STRATEGY RESEARCH PROJECT

THE MUNITIONS INDUSTRIAL BASE: PAST, PRESENT AND FUTURE

BY

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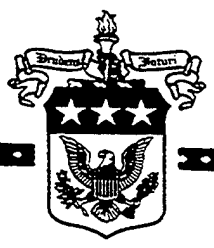

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ABSTRACT

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TITLE: The Munitions Industrial Base: Past, Present and Future

FORMAT: Strategy Research Project

DATE: 7 April 1997 PAGES: 32 CLASSIFICATION: Unclassified

Downsizing of U.S. Military forces since the end of the Cold War has led to an unparalleled reduction of the Defense Industrial Base. Some critics now claim the military lacks an adequate supply of modern preferred munitions to execute the new National Security Strategy of "Engagement and Enlargement". They go on to question the U.S. military's ability to execute the National Military Strategy, which requires our forces to execute and win two near simultaneous major regional contingencies. Even so, we continue to restructure and reduce the size of the force. This strategy requires the continued capability to deter war and respond to crisis. We also need the capability to replenish war reserves and reconstitute forces after military intervention in response to a new major regional threat. The success of the Gulf War may have erroneously suggested a capability to fight a protracted war or to readily reconstitute forces. This strategy research project will examine the munitions industrial base of the past, assess present capabilities, and make recommendations to ensure that there is an adequate base for our forces well into the 21st century.

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INTRODUCTION

Since the fall of the Berlin Wall in 1989, the demise of Soviet Union, and the culmination of hostilities in the Persian Gulf in 1991, the United States has acknowledged the emergence of post-Cold War global environment that requires a dramatically altered national strategy. It has significantly reduced its military forces from a large forward-deployed force to a much smaller CONUS-based force. The defense budget has been in steady decline since end of the Reagan/Bush build-up in the late 80's and the early 90's. News reports, messages from the Secretary of Defense and the Service Chiefs, and recent guest lecturers at the Army War College all indicate the defense budget will get even smaller in the near term. This changing world environment has led to significant planned reductions in the defense budget and force structure. Since the beginning of the drawdown, the United States has reduced forward basing of military forces in favor of a more CONUS-based power projection force.

When the Clinton administration assumed office, the United States and its allies faced a radically transformed security environment. Whereas for decades U.S. strategy was designed to contain communist expansion while preventing nuclear war, the U.S. now faces a complex array of new and old security challenges. As we approach the 21st century, we are developing a new strategy. Thus, the national security strategy of "Engagement and Enlargement" emerged, a strategy to advance our interests at home and abroad. Speaking of the complementary National Military Strategy, the Chairman of the Joint Chiefs of Staff, General John Shalikashvili, has declared that "the fundamental purpose of the Armed Forces must remain to fight and win our Nation's wars whenever and wherever called upon. With worldwide interests and challenges, the United States

must maintain its capability to deal with more than one major crisis at a time. For this reason, our Armed Forces must maintain the capability to fight and win two nearly simultaneous regional contingencies, even as we continue to restructure and reduce the size of the force." [1] The strategy requires U.S. capability to project forces to one contingency while enhancing the readiness of other assets to handle a challenge elsewhere. Some high-leverage capabilities could be used in one major regional contingency and then reallocated and redeployed to another as conditions permit. Other capabilities essential to fighting and winning the first conflict will remain in the theater where they have been initially committed. This concept was nearly tested in late summer 1994 by the real prospect of near simultaneous hostilities with Iraq and North Korea.

BACKGROUND

The munitions industry, like the other sectors of the defense industry is steadily shrinking. The munitions industrial base is unique in that it develops and manufactures products that are used exclusively for military purposes. With the possible exception of the basic technology in pyrotechnic illumination mortar rounds, the low end of the demolition charge scale, the least invasive 9mm handgun rounds, and some supporting technologies, none of the capabilities of the munitions industrial base have commercial relevance. The reliable creation of precision warheads from such materials as depleted uranium and tantalum is done in no other industrial base sector except in the munitions industrial base. The development and manufacture of metal parts strong enough to withstand ten plus years of storage, launch shock and high-spin environments, and then

reliably break up into precise fragments under explosive force is done in no other industrial base sector. It is uniquely comprised of public and private facilities that produce a vast array of end items, including small arms ammunition, cannon and artillery shells, bombs, grenades, rockets, mines, propellant charges, precision guided munitions, pryrotechnic devices and explosives.

MANAGEMENT

In 1977, the Army was appointed (by authority of DODI 4160.65) as the Single Manager for Conventional Ammunition (SMCA). In this capacity it assumed responsibility for the storage, management, and disposal of the wholesale inventories of ammunition and explosives for all the services. Additionally, the manufacture of most of these munitions products is supervised by the Army's Industrial Operations Command (IOC), which is responsible for meeting conventional ammunition requirements of all the military services (except for a small portion of naval munitions). The IOC manages 246 munitions end items from its headquarters at Rock Island, Illinois. Impressive as the number is, it is less than half of the 590 end items the Army's munitions experts managed in the early 1990's, before drastic consolidation efforts were undertaken in response to shrinking budgets. [2] The items managed include many obsolete and items excess to the services needs that have been identified for demilitarization.

The total munitions industrial base is made up of three types of production facilities: government-owned, government operated (GOGO); government-owned, contractor operated (GOCO); and contractor-owned, contractor-operated (COCO).

Government-owned facilities (GOGO and GOCO) generally produce propellants and explosives, they perform the final loading, assembling, and packaging of the munitions ends items. All government-owned production facilities are managed by the Industrial Operations Command. Contractor-owned facilities (COCO) usually produce non-explosive components such as metal parts, shells, and fuses. Approximately 70 percent of the ammunition procurement budgets are spent in the COCO base. [3]

THE ELUSIVE STOCKPILE

During the Cold War the services accumulated a huge stockpile of munitions that is currently estimated at 3.4 million tons. An uninformed observer could easily surmise that this amount of ammunition would last for centuries to come. Its not that simple. The munitions stockpile has many components. It consists of munitions belonging to each of the military services. Within the stockpile the Army owns approximately 51% (1.4 million tons) of the assets; the Air Force owns approximately 18% (467.6 thousand tons) of the assets; the Navy owns approximately 13% (360.7 thousands tons) of the assets; the Marine Corps owns approximately 6% (183 thousand tons) of the assets; and the remaining approximately 14% (395.4 thousand tons) of the assets are in the demil account for all the services. [4]

Assessment of the existing stockpile is critical in the analysis of ammunition requirements and retention of the munitions industrial base. The Army's conventional ammunition stockpile is being drawn down in response to recently reduced operational requirements through training, and elimination of older, obsolete munitions. Present

policies call for the services to draw upon the stockpile to prosecute two nearly simultaneous major regional contingencies at the same time. The 1996 Industrial College of the Armed Forces (ICAF) study "In Touch With Industry" concluded that the huge U.S. munitions stockpile contains more than enough ammunition to fight two MRCs, but it consists largely of older, less capable ammunition that may not be effective against a future threat. Furthermore, the stockpile is short in the area of "preferred" munitions. [5]

As Single Manager for Conventional Ammunition, the Army has oversight of wholesale assets of all services, along with retail assets for the Army. While the stratification of other services' assets is beyond the scope of the SMCA mission, other services have known long and short supply items. The services have identified net shortfalls for integration into the industrial base assessment that is performed prior to production of ammunition items. The following categories have been used in the stratification process:

- ***Preferred rounds*** are current generation, state-of-the-art rounds of ammunition which field commanders prefer to go to war with. Examples: the M829A1 Kinetic energy (KE) tank round, rather than the older less capable M829 KE round.

- ***Discretionary rounds*** are previous generation rounds which will be used if field commanders run out of the preferred rounds. Those substitutes for the primary warfighting munitions employ older technology and are significantly less capable than the modern preferred munitions. Example: the preferred USAF cluster bomb is the CBU-87 CEM; the discretionary round is the MK-20 Rockeye. The CBU 87 can be dropped from any altitude at any speed, whereas the Rockeye cannot be effectively employed below 500 ft, at speeds ranging from 225 to 500 knots. An aircraft flying at 500 ft and 400 knots is more vulnerable to enemy air defense weapons than one flying at 200 ft and 600 knots.

- ***Training rounds*** are rounds designed specifically for training. They are used where preferred rounds are too volatile, too expensive, or contain environmentally sensitive components (such as depleted uranium penetrators), or which have ranges in excess of those safe for training sites.

- ***Excess rounds*** are those that are no longer required for use by an individual services and have been screened for utilization by other military services or by security assistance customers for foreign military sales. Once the rounds have not been accepted for any of these clients, they are disposed. [6]

A recent report released by the General Accounting Office in June 1996, "Defense Ammunition: Significant Problems Left unattended Will Get Worse", declared that the services have to do a better job of managing their ammunition needs. As of 30 September 1994, the total stockpile of usable and unusable ammunition was worth about $80 billion. GAO estimates that about $31 billion of this total stockpile of ammunition is excess. This excess ammunition includes about $22 billion worth of ammunition that is still usable. [7] This excess accrued primarily as a result of the demise of the Soviet Union and changing world conditions which have dramatically changed the threat to the United States. As a consequence, the services' ammunition requirements have been drastically reduced, creating more excess. For example, the Army's war reserve requirements were reduced by 74%. [8]

The SMCA faces problems in disposing of this growing inventory of excess ammunition. First, the single manager must continue to store the excess ammunition until the services identify ownership of the excess. The services have no real incentives to identify their excess ammo, in part, because the SMCA is responsible for it and pays

for its care; that is, SMCA stores it, maintains an inventory of it, keeps it secure, and disposes of it properly when it has been certified excess. Further, although Congress has recently provided more funds for ammunition disposal, the single manager cannot meet existing demands for disposal. As a result, the stockpile continues to grow.

DECLINE OF THE MUNITIONS INDUSTRIAL BASE

GOVERNMENT

In his October 1985 testimony during a hearing before the Senate Subcommittee on Preparedness of the Armed Services, (99th Congress), BG Guy Bowen, testifying as Deputy Executive Director for Conventional Ammunition, said the single manager is responsible for two arsenals and 28 ammunition plants, 16 active and 12 inactive. [9] In 1993, 28 government-owned facilities remained, of which 12 were active. Today, we have only six core government-owned production facilities in operation, with an additional four being retained for specified mission work.

COMMERCIAL

In 1978 there were 286 commercially-owned facilities; in 1993 the number of commercially-owned munitions industrial base facilities had dwindled to150 facilities. By 1994 that number had fallen to 88. Today, there are only 52 commercially-owned facilities. The total number of munitions production facilities has fallen from 318 to 71, a reduction of 78% in less than 20 years.

The ammunition sector of the defense industrial base employed over 90,000 people at its peak in 1988. The decline in ammunition budgets has had a particularly pronounced impact on workers in this industry, with an estimated drop in employment from 40,000 in 1991 to around 15,000 with the FY 94 budget level. This decline in the munitions industrial base has had an impact across the United States. Even prior to downsizing, only two states, Maine and Wyoming, had no production directly related to ammunition. [10] Many jobs in the munitions industrial base are non-convertible; that is, they are unique and have no application across other industries.

No other industry has the production safety requirements of the munitions industrial base, with exception of the rocket fuel industry. Workers deal with complex metallurgical materials that must withstand the physical stresses of high velocity and the environmental extremes of combat also demand unique labor skills. Explosive test specialists and explosive ordnance disposal experts are a breed apart. They can be trained only through a lengthy and demanding apprenticeship. Their skills must be rigorously and frequently exercised; otherwise they lose them. Much of the engineering required for munitions is also unique. Ballistics is a specialty not easily learned in the classroom, nor is it widely taught in the United States. The metallurgical requirements for munitions rival those of other exotic materials technologies. Modeling and designing explosive warheads require the most advanced programming and superb computer capabilities.

Many of the fabrication processes in the munitions industrial base are not used in any other industry. For example, exotic materials such as certain boron alloys and depleted uranium have virtually no other applications. Making combustible cartridge

cases, melting, pouring and pressing explosives all have no counter-part in commercial industry. Additionally, the process of mixing, blending, drying, and packaging the energetic materials (TNT, RDX, HMX) for use in munitions components are relevant to no other sector.

There are, however, other sectors of the industrial base that the munitions industry depends on. These sectors include heavy industry segments as fabricated metal products, steel, forging, resin, paper, and others. Other vital industries to the production of munitions are lumber, some types of castings, alloy steel, machine components, and copper and aluminum alloys. Since the military demand for such products has dramatically decreased, we are losing some of this industrial base. We are getting into a situation where we will depend increasingly on foreign providers of such products.

BUDGET

The United States ammunition budget has been in a steady and steep decline since 1986, with the exception of the Gulf War year, 1991. In the peak year 1985, DOD spent $5.6 billion in munitions procurement (in 1985 dollars). However, ammunition procurement has declined ever since. In 1992, the greater portion of the budget (62%) was spent in procuring ammunition products. The next large amount (27%) was spent on operations and maintenance costs while 11% was devoted to research, development, test and evaluation. [11] The total requested for fiscal year (FY) 1994 was $1.4 billion for all services, but much of that was fenced for things other than munitions production, including layaway of industrial facilities and demilitarization of the unserviceable

ammunition stockpile. The final ammunition budget in FY 1994 reached an all-time low of $501 million. FY 1995 and FY 1996 saw an increase to just over $1 billion through congressional add-ons to the Department of Defense (DOD) budget. The rate of decline in the ammunition procurement accounts has been more than twice that of the defense budget total since 1991. The current FY 1997 ammunition budget is at $1 billion.

The overall cuts in the DOD procurement dollars (reduced 75% since 1985) have hurt the munitions industry. An analysis of projected munitions funding from FY 1996 through FY 2001 indicates that available resources will trail requirements by more than $20 billion. The Chairman of the Joint Chiefs of Staff, requested Defense Secretary, William Perry, to increase arms procurement in fiscal year 1997. He warned of dire consequences if the decade-long plunge in defense procurement spending is not reversed. The Chairman said that $60 billion per year in procurement funding (including munitions) was required to adequately recapitalize. [12]

As an ammunition management officer by trade, I have been in the Army long enough to have witnessed the erosion of the munitions industrial base from its robust days in the early and mid 1980s to its present condition.

CURRENT TRENDS

COMMERCIAL

Current trends in the munitions industry have been similar to those of the other sectors of the defense industrial base. The initiatives to accommodate reduced defense spending and downsizing are to consolidate, to go out of business, or to leave the

ammunition industrial base completely. Secretary Perry, admitted that, "We expect defense companies to go out of business, and we will stand by and let that happen." [13] This was a wake-up call for industry. The Secretary's message was that free market forces will guide the industrial base. There are some benefits to defense industry consolidation, such as economies of scale, consolidation of savings, leveraged R&D spending, systems-of-systems expertise, improved program diversity, and enhanced cash flows. But with these benefits come some risks, such as execution breakage, employee turnover, loss of focus, and creeping bureaucracy. As the industry consolidates, effective management becomes increasingly critical. [14]

GOVERNMENT

As commercial industry has consolidated, so has the government consolidated its GOGO and GOCO munitions production facilities. The U.S. Army Armament, Munitions and Chemical Command's Ammunition Facility Strategy for the 21st century (AMMO-FAST-21, published in September 1992), initiated the consolidation effort for the government facilities. AMMO-FAST-21 directed consolidating and reshaping the ammunition industrial base to a more appropriate size in keeping with budget realities and current DOD mission. Restructuring requires GOGO/GOCOs maintain the capability for providing today's peacetime ammunition requirements and tomorrow's technologically improved ammunition needs. The new structure is designed to maintain the minimum essential industrial base necessary to satisfy projected demands and

preserve the critical capabilities, processes, and skills within government and commercial facilities for readiness, research and development, and replenishment purposes.

AMMO-FAST-21 seeks to provide a common focus and framework necessary for consistent management of the entire munitions industrial base (both government and commercial). It creates the framework for making decisions regarding workloading; investment; retention of manufacturing facilities; maintenance; excessing of equipment, buildings, and land; acquisition strategies and plans; and make-or-buy decisions, third party and facility contracting approvals. It also suggests an approach to decisions regarding facility/or equipment use, or involving lifecycle planning requirement. [15]

Within the government-owned portion of the munitions industrial base, the number of active ammunition plants has been reduced to six core GOCO facilities. AMMO-FAST-21 categorizes facilities as Group Technology centers (GTC) and Specified Mission Facilities (SMF). The GTCs and SMFs are workloaded to ensure that critical "core" capabilities exist to produce defense items in the munitions industrial base in accordance with the Defense Planning Guidance (DPG). The six core GOCO facilities have been designated as GTCs, based on their manufacturing expertise and flexibility to produce a variety or specific commodity family of ammunition items using similar industrial processes. GTCs and SMFs provide minimum direct work necessary to retain core skills, supplemented by third party work obtained by the operating contractor. Three GOGO facilities have been designated SMFs. SMFs have other missions at the installation, such as depot storage. Thus their basic infrastructure will probably remain active if the production mission is periodically interrupted. The remainder of the

government-owned munitions base is either in inactive status, modified caretaker status, designated as excess. The term "modified caretaker" refers to a relatively low cost, much reduced level of maintenance, so the production facilities are no longer required in support of annual procurement or replenishment demands but the land is retained for future use in the munitions base, if needed. It was described in the DPG as a hedge for reconstitution. [16] The current government portion of the munitions industrial base is depicted at fig 1.

ORGANIC BASE

ACTIVE	**INACTIVE**	**DEPOT/DEPOT ACTIVITY**	**EXCESS**
GTC	BADGER	ANNISTON	ALABAMA
HOLSTON	INDIANA	BLUE GRASS	CORNHUSKER
IOWA	KANSAS	LETTERKENNY	JOLIET
LAKE CITY	L ONGHORN	RED RIVER	NEWPORT(PRODUCTION)
LONE STAR	LOUISIANA	SAVANNA	PHOSPHATE
MILAN	MISSISSIPPI	SENECA	RAVENNA (PRODUCTION)
RADFORD	RIVERBANK	SIERRA	TWIN CITIES
	SCRANTON	TOOELE***	FT. WINGATE
	SUNFLOWER	HAWTHORNE	
SMF	VOLUNTEER		
CRANE*			***TRANSFERRED****
McALESTER*			HAYS
PINE BLUFF*			RMA
			ST. LOUIS

* ALSO HAVE DEPOT STORAGE MISSION
** THESE FACILITIES ARE NO LONGER ACCOUNTABLE TO THE IOC AND HAVE BEEN TRANSFERRED TO OTHER FEDERAL, STATE, OR LOCAL AGENCIES.
***IDENTIFIED IN BASE REALIGNMENT AND CLOSURE (BRAC) 1991/1993.

Fig 1

Restricted Specified Base

The use of a Restricted Specified Base (RSB) has been in existence since the robust days of the early 1980s when the ammunition command was pressed to meet its mobilization requirements. There was and continues to be a need for a specialized base

of planned producers in the munitions industrial base who possess specialized/unique skills, equipment, processes, or facilities who are qualified to produce certain ammunition items. This portion of the munitions industry is known as the Restricted Specified Base. Similar to the restriction of certain items for the GTCs and SMFs, there are restrictions of requirements within specific commodity families (small caliber, fuzes, mortars, etc.) of items above the core capabilities of the governments organic base that are designated to the commercial sector of the munitions industrial base.. The reservation of procurement actions to the RSB are justified under Federal Acquisition Regulation (FAR) 6.302 (3) (B) (1) (1). The full text of FAR part six that covers competition requirements and circumstances permitting other than full and open competition and parts germane to how the IOC qualifies for restricting competition to the RSB are in appendix 1. Current listing of RSB producers are at fig 2. Planned producers in the RSB sign no-cost production planning schedule contracts which contractually bind them to maintain production capacity for a negotiated length of time in order to replenish specified items in the event of a national emergency. [17]

Designation of the RSB producers was based on the need to retain critical skills, processes, and equipment in the commercial sector. Facility use contractors who are or have been the GOCO operating contractors will be added to the RSB as providers of items which currently have established RBSs and which were previously emergency planned with the operating contractor. The GOCO contractors are eligible for membership within the RSB once they sign a letter of intent to enter into a facility use contract. For those items which qualify as RSB, the facility use contractor will be

automatically considered a member of the RSB for the planned items they have manufactured. However, the initial requirement will be solicited competitively from the United States and Canadian industrial base in order to identify at least one other contractor, who may be added to the RSB in the event the initial contractor fails or withdraws from the RSB contract. The RSB members thus provide a long term, best value vendor base.

RSB LISTING

SMALL CALIBER
CALIFORNIA IND. PRODUCTS
GREENE INTERNATIONAL WEST
OLIN CORP. - EAST ALTON
OLIN CORP. - ST. MARKS
VALENTEC WELLS

DISPENSER MUNITION
ALLIANT (NEW BRIGHTON)
EAGLE PICHER
OLIN-CHINO/DOWNEY
SAFT

BOMBS/COMP
ALLARD INDUSTRIES, INC.
DELCO MACHINE & GEAR
DELFASCO OF TENNESSEE
DIV. OF MID-SO-ELECT
ERIE TOOL WORKS
IMCO
IRVIN INDUSTRIES, INC.
MTD INC.

CANNON CALIBER
ALLIANT (NEW BRIGHTON)
AMRON
EMCO
GAYSTON
GREENE INTERNATIONAL WEST
OLIN - MARION
OLIN CORP. - ST. MARKS
OLIN (DOWNEY)
VALENTEC WELLS

FUZES
ACTION MFG. CO.
ALLIANT (ACCUDYNE)
ALLIANT (NEW BRIGHTON)
AMTEC PRECISION
BOWMAR
BULOVA
DAYRON INC.
EAGLE PICHER
EMCO
KDI
MAGNAVOX
MARTIN ELECTRONICS
MOTOROLA
RAYTHEON
VALENTEC WELLS

PROPELLING CHARGES
ARMTEC DEFENSE PRODUCTS CO.
OLIN CORP. - MARION

TANK
AEROJET-JONESBORO
ALLIANT (NEW BRIGHTON)
NUCLEAR METALS INC.
OLIN - ST. PETERSBURG

ROCKETS/WARHEADS
LOCKHEED MARTIN, INC.
EMCO
KDI
MAGNAVOX
PIQUA
RAYMOND ENGINEERING
SIPPICAN
THIOKOL CORP. (UTAH)

PENDING
DAY & ZIMMERMAN (LSAAP)
HOLSTON DEFENSE CORP. (HSAAP)
HERCULES, INC. (SFAAP)
LOCKHEED MARTIN (MLAAP)
OLIN CORP. (BAAAP)
OLIN CORP. (LCAAP)
THIOKOL CORP (LAAAP)

ARTILLERY CALIBER
ALLIANT (FERRULMATIC)
AMRON
AMTEC PRECISION
BALIMOY
BABCOCK AND WILCOX
EMCO
FABRICATED METAL PRODUCTS
OLIN - FLINCHBAUGH
OLIN - CORP. - EAST ALTON
TALLEY DEFENSE SYSTEMS (MESA)

PRYOTECHNICS
ALLIANT (KILGORE)
MARTIN ELECTRONICS

MORTARS
ARMTEC DEFENSE PRODUCTS CO.
LOCKHEED MARTIN
MEDICO
OLIN CORP. - ST. MARKS
VALENTIC SYSTEMS, INC.

DEMO,GRENADES & MINES
HITECH INDUSTRIES
SNC INDUSTRIES TECH., INC.

NAVY GUN
ALLIANT (FERRULMATIC)
AMTEC PRECISION
INTERNATIONAL POLYMER
MARTIN ELECTRONICS
PROPELLEX CORP.
REACTION PLASTIC

FASCAM
ACTION MFG.
ALLIANT (ACCUDYNE)
ALLIANT (NEW BRIGHTON)
BULOVA
EMCO
NATIONAL MACHINE CO.
QUANTIC

FACILITY USE CONTRACTORS
SIGNED
CHAMBERLAIN MFG. CORP (SCAAP)
DAY & ZIMMERMAN, INC. (KSAAP)
HERCULES, INC. (RFAAP)
ICI EXPLOSIVES ENVIRONMENTAL (INAAP)
ICI EXLOSIVES (VOAAP)
MASON & HANGAR-SILAS MASON CO. INC. (IAAAP)
MASON & TECHNOLOGIES, INC. (MSAAP)
NI IND. INC. (RBAAP)
THIOKOL CORP. (LAAAP)

as of December 1996

Fig 2

The IOC reexamined the RSB mission when the focus turned from mobilization to replenishment. No longer is the emphasis solely on quantity, with scant regard to quality and price. IOC now uses a Contractor Performance Certification Program $(CP)^2$. An independent study team, made up of principally former corporate executives of defense suppliers, has recommended that RSB members "must be certified under CP^2 or be replaced". The independent group believes that certain position attributes, such as those demonstrated by CP^2 contractors, are essential for our suppliers. [18] CP^2 provides quality discriminators for shaping the munitions industrial base. this voluntary program utilizes enhanced performance requirements to recognize contractors which have demonstrated commitment to quality and improved productivity, have aggressively utilized statistical process control, and have applied its use to product acceptability. These contractors also must employ preventative proactive audit procedures and must stand behind their products to assure customer satisfaction.

The IOC is also placing special emphasis on achieving a certified RSB on a sector basis in the munitions industrial base. The strategy is to reduce oversight requirements (e.g. inspections, testing) up front in the solicitation phase of the RSB procurement, in sectors (i.e. fuzes, propellants, etc.) where all contractors would be qualified. As budget reductions continue, the IOC believes both government and industry will benefit from reduced oversight requirements based on balanced risk through knowledge gained from certification. As of 1995, only 34% of contractors in the RSB were certified or were pursuing certification. [19] The decision to restrict a procurement to the RSB is not automatic or arbitrary. The IOC uses an Acquisition Decision Logic Tree delineated in

procurement information letter (PIL8-93) in determining where a contract should be awarded. The decision tree utilizes a three step process (see figure 3). Restriction of requirements under FAR 6.302-3(b)(1)(i) to planned producers within the RSBs can only be accomplished when supporting documentation has been provided by industrial readiness personnel via the Industrial Base Analysis (IBA). At a minimum, the IBA must identify the Department of the Army Critical Items List replenishment requirements, the replenishment requirements identified by each Service, production 1-8-5 rates (or turndown rates if appropriate) of all RSB planned producers, critical skills, processes, equipment and facilities possessed by members of the RSB, an assessment of each proposed producer's ability to replenish within the Defense Planning Guidance timeframe, and an affirmative statement that restriction of production requirements to the RSB is necessary to preserve domestic production capability in the event of a national emergency. [20]

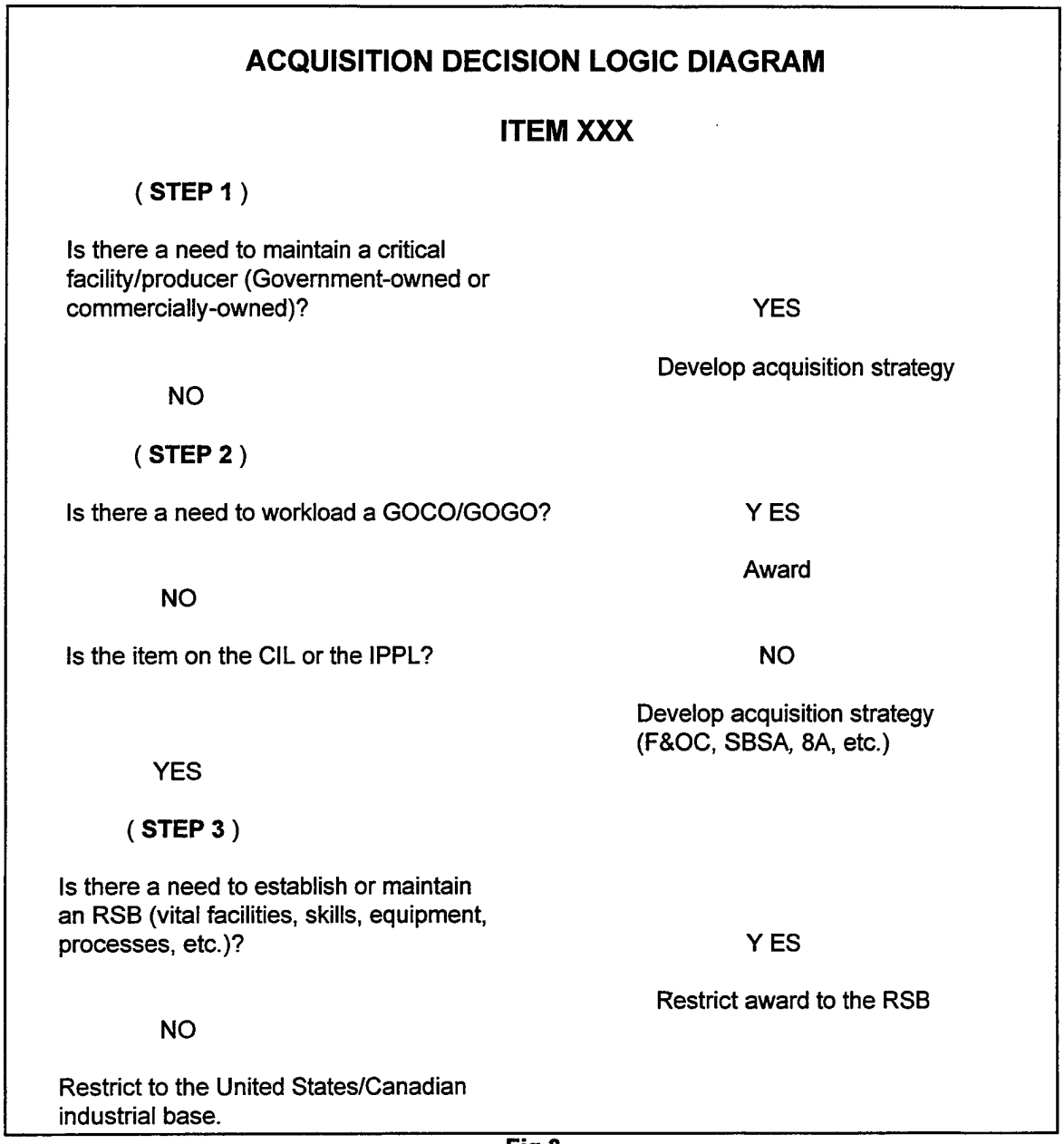

Fig 3

ADVOCACY

The Munitions Industrial Base Task Force (MIBTF) was established in July 1993 by a group executives from a cross-section of the nations private munitions companies and its arsenal operators. The organizations concluded that they were in the middle of an

unplanned free-fall in munitions funding which would, if not reversed, cause the demise of the U.S. munitions industrial base. The MIBTF is a non-profit organization comprised of 13 munitions manufacturing companies who have come together on a temporary basis to pursue a common goal: Adequate funding and policies to sustain a responsive, capable U.S. munitions industrial base to develop, produce, and support superior munitions for the U.S. and its allies. [21] They operate both privately owned, and government-owned facilities. They also represent a cross-section of subcontractors and suppliers. The MIBTF does not advocate specific programs on behalf of any of its members.

Munitions Industrial Base Task Force Membership

Aerojet General Corp	General Dynamics
Alliant Techsystems, Inc.	KDI Precision Products, Inc.
Armtec Defense Products	Mason & Hanger Co., Inc.
Bulova Technologies, Inc.	Primex
CMS	Talley Defense Systems, Inc
Day and Zimmermann, Inc	Thiokol Corporarion

Valentec International Corp

Fig 4

INDUSTRY PERSPECTIVE

The MIBTF has commissioned several studies since its formation, most of which have been conducted by the Strategic Assessment Center of Science Applications International Corporation (SAIC). The MIBTF study of the munitions industrial base completed in October 1993 arrived at the following conclusions:

- The base could not support demands for the most modern, "**preferred**" ammunition for one major regional contingency (MRC), much less for two simultaneous MRCs.

- Production capacity was insufficient to meet the requirement to **replenish** ammunition stocks after a conflict.

- The munitions industrial base is in crisis and can only be saved by increased **steady spending on ammunition**.

- Most ammunition corporate strategists advise **getting out of the business**. [22]

As an Ordnance Officer, Ammunition Management by trade, I can certainly comprehend the rationale for the conclusions of the MIBTF study. I have been in the Army long enough to have witnessed the erosion of the munitions industrial base from its robust days in the early and mid 1980s to its present condition.

A follow-up review by the MIBTF reached essentially the same conclusions.

GOVERNMENT ASSESSMENT

In contrast to the MIBTF studies, studies completed by the Office of the Secretary of Defense (OSD) in 1995 found that although considerable financial distress exists within the munitions industrial base, both production capacity and technological capability of the munitions sector are sufficient to meet DOD's requirements for munitions production and replenishment. The OSD recognized that industry has responded to reduced ammunition procurement by restructuring, shrinking, and, in some cases, closing facilities. There may now be more single producers for certain products, creating the need to contract with a sole source for ammunition needs. The OSD

concluded that the situation did not threaten the DOD's ability to supply the armed forces with sufficient quantities of high-quality ammunition.

DIFFERENCES

The great differences in the conclusions drawn by the MIBTF and the OSD are largely the result of differing working assumptions. For example, the OSD study sent 154 letters to producers in the munitions base, but received only 29 responses in return. OSD assumed that if a company did not respond to its request for information, was financially healthy. This was assumed even though companies in financial distress may have been reluctant to provide adverse financial information to the government for fear that it might jeopardize their consideration for future contract awards. On the other hand, if OSD had assumed financial distress rather than fiscal soundness for companies that did not respond, perhaps the results would have been very different. Conversely, for the MIBTF study the task force was made up of representatives from companies whose survival depends upon defense ammunition budgets. Their perspective during a period of fiscal austerity could well have affected their conclusions. Even so in response to the MIBTF study Congress increased ammunition budgets in FY 1994 ($1million), FY 1995 ($300million) and FY 1996 ($300 million). [23]

CONCLUSION

The future of the munitions industrial base, like other sectors in the defense industry looks bleak for the near term. The large Cold War U.S. defense industrial base is now a thing of the past and the defense industry has been forced to downsize as the military forces have been drawdown. Because the nature of the threat from regional conflicts require a smaller base force, likewise, the new U.S. defense industrial base can be smaller, however without fundamental changes will not sustain even a smaller base force. The current state of the munitions industrial base cannot support the demands for the most modern, "preferred" munitions for one major regional contingency, much less for two simultaneous MRCs and is insufficient for replenishment of ammunition stocks after conflict termination.

The Clinton administrations policy of letting "free market" forces prevail does not work in the munitions industry because its products are exclusively for military purposes. Funding remains an issue for the entire defense industrial base, however, massive increases in ammunition spending is not necessary. But funding must be allocated and remain at levels that will allow steady procurement of preferred munitions without the current shortfalls. The present approach to ammunition procurement is poorly funded and puts our forces at risk for in executing future conflicts. Although many policymakers realize that ammunition accounts are not being adequately funded, they have accepted the current state of affairs because they have more pressing budgetary priorities and the threat to U.S. national security is greatly diminished. Congress has provided plus-ups to the

ammunition budget in FY1994, FY 1995 and FY1996, however, there still was a substantial shortfall.

The existing ammunition stockpile is huge but not adequate to sustain U.S. forces in two nearly simultaneous major regional conflicts, and the munitions industrial base has been allowed to erode to a point where it cannot cover shortages in a timely manner. Unanticipated problems that arose during Desert Shield/Storm in the surge production of some critical ammunition items such as 25mm and 40mm rounds are sure to be repeated if existing shortfalls are not resolved now. Many of the "discretionary" munitions are being used to support training. How long will this continue?

Federal regulatory agencies must begin to permit greater flexibility in the consolidation of producers in the munitions base. The ammunition sector continues to downsize to meet the less projected levels of demand, and further rationalization of excess capacity in their facilities. However, a recent effort by two major manufacturers to merge their ordnance operations was blocked by the Federal Trade Commission on antitrust grounds. This action is a textbook example of sacrificing common sense to abstract principles. The resulting effect of the FTCs non-approval of this consolidation action weakened an already depressed munitions industrial base. This also burdens DOD with unnecessary costs arising out of the retention of two producers that we can no longer support. Recent trends in the ammunition sector clearly demand a different antitrust standard than would be applied to other defense industries.

Finally, if the U.S. military forces are to fight and win our nation's wars whenever and wherever called upon, it is imperative that we have an adequate munitions industrial

base capable and responsive when called upon. We must be more realistic about the requirements that future conflicts might impose on the munitions industrial base. The current strategy of relying on war reserves during the conflict and replenishing after hostilities have ceased is flawed policy that has occurred due to a diminished threat. Proactive measures are critical now. New threats will eventually arise, and when they do, will we have a munitions surge and production capability to respond? We must not deny our soldiers a means to fight and win our future wars with low cost in U.S. casualties. It makes more sense to preserve an adequate munitions base today, rather than having to undertake a costly reconstitution effort in the future.

Appendix 1

FAR -- Part 6

Competition Requirements

FAC 90-42

Oct 7, 1996

6.000 Scope of Part.

This part prescribes policies and procedures to promote full and open competition in the acquisition process and to provide for full and open competition, full and open competition after exclusion of sources, other than full and open competition, and competition advocates. As used in this part, full and. open competition is the process by which all responsible offerors are allowed to compete. This part does not deal with the results of competition (e.g., adequate price competition), which are addressed in other parts (e.g., Part 15).

6.001 Applicability.

This part applies to all acquisitions except -

(a) Contracts awarded using the simplified acquisition procedures of Part 13 ;

(b) Contracts awarded using contracting procedures (other than those addressed in this part) that are expressly authorized by statute;

(c) Contract modifications, including the exercise of priced options that were evaluated as part of the initial competition (see 17.207(f), that are within the scope and under the terms of an existing contract

(d) Orders placed under requirements contracts or definite-quantity contracts; or

(e) Orders placed under indefinite-quantity contracts that were entered into pursuant to this part when

(1) The contract was awarded under Subpart 6.1 or 6.2 and all responsible sources were realistically permitted to compete for the requirements contained in the order; or

(2) The contract was awarded under Subpart 6.3 and the required justification and approval adequately covers the requirements contained in the order.

(f) Orders placed against task order and delivery order contracts entered into pursuant to Subpart

Subpart 6.3 – Other Than Full and Open Competition

6.300 Scope of Subpart.

This subpart prescribes policies and procedures, and identifies the statutory authorities, for contracting without providing for full and open competition.

6.301 Policy..

(a) 41 U. S. C. 2 5 3 (c) and 10 U. S. C. 23 04(c) each authorize, under certain conditions, contracting
without providing for full and open competition. The Department of Defense, Coast Guard, and National Aeronautics and Space Administration are subject to 10 U.S.C. 2304(c). Other executive agencies are subject to 41 U. S. C. 2 5 3 (c). Contracting without providing for full and open competition or full and open competition after exclusion of sources is a violation of statute, unless permitted by one of the exceptions in 6. 3 02.

(b) Each contract awarded without providing for full and open competition shall contain a reference to the specific authority under which it was so awarded. Contracting officers shall use the U.S. Code citation applicable to their agency (see 6.302).

(c) Contracting without providing for full and open competition shall not be justified on the basis of

(1) a lack of advance planning by the requiring activity or

(2) concerns related to the amount of funds available (e.g., funds will expire) to the agency or activity for the acquisition of supplies or services.

(d) When not providing for full and open competition, the contracting officer shall solicit offers from as many potential sources as is practicable under the circumstances.

(e) For contracts under this subpart, the contracting officer shall use the contracting procedures prescribed in 6.102(a) or (b), if appropriate, or any other procedures authorized by this regulation.

6.302 Circumstances Permitting Other Than Full and Open Competition.

The following statutory authorities (including applications and limitations) permit contracting without providing for full and open competition. Requirements for justifications to support the use of these authorities are in 6. 3 03.

6.302-3 Industrial Mobilization; Engineering, Developmental, or Research Capability; or Expert Services.

(a) **Authority.**

(1) **Citations:** 10 U.S.C. 2304(c)(3) or 41 U.S.C. 253(c)(3).

(2) Full and open competition need not be provided for when it is necessary to award the contract to a particular source or sources in order

(i) to maintain a facility, producer, manufacturer, or other supplier available for furnishing supplies or services in case of a national emergency or to achieve industrial mobilization,

(ii) to establish or maintain an essential engineering, research, or development capability to be provided by an educational or other nonprofit institution or a federally funded research and development center, or

(iii) to acquire the services of an expert for any current or anticipated litigation or dispute.

(b) **Application**

1) Use of the authority in paragraph (a)(2)(i) of this subsection may be appropriate when it is necessary to --

(i) Keep vital facilities or suppliers in business or make them available in the event of a national emergency;

(c) **Limitations.** Contracts awarded using this authority shall be supported by the written justifications and approvals..

ENDNOTES

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[3] Department of the Army, Updated Ammunition Production Base Planning and Restructuring Study (Rock Island, IL: Headquarters, U. S. Army Armaments, Munitions and Chemical Command, July 1993) p. 19.
[4] Brigadier General Joseph W. Arbuclkle, Army Ammunition Program (Briefing to Industrial College of the Armed Forces, January 31, 1997), charts 33 & 35.
[5] Department of Defense, In Touch With Industry (ICAF Industry Studies, Industrial College of the Armed Forces, National Defense University,1996), p. 15-8.
[6] Munitions Industrial Base Task Force, United States Conventional Munitions Assessment With Recommendations, June 27, 1994, pp. Iv-6 & 7.
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[9] United States Senate, Committee on Armed Services, Department of Defense Ammunition Requirements and Production Base, October 31, 1985, p. 7.
[10] Department of Commerce, Bureau of Census, Non-Agricultural Employment by Division and Industries (National Economic, Social and Environmental Data Bank) May 17, 1993, p. 27.
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[12] Department of Defense, p. 15-4.
[13] John E. Montague, Defense Industry Restructuring (Briefing to USAWC Industrial Base Class), February 5, 1997, chart 4.
[14] Ibid, chart 11.
[15] Department of the Army, p. 7.
[16] Ibid, p.26.
[17] Department of the Army, Ammunition " State of the Base, Blue Book FY95 (Rock Island, IL: Headquarters, U.S. Army, Industrial Operations Command, February 1995), p.36.
[18] Ibid, p. 14.
[19] Ibid.
[20] Department of the Army, Procurement Information Letter (PIL 8-93) (Rock Island, IL: Headquarters, U.S. Army Armaments, Munitions and Chemical Command, December 13, 1993), p. 9.
[21] Munitions Industrial Base Task Force, MIBTF Charter, July 1993.
[22] Department of Defense, Ibid, p. 15-6.
[23] Ibid, p. 15-7.

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