

Facing Warfare In The Third Millennium

Growing potential threats from developing nations and a declining investment in US military forces have led to a situation where the US and allies are vulnerable to hostile actions.

military solutions continue to grow more advanced in the third millennium. Radical changes within this country and the ever-changing balance of world political alliances have combined to create an environment where modern military solutions must be agile and flexible. However, by examining the past, it may be possible to anticipate the military needs to come.

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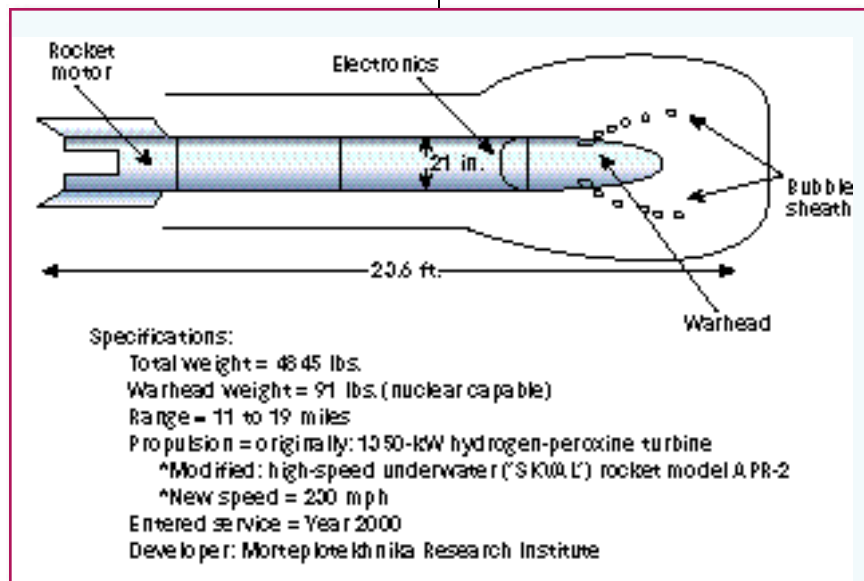
Political environments change constantly. With the "fall" of the Soviet Union, one great threat to this country has been "minimized." Still, another threat is in the making. One of the key changes in the world's political envi-

ronment over the last several years is China's role on world peace. A panel of international experts recently pointed out the potential for danger from the Chinese political situation: "...eight years [1992-2000] of strategic obtuseness and a policy of appeasement has emboldened China to such a significant degree that the next few years could well prove to be an extreme-

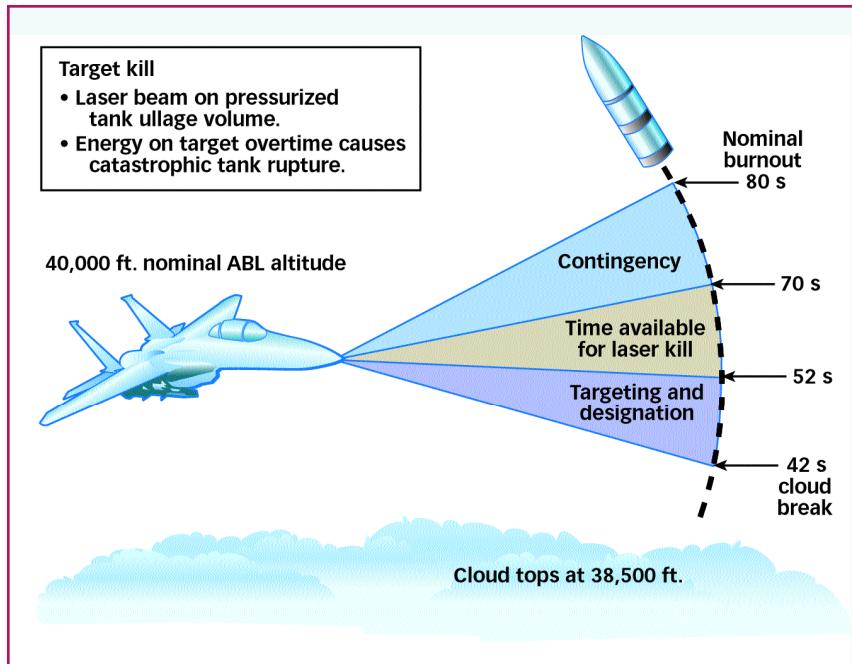
FRED LEVIEN

President

The Levien Group, 14621 Charter Oak, Prunedale, CA 93907; (831) 633-5124, FAX:(831) 633-5181, e-mail: flevien@redshift.com.



1. The Russian Skval submarine torpedo can achieve an underwater speed of 230 mph.



2. The Air Borne Laser (ABL) weapon system has been developed by Boeing, TRW, and Lockheed Martin under contract to the US Air Force.

ly dangerous period in US/China relations.”¹ In addition, the panel found “a China much more dangerous now than it ever was when he [former President Bill Clinton] arrived in 1993.”¹

The last decade was one where international relationships have slipped but, at the same time, the US military has declined. The decade witnessed a severe drop in US troop morale and, while a simple examination of numbers does not tell a full story, it does reveal the extent

of US military erosion resulting from the financial fallout of the previous presidential administration’s budgets (Tables 1 to 3). Even during a decade of financial bounty, the Clinton Administration chose to apportion the smallest percentage of US Gross Domestic Product to the defense of the nation since prior to World War II (Table 4). The net result on the US military forces was pervasive. The US Air Force decreased from 36 to 10 fighter wings. The Navy dropped from

Table 1: A shrinking US Navy

	1990	1999	CHANGE
Budget (in constant 2000 dollars)	\$146 billion	\$84 billion	-42 percent
Personnel (total)	1,322,500	882,200	-33 percent
Navy	582,900	372,300	
US Marine Corp active	196,700	172,200	
Navy reserve	149,900	90,800	
US Marine Corp reserve	44,500	40,000	
Civilian	349,000	206,900	
Strategic submarines (ballistic missile)	34	18	-47 percent
Tactical submarines (attack)	91	57	-37 percent
Aircraft carriers	14	12	-14 percent
Major surface combatants	206	116	-44 percent
Navy fighter and attack aircraft	759	468	-38 percent
US Marine Corp fighter and attack aircraft	450	328	-27 percent

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approximately 600 ships to slightly more than 300. Approximately three-quarters of a million troops were dropped from the active US forces. US Army divisions alone have decreased from 18 to 10, making the US Army now only the seventh largest in the world.

Ross Munro writes that, "The Clinton legacy in Asia has been to weaken America's standing and to make China a greater danger to its neighbors and the US than it otherwise would have been."¹ His conclusion is that the danger from China as a military threat is not just potential and long term in nature. It is "here and now, real and present...constituting one of the most serious indictments of Clinton policy."¹

China is not alone as a potential threat. Growing world powers (and

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not to discount Russia) have become unfriendly to the West, and to the US in particular. These political changes occurred at a time when the US armed forces were becoming less capable with each succeeding Department of Defense (DoD) budget. This is the legacy that the recent eight years of leadership have passed on to the current administration in particular and to the country at large.

Fortunately, there is a sense under the current administration that much greater attention will be paid to the US military. Unfortunately, reversing this decline in military strength and the equally troublesome underlying damage to troop morale will not come easily or inexpensively.

These next three points need to be emphasized:

1. There is an absolute necessity for the US to develop strategic “leap-ahead” advances in military technology.

2. It is necessary to understand the possibility of the military dangers that this nation faces.

3. It is necessary to take all prudent steps necessary to counter these dangers.

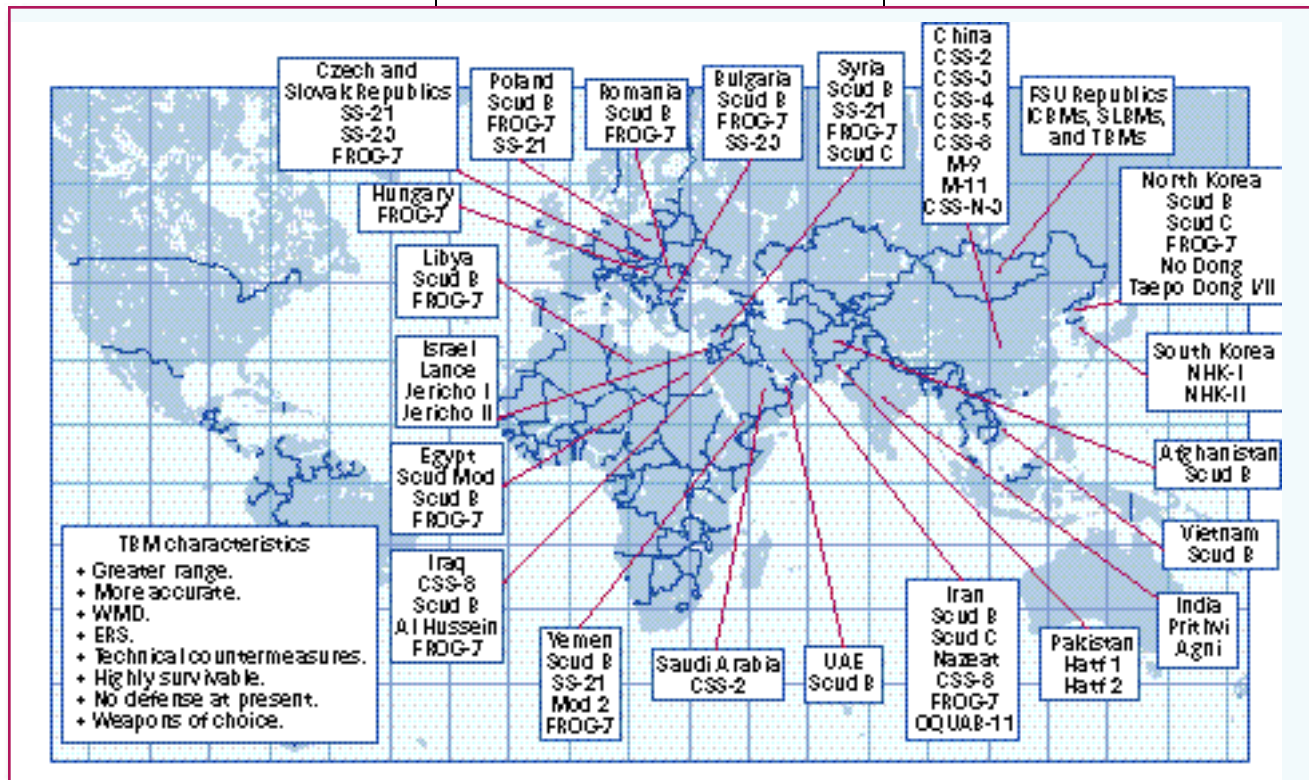
For those who doubt the need for a strong US military, let the events of August 12, 2000 serve as a reminder. That story began with the Russian Naval submarine, Kursk, in the Barents Sea. The ship was engaged in a war game designed to determine how best to use a newly developed Russian undersea weapon specifically designed to sink US submarines and aircraft carriers. The exercise did not go according to plan, however, and signs of trouble were detected by two US Naval submarines in nearby patrol. The USS Toledo and the USS Memphis, which were close by under the sea observing the exercise using MASINT listening gear, heard a pair of explosions that were detected just two minutes apart. Then there was an ominous silence, which would inevitably signal the death of

	1990	2000
Army		
Active divisions	18	10
Reserve brigades	57	42
Navy		
Aircraft carriers	15	11
Air wings	13	10
Attack submarines	91	55
Surface combatants	206	116
Air Force		
Active fighter wings	24	12
Reserve fighter wings	12	7
Reserve air-defense squadrons	14	4
Bombers (total)	277	190
Marine Corp		
Expeditionary forces	3	3

the 118 men aboard the mangled submarine. They had been attempting to demonstrate a new weapon with “leap-ahead” technology for a potential buyer—The People’s Republic of China.

Included in the oversized crew (the standard crew size for this submarine

is 108) it is believed there had been a Chinese Naval officer observing the (hoped for) performance of this new torpedo. As an unclassified guess, it could be pieced together that the new torpedo, known as “Skval” in Russian (“Squall” in English), failed, allowing



3. The TBM proliferation worldwide includes more accurate weapons with increased range.

fuel to leak into the submarine. The fuel ignited a fire in the forward torpedo room, which caused the torpedo to explode. This led to a more extensive fire, which a few minutes later detonated all the other ordnance aboard the Kursk located in the forward torpedo room.

These explosions ultimately resulted in the sinking of the vessel.

This scenario was essentially confirmed by a note found on the body of a Kursk sailor recovered from the wreckage. Not surprisingly, Russian naval officers, despite all of the evidence to

the contrary, have continued to insist that a collision with a foreign submarine was the first in the series of events that doomed the Kursk.

In the details of this new weapon (Fig. 1), there is one number that dominates—the underwater speed. The torpedo, which was driven by a jet-rock- et engine, is reported to have had an estimated speed of 230 mph. This tremendous speed is made possible by generating an envelope of bubbles forward of the torpedo nose, thereby reducing the frictional drag through the water. This is five times the underwater speed of any known torpedo currently in any Navy's inventory. It is believed that a more advanced version of the Skval torpedo is under development, with an underwater speed of 300 mph. The

Despite the harsh economic situation, Russia has employed some of the best engineers and scientists, and is still capable of developing "leap-ahead" technologies.

impact of this potent nuclear-capable weapon was best described by a Jane's Defense Week analyst who said that "Skval is a weapon that has the prospects of destroying entire Naval battle groups at once. This could abruptly blow a hole in US Carrier-based air superiority. The consequences are grave. This new torpedo has the potential to tilt the balance of power."³

The potential customer for this technology is from the same nation that recently took out a US Navy EP-3E aircraft over international waters. As the crew tried to keep it from crashing, China arrogantly blamed the US for intruding into Chinese air space. China has demanded and is still demanding an apology for their aggressive, illegal, and hostile actions. This is a nation that held the US in high regard as a poten-

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tial friend only eight years ago.

The Kursk incident highlights how two major communist nations have allied together to form a potential threat. The technologically advanced Russians are in need of a "customer," while the Chinese have shown with the EP-3E inci-

dent that they are willing to steal whatever technology they cannot buy. Despite the harsh economic situation, Russia has employed some of the world's best engineers and scientists, and is still capable of developing "leap-ahead" technologies. And in its decline, Russian has shown that it will sell anything to anyone at any time.

Table 3: A shrinking Air Force

	1990	1999	CHANGE
Budget (in constant 2000 dollars)	\$116 billion	\$78 billion	-33 percent
Personnel (total)	992,300	715,000	-28 percent
Active	539,300	365,900	
Reserve	197,600	181,200	
Civilian	255,400	168,700	
Heavy bombers	244	143	-41 percent
Fighter and attack aircraft (total)	2610	1455	-44 percent
Active	1743	906	
Reserve	867	549	
Airlift aircraft (total)	851	756	-9 percent
Intertheater	401	331	
Intratheater	450	425	

The existence of the Skval torpedo is a sign that the US does not own all of the most advanced technologies. With the growing competition for weapons technology, the rising importance of Asia becomes obvious. The Skval represents "asymmetric warfare." It is essentially a \$200,000 torpedo that can obliterate a US battle group that costs multiple

billions of dollars, and causes fatalities to more than 6000 US service men and women. The Kursk story effectively supports a report prepared by Andy Marshall for President Bush. The report, entitled *A Strategy for a Long Peace* and subtitled *Quick Look*, examines what lies ahead for the US military. Marshall, who has served as a mentor to the author during the development of his Information Warfare (IW) course for the Naval Postgraduate School, has worked at the Pentagon for more than 50 years. He was chosen for the study due to his highly regarded technical expertise and legendary skills in big-

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picture strategic thinking.

In reviewing the 25-page first draft of the report, it is possible to target key areas that are deemed to be crucial to understanding and planning for the future of the US Military. The report notes the trends in political powers, keying on rising competition in Asia. This translates into the high-priority need for defending the US homeland with a National Missile Defense (NMD) system. The report also highlights the increased risk incurred by forward basing of US military forces on land and naval forces close offshore. The report reviews primary tools, including IW, and the impact on the US Armed Services. The report calls for support of the Naval submarine service and the development of a new breed of small "street fighter"

For Those

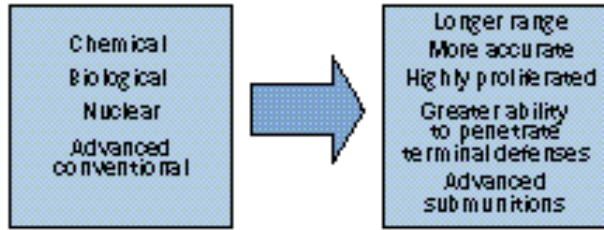
who would dispute the need for an NMD system, the pages of US newspapers have provided clues as far back as 1997 as to the need.

vessels, while de-emphasizing Navy aircraft carriers, even suggesting a cut in numbers. The report urges US Air Force dominance in the electromagnetic (EM) spectrum, suggesting that this should be the primary mission of the B-52 fleet and the B-1 bombers. The report opposes the call for the newly proposed JSF fighter A/C, with unmanned air-combat vehicles suggested as a replacement for US Air Force support missions. In the realm of promising warfare technologies, the report makes note of advanced radar satellites, undersea power projection, and new IW technologies such as directed-energy weapons and computer-network warfare.

One more potential weapon system is covered by President Bush's plans

4. The threat of TBM capabilities worldwide extends to a variety of payloads, including nuclear, biological, and chemical weapons.

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for an NMD system for protecting the US and its allies. The two main objections to the system are that 1. it is not needed and 2. it will not work. One of those objecting to the NMD system is French Assembly President Paul Quiles, who denounced NMD as a “military program unworthy of the name.” He adds that “this system will never work...the technology is not there.”⁴

The growth of potential threats worldwide would seem to dismiss the first objection. The technological history of the US would certainly dispel the second. Those who doubt that the system is possible should be reminded of all those who doubted that the US could land a man on the moon.

The US has already come close to the technological reality of this anti-missile system. By applying a deliberate, carefully planned, and superbly managed effort, the US Air Force has maintained an on-time program that is within budget and meets all key technical milestones. With less than 40 s to acquire, track, and kill an Intercontinental Ballistic Missile (ICBM) target in the boost phase (Fig. 2), the anti-ballistic-laser (ABL) margin for error is extremely small. Yet, to date, all tests point to a successful program completion in a relatively short span of time. Fullup system design has resulted in the first flyable airframe that is being



5. The numbers next to the circles denote the explosive yield in megatons, and the circle itself covers a metropolitan area of New York City.

assembled now, with a deployable system possible within three years.

For those who would dispute the need for an NMD system, the pages of US newspapers have provided clues as far back as 1997 as to the need. One newspaper title in particular, cautioned “Ballistic Missiles within easy reach for many Nations.”⁵ A recent Air Force overview of missile capability presently deployed around the world provides an accurate and sobering view of more than 10,000 ballistic missiles (TBMs) currently in place. The status shown for these missiles is by type of missile and the country in possession of it (Fig.

3). Not all of the nations listed are friendly toward the US and the payloads that these countries are prepared to deliver are deadly and constantly being improved (Fig. 4).

A graphic depiction is presented here of the potential damage from a missile strike (Fig. 5).⁶ The effects of detonating a single nuclear weapon over the southernmost tip of Manhattan island in New York City, a spot known as Battery Park, are portrayed. Two choices are provided to calculate the effects of a single armed nuclear-missile attack on New York City: a surface detonation and an air burst (as might be expected from an incoming ICBM). For example, in using a one-megaton value for an air burst caused by a present-day multiple independently targeted re-

entry vehicle (MIRV), most of the population within the depicted circle would be killed by thermal radiant exposure. A single half-megaton ground blast would result in approximately three to four million fatalities.

Readers should be aware of the real and present dangers in our unsettled world. They are urged to apply their talents to the goal of developing advanced “leap-ahead” concepts and technology in support of next-generation military electronics. This can lead to better ways of providing the tools that the US military desperately needs to ensure our country’s survival.

Editor’s Note: This article is an excerpt of a Keynote Address presented by the author at the First Military Electronics Show in Baltimore, MD, April 24, 2001. **MRF**

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Table 4: Federal spending by administration (percent of gross domestic product)

PRESIDENT (FISCAL YEARS)	SOCIAL WELFARE	NET INTEREST	DEFENSE	OTHER	TOTAL
Nixon (1970–1975)	9.4	1.4	6.7	2.6	20.1
Ford (1976–1977)	11.9	1.6	5.2	3.0	21.7
Carter (1978–1981)	11.6	1.9	5.0	3.3	21.8
Reagan (1982–1985)	12.2	2.9	6.2	2.5	23.8
Reagan (1986–1989)	11.2	3.2	6.2	2.0	22.6
Bush (1990–1993)	12.6	3.4	5.1	2.3	23.4
Clinton (1994–1997)	14.0	3.4	2.8	1.6	22.8

Source: Congressional Research Service.