear explosion. Built from a modified nuclear weapon or components.

Amount of fissile material needed to build an atomic bomb.

Highly Enriched Uranium (HEU enriched to 90% of U-235)	Simple gun-type nuclear weapon	9-110 lbs (40 to 50kg)
	Simple implosion weapon	33 lbs (15 kg)
	Sophisticated implosion weapon	20-26 lbs (9 to 12 kg)
Plutonium	Simple implosion weapon	14 lbs (6 kg)
	Sophisticated implosion weapon	4.5 – 9 lbs (2 to 4 kg)

(Source: Union of Concerned Scientists. "Preventing Nuclear Terrorism Fact Sheet" April 2004)

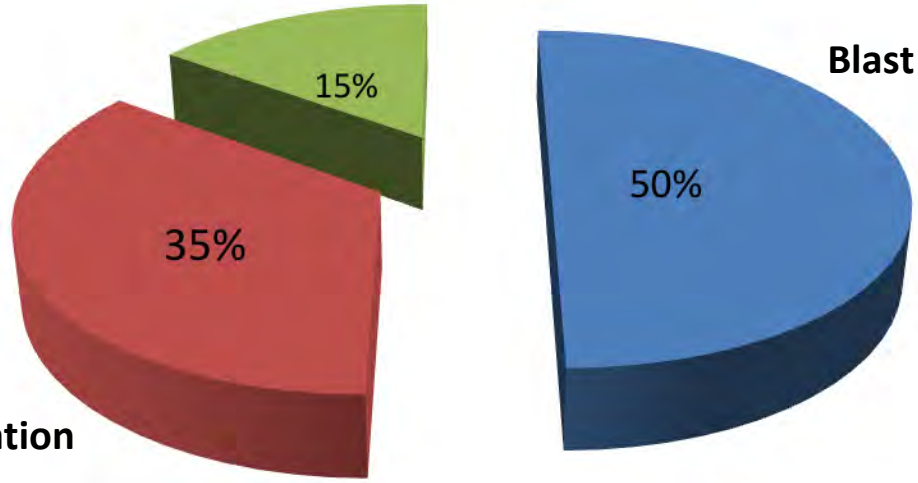
The Energy of a Nuclear Explosion

Personnel exposed to a nuclear explosion may be killed or suffer injuries of various types. Casualties are primarily caused by blast, thermal radiation, and ionizing radiation. The distribution and severity of these injuries depends on device yield, height of burst, atmospheric conditions, body orientation, protection afforded by shelter, and the general nature of the terrain.

The energy of a nuclear explosion is partitioned as follows:

Ionized Radiation

5% Prompt (first minute)
10% Delayed (minutes to years)



Blast and Ground Shock

Thermal Radiation

		20 KT	100 KT	500 KT
Fireball	Elapsed time to reach maximum diameter	1 sec	1 sec	1 sec
	Maximum diameter	580 m	1,100 m	2,100 m
Thermal Radiation	Temporarily flash blindness from scattered light out to a distance of distance of :	23 km 14 miles	26 km 16 miles	29 km 18 miles
	Individuals who directly view the initial fireball could experience retinal burns to a distance of:	25 km 16 miles	30 km 19 miles	35 km 22 miles
	Unprotected individuals could receive in excess of the thermal radiation dose required for third degree burns, out to a distance of:	1.9 km 1.2 miles	3.9 km 2.4 miles	7.8 km 4.8 miles
Ionizing Radiation	Unprotected individuals could receive in excess of the prompt ionization radiation dose required for 50% lethality (within weeks), out to a distance of:	1.6 km 0.98 miles	2.0 km 1.24 miles	2.5 km 1.58 miles
	Unprotected individuals remaining in the contamination zone for the first hour following the nuclear explosion could receive in excess of the fallout dose required for 50% lethality (within weeks), out to a distance of about:	9 km 6 miles	13 km 8 miles	15 km 9 miles
	The idealized maximum width of the fallout footprint is about:	0.47 km 0.29 miles	0.78 km 0.49 miles	6.5 km 4.1 miles
	For individuals remaining in the contamination for the first 24 hours, the downwind extent of the 50% lethality contour increases to approximately:	20 km 12 miles	33 km 21 miles	55 km 34 miles
	The 50% lethality contour width increases to about:	1.2 km 0.80 miles	3.1 km 1.9 miles	8.1 km 5.0 miles
Electromagnetic Pulse (EMP)	The EMP range (is the outer extent that any EMP effects are expected to occur) for the detonation is approximately:	5 km 3 miles	6 km 4 miles	7 km 4 miles

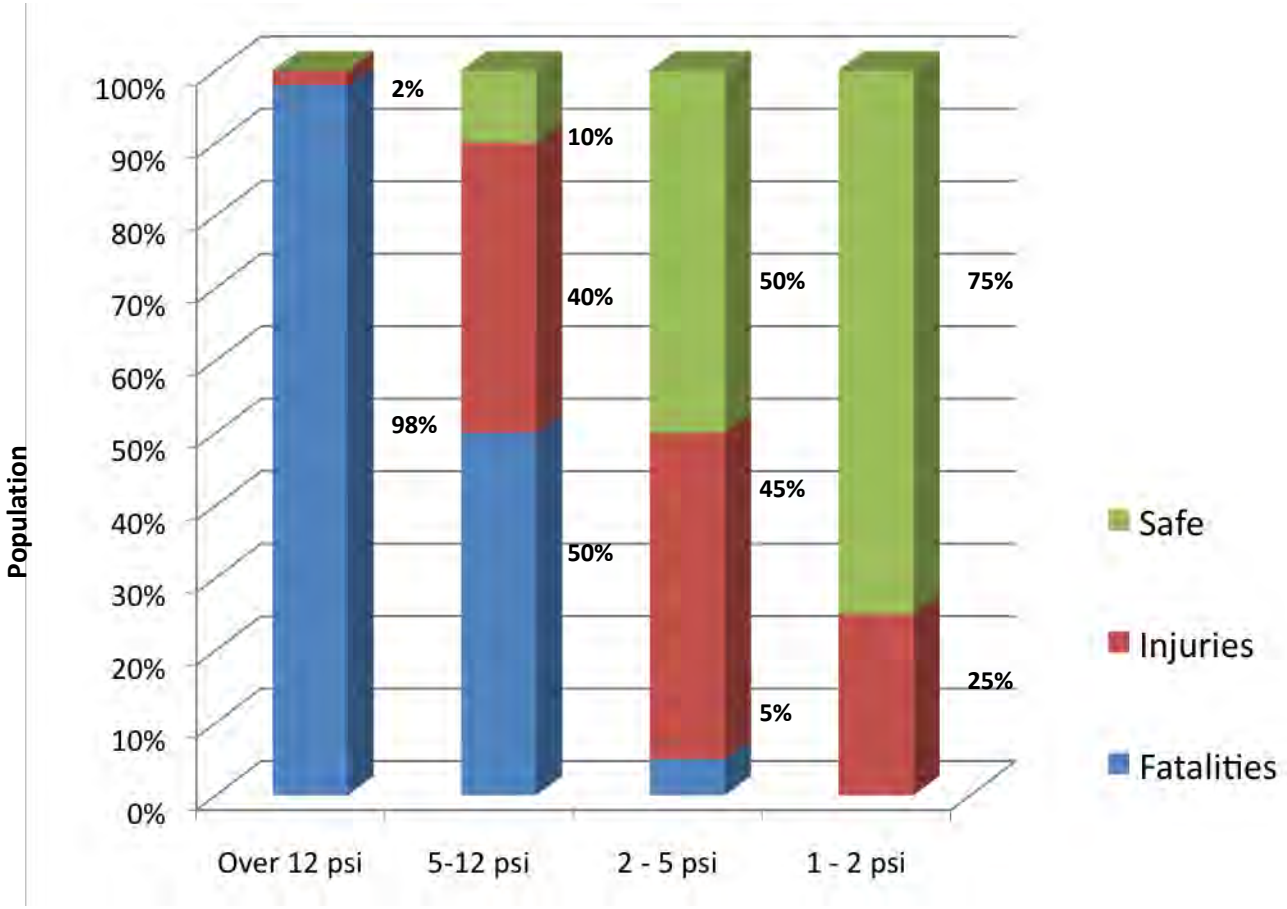
• Nuclear weapons of the order of 100 KT, 500 KT and 1,000 KT can obviously cause more casualties than the Hiroshima Nuclear Bomb (12.5 KT). In order to calculate these casualties, the fatalities and injuries at Hiroshima were extrapolated to fatalities and injury rates caused by Nuclear Weapons of different yields.

• Blast kills people by indirect means rather than by direct overpressure. While a human body can withstand up to 30psi of overpressure, the winds associated with as little as 2 to 3 psi could be expected to blow people out of typical modern office buildings.

• Most blast deaths come about as a result from occupied buildings collapsing, from people being blown into objects or smaller objects being blown onto or into people.

• In order to estimate the number of fatal and injury rates from any given explosion, assumptions have to made about the proportion of people who will be killed or injured at any given over-pressure as shown in the next slide.

Vulnerability of Population in Various Overpressure Zones



(Source: The Effects of Nuclear War. May 1979, Congress of the United States. Office of Technology Assessment)

Radiation Exposure Symptoms

Expected health effects for an adult assuming the cumulative total radiation exposure was all received within a week's time. for children, the effects can be expected at half those dose levels.

Total Exposure (rems)	Onset and Duration of Initial Symptoms and Disposition
30 – 70	From 6-12 hours: none to slight incidence of transient headache and nausea vomiting in up to 5 percent of personnel in upper part of dose range. Mild lymphocyte depression within 24 hours. Full recovery expected. (Fetus damage possible from 50R and above.)
70 – 150	From 2-20 hours: transient mild nausea and vomiting in 5 to 30 percent of personnel. Potential for delayed traumatic and surgical wound healing, minimal clinical effect. Moderate drop in lymphocyte, platelet, and granulocyte counts. Increased susceptibility to opportunistic pathogens. Full recovery expected.
150 – 300	From 2 hours to three days: transient to moderate nausea and vomiting in 20 to 70 percent; mild to moderate fatigability and weakness in 25 to 60 percent of personnel. At 3 to 5 weeks: medical care required for 10 to 50%. At high end of range, death may occur to maximum 10%. Anticipated medical problems include infection, bleeding, and fever. Wounding or burns will geometrically increase morbidity and mortality.
300 – 530	From 2 hours to three days: transient to moderate nausea and vomiting in 50 to 90 percent; mild to moderate fatigability in 50 to 90 percent of personnel. At 2 to 5 weeks: medical care required for 10 to 80%. At low end of range, less than 10% deaths; at high end, death may occur for more than 50%. Anticipated medical problems include frequent diarrhea stools, anorexia, increased fluid loss, ulceration. Increased infection susceptibility during immune-compromised time-frame. Moderate to severe loss of lymphocytes. Hair loss after 14 days.
530 – 830	From 2 hours to two days: moderate to severe nausea and vomiting in 80 to 100 percent of personnel; From 2 hours to six weeks: moderate to severe fatigability and weakness in 90 to 100 percent of personnel. At 10 days to 5 weeks: medical care required for 50 to 100%. At low end of range, death may occur for more than 50% at six weeks. At high end, death may occur for 99% of personnel. Anticipated medical problems include developing pathogenic and opportunistic infections, bleeding, fever, loss of appetite, GI ulcerations, bloody diarrhea, severe fluid and electrolyte shifts, capillary leak, hypotension. Combined with any significant physical trauma, survival rates will approach zero.
830 Plus	From 30 minutes to 2 days: severe nausea, vomiting, fatigability, weakness, dizziness, and disorientation; moderate to severe fluid imbalance and headache. Bone marrow total depletion within days. CNS symptoms are predominant at higher radiation levels. Few, if any, survivors even with aggressive and immediate medical attention.

(Source: MSA Data Sheet. Radiation detection Overview, alpha, beta and gamma particles. 07-2095WhitePaperRadiation.pdf)

Low Yield Blast Effects
0.1 KT Surface Burst

Range (meters)	Peak Overpressure	Peak Wind Velocity (meter/sec)	Typical Blast Effects
80	20 psi	210	Reinforced concrete structures are leveled.
115	10 psi	130	Most factories and commercial buildings are collapsed. Small wood-frame and brick residences destroyed and distributed as debris.
170	5 psi	71	Lightly constructed commercial buildings and typical residences are destroyed, heavier construction is severely damaged.
240	3 psi	42	Walls of typical steel-frame buildings are blown away; severe damage to residences. Winds sufficient to kill people in the open.
550	1 psi	16	Damage to structures, people endangered by flying glass and debris.

Source: The Effects of Nuclear War. May 1979, Congress of the United States. Office of Technology Assessment

0.1 Kiloton Nuclear Explosion

- **Fireball:**
  - **The 0.1 KT nuclear explosion produces a fireball of incandescent gas and vapor.**
  - **Initially, the fireball is many times more brilliant than the sun at noon, but quickly decreases In brightness and continues to expand.**
  - **In about 1 second, the fireball will have reached its maximum diameter of about 70 meters.**
  - **After 1 minute, the fireball will have cooled sufficiently so that it no longer glows.**

- **Blast:**
  - **Blast casualties may occur due to the direct action of the pressure wave. The destructiveness of the blast depends on its peak overpressure and duration of the positive pressure wave (or Impulse).**

- **Thermal Radiation:**
  - **Burn casualties may result from the absorption of thermal radiation energy by the skin, heating or ignition of clothing, and fires started by the thermal pulse or as side effects of the air blast or the ground shock.**
  - **Exposed eyes are at risk of permanent retinal burns and flash blindness out to relatively large distances (especially at night when the diameter of the pupil is maximum).**
  - **Under daytime conditions, the 0.1 KT explosion could produce temporarily flash blindness from scattered light out to a distance of distance of 4km (2.5 miles).**
  - **Individuals who directly view the initial fireball could experience retinal burns to a distance of 9.5 km (about 5.9 miles).**
  - **Unprotected individuals could receive in excess of the thermal radiation dose required for third degree burns, out to a distance of 0.16 km (0.1 miles).**

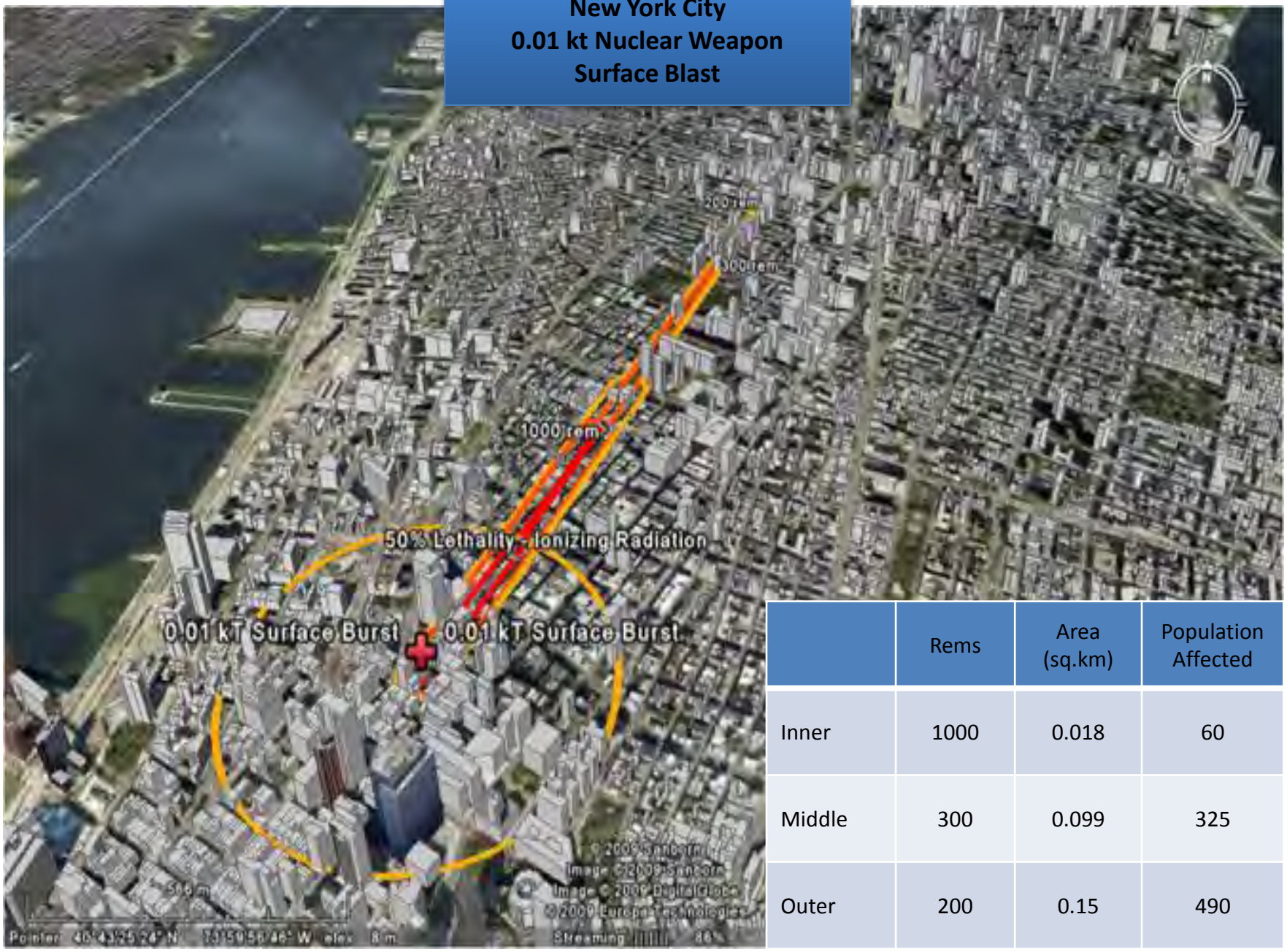
(Reference: Lawrence Livermore National Laboratory. HotSpot version 2.07 Software. Steven G. Homann March 1, 2009)

- **Ionizing Radiation:**
  - **Radiation casualties may be caused by prompt nuclear radiation or by radioactive fallout.**
  - **Prompt ionizing radiation consists of X-rays, Gamma rays, and neutrons produced in the first minute following the nuclear explosion.**
  - **Unprotected individuals could receive in excess of the prompt ionization radiation dose required for 50% lethality (within weeks), out to a distance of 0.7 km (0.44 miles).**
  - **The delayed ionizing radiation is produced by fission products and neutron-induced radio nuclides in surrounding materials (soil, air, structures, nuclear device debris).**
  - **These radioactive products will be dispersed downwind with the fireball/debris cloud.**
  - **As the cloud travels downwind, the radioactive material that has fallen and settled on the ground creates a footprint of deposited material (fallout).**
  - **The exposure to the fallout is the dominant source of radiation exposure for locations beyond the prompt effects of the nuclear detonation.**
  - **The dose received depends upon the time an individual remains in the contaminated area. Unprotected individuals remaining in the contamination zone for the first hour following the nuclear explosion could receive in excess of the fallout dose required for 50% lethality (within weeks), out to a distance of about 2 km (1 mile).**
  - **The idealized maximum width of the fallout footprint is about 0.04 km (0.025 miles).**
  - **For individuals remaining in the contamination for the first 24 hours, the downwind extent of the 50% lethality contour increases to approximately 3 km (2 miles).**
  - **The 50% lethality contour width increases to about 0.075 km (0.046 miles).**

- **Electromagnetic Pulse (EMP):**
  - **The EMP range for the 0.1 KT detonation is approximately 2 km (approximately 1 mile). This range is the outer extent that any EMP effects are expected to occur.**
  - **Not all electronic equipment within the EMP-effects circle will fail. The amount of failure will increase the closer to ground zero the equipment is located, the larger the equipment's effective receptor antenna, and the equipment's sensitivity to EMP effects.**
  - **The effects of EMP occur at the instant of the nuclear detonation and ends within a few seconds. Any equipment that will be damaged by EMP will be damaged within those seconds.**
  - **Electronic equipment entering the area after the detonation will function normally as long as they do not rely on previously damaged equipment, e.g. repeaters, power supplies, etc.**

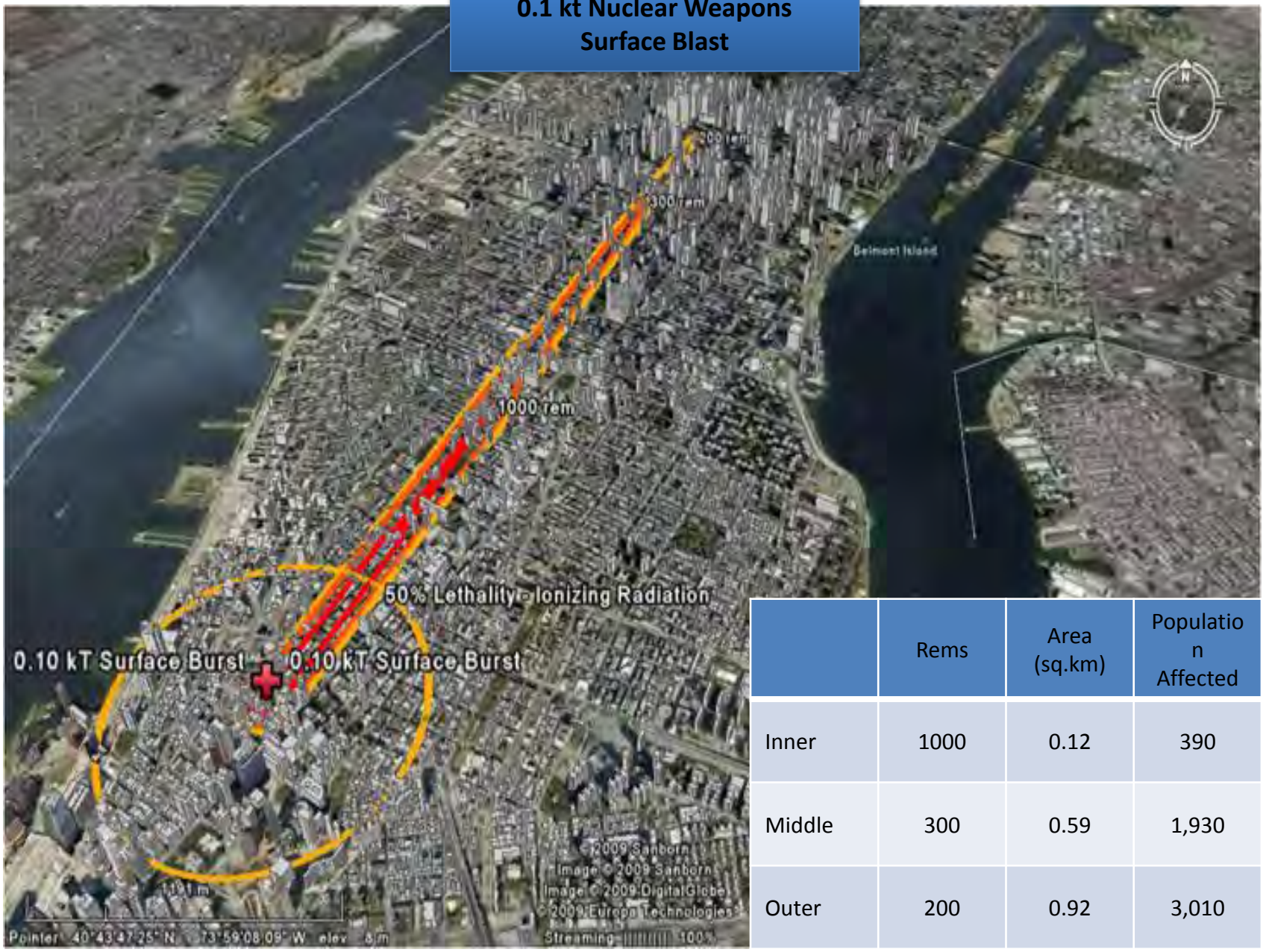
(Reference: Lawrence Livermore National Laboratory. HotSpot version 2.07 Software. Steven G. Homann March 1, 2009)

New York City
0.01 kt Nuclear Weapon
Surface Blast



	Rems	Area (sq.km)	Population Affected
Inner	1000	0.018	60
Middle	300	0.099	325
Outer	200	0.15	490

0.1 kt Nuclear Weapons Surface Blast



	Rems	Area (sq.km)	Population Affected
Inner	1000	0.12	390
Middle	300	0.59	1,930
Outer	200	0.92	3,010