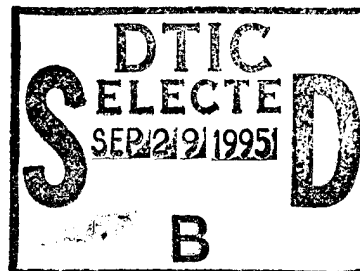


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Team Synergy

Program Management Teams

International Interdependency

From Philadelphia... to Lakehurst
Maintaining the Fleet

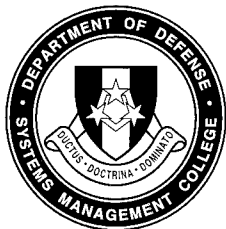


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Mark E. Gindele

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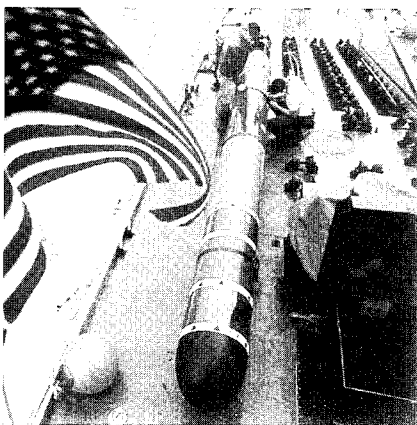


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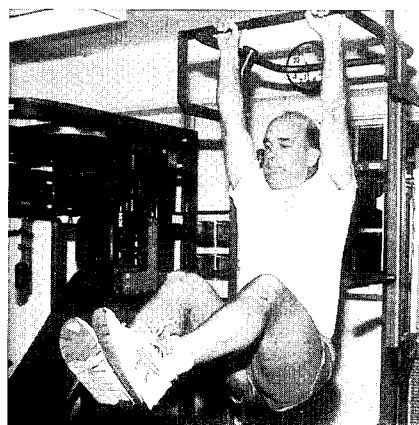


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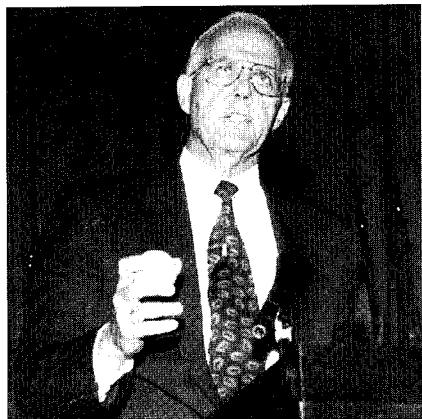
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ORGANIC MANUFACTURING — THE PROGRAM MANAGER'S SAFETY NET

*A Means to Respond Quickly to Contractor Defaults
on Programs Critical to Defense Readiness*

Mark E. Gindele

As the program manager, you evaluate all the programmatic factors that can affect your program. Issues addressing schedule, cost, environmental impact, and delivery are reviewed and alternatives considered. With the fleet's requirements driving the need, you draft your acquisition plan to merge procurement laws governing defense contracts and an acceptable delivery strategy. The plan is universally accepted and all the parties sign up. Just when you gain a modicum of confidence that you have a truly executable plan, trouble starts.

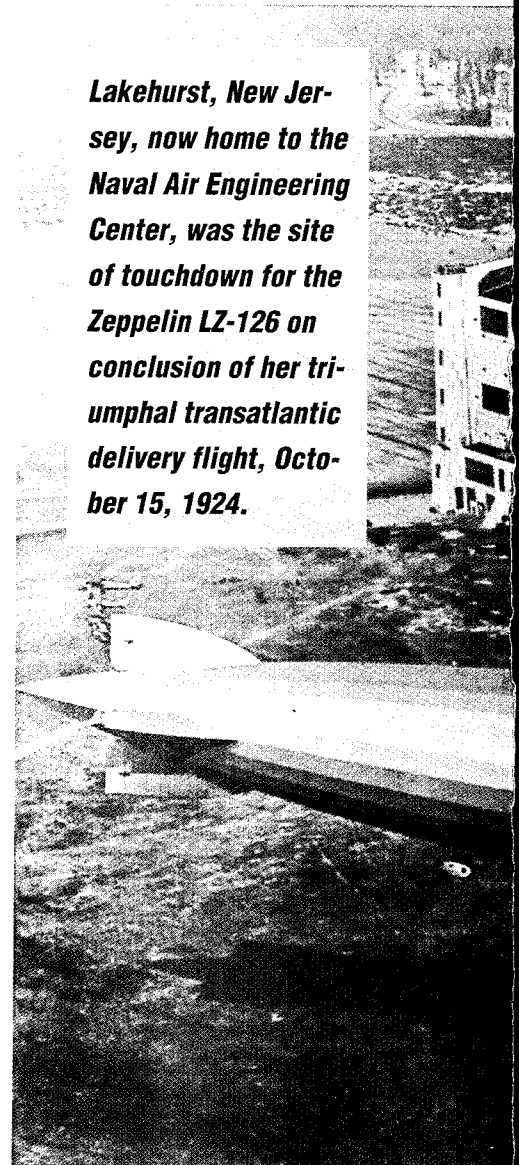
The acquisition program includes contracting with a small business. Although the contractor never produced this type of item prior to this, the pre-award survey's results supported a recommendation that this contractor could produce the item you need. You

try to stay current on the progress of the contractor, but 6 months into the contract you begin to realize the finely crafted acquisition plan is in serious need of an overhaul. After considerable discussions and negotiations between the contractor and the government's contracting office, you accept the fact that this contractor will not deliver. The final issue of the default notice to the contractor only confirms your worst fear.

Swiftly you consider career changes, thinking this would be the perfect time to take a detail in another department or the 14-week Advanced Program Manager's Course at Defense Systems Management College. As reality sets in (and professionalism takes command) you become cognizant that turning over the program to someone else will not help satisfy the needs of the fleet. You meet with your contracting office and discuss plans to terminate the existing contract, collect all work in process, and re-solicit the industry. Calculations indicate the default cost you 12 to 18 months of schedule time, and your delay will impact fleet readiness.

You need to somehow overcome your schedule impact and devise a way to deliver the needed items. You review the steps that put you in the

Lakehurst, New Jersey, now home to the Naval Air Engineering Center, was the site of touchdown for the Zeppelin LZ-126 on conclusion of her triumphal transatlantic delivery flight, October 15, 1924.



Mr. Gindele is a division manager in the Prototyping and Manufacturing Department for the Naval Air Warfare Center in Lakehurst, New Jersey, as well as a consultant for Norman D. Leebron and Associates, Narberth, Pennsylvania. He specializes in industrial engineering and life-cycle cost estimating. He has previously authored articles on defense reform for Program Manager and other publications.

predicament you are presently in, and accept that you cannot afford another possible default. You need an entity that can work with you on schedule, can conform to strict levels of quality assurance, and, above all, cannot stop work. You turn to organic manufacturing for solutions.

Organic Manufacturing Defined

Organic manufacturing is an in-house capability to produce quality products for the fleet. It provides a safety net for responding quickly to contractor defaults on programs critical to defense readiness. And organic manufacturing provides much more. In the recently formed Competency

Aligned Organization at the Naval Air Warfare Center, Aircraft Division, organic manufacturing capability resides in the Industrial Department, which has facilities both at Indianapolis, Indiana, and Lakehurst, New Jersey. Although this article specifically addresses the industrial department, often referred to as "Prototyping and Manufacturing" Department, Naval Air Warfare Center, Aircraft Division, Lakehurst, New Jersey, similar issues pertain to most organic facilities.

Many benefits emerge from having an in-house manufacturing department that has all the capabilities necessary to produce new and modified equipment. Primarily, the capability

to handle surge production is an available, distinct advantage. This allows the military to provide one-of-a-kind products or short-term volume increases for specific operations. Implementing mobilization plans is faster when you can control the process. For example, during operations Desert Storm and Desert Shield, the prototyping department designed and manufactured 560 special gas mask fittings within a 2-week time frame.

Organic manufacturing provides the flexibility needed to support many material situations that may arise as a result of maintaining a military readiness. In addition to fast responses and surge capacities, workforce skill levels, enabling government procurement personnel to be smart buyers, can be cultivated and maintained. With the hands-on experience gained by producing products, personnel can perform accurate product evaluations, emergency repairs, and field installations and modifications of specialized equipment. Personnel are also an outstanding resource for source selection support and manufacturing consultants.

The History of In-house Manufacturing

Eight short years after the Wright brothers' auspicious flight of the Kitty Hawk in 1903, a stunt flyer from the Glenn Curtis flying team, Mr. Eugene Ely, successfully landed an aircraft on a make-shift landing deck aboard the cruiser ship Pennsylvania. With the aid of wires and sandbags, the airplane's velocity was adequately arrested and the plane safely landed. In the following year, Lt. Theodore G. Ellyson used an inclined wire across the beach in Hammondsport, New York, to help launch his aircraft into flight. With the basic concepts for aircraft launch and arrest on a ship proven, naval aviation would soon become a preoccupation with the Navy.

After many experimental flights the Navy purchased its first two Curtiss seaplanes with a 1911 appropriation



U.S. Navy photos

FIGURE 1. Aircraft Manufactured by the Naval Aircraft Factory

YEAR	PLANE	NO. MADE	ENGINES	HP	MAX. MPH SPEED	WEIGHT (LBS.)
1918	N-1, Pusher	4	1	360	94	5,900
1918-19	H-16, Flying Boat	150	2	720	87	10,900
1918-19	F5L, Flying Boat	138	2	720	89	13,000
1919	SA-1, -2 Light Recon.	4	1	55	70	810
1920-21	NC5 (to NC10) Flying Boat	6	4	600	85	28,000
1920	HS-3, Patrol Bomber	2	1	360	89	6,432
1920	MF, Flying Boat	80	1	100	73	2,488
1921	VE-7, Trainer	140	1	180	115	2,100
1921	M-80, High Wing Monoplane	36	1	300	145	2,068
1922	PT-1, Seaplane	15	1	400	96	6,789
1923	TS-1, -2, -3 Fighter	10	1	200	131	1,913
1922-23	TR-1, -2 Racer	2	1	200	127	1,720
1923	ZR-1, Airship, Shenandoah*	1	6	1,800	60	
1920-23	TF, Tractor-Pusher Seaplane	4	2	600	107	8,846
1923	PT-2, Seaplane	18	1	400	100	7,055
1923	DT-2, Torpedo Plane	24	1	450	104	6,502
1924	DT-4, Tractor Biplane	5	1	520	107	6,833
1924-28	PN-7, -8, -9, -10, -11, -12, Patrol Flying Boats	10	2	1050	128	16,870
1924	TG-1, -2, -3, -4, -5 Series (Trainer)	5	1	200	97	2,953
1924	NO-1, Observation	3	1	350	104	4,842
1924	N2N-1, Trainer	3	1	200	106	2,640
1925	NM-1, Land or Sea Biplane	1	1	325	108	4,440
1927	XTN-1, Observation Scout, Torpedo	1	2	880	123	10,535
1929	Mercury Racer	1	1	1,300	5,000	
1929	XT2N-1, Dive Bomber	1	1	525	144	5,282
1931	XP4N-1, -2 Patrol	3	2	1,150	115	17,595
1937-38	N3N-1, Trainer	185	1	220	116	2,770
1939	XOSN-1, Observation Scout	1	1	550	160	5,412
1939	SON-1, Scout Observation	44	1	550	165	5,287
1940-42	N3N-3, Trainer	817	1	235	121	2,940
1941	XN5N-1, Trainer	1	1	320	135	3,370
1942	SBN-1, Scout Bomber	30	1	850	237	5,972
1942	OS2N-1, Scout Observation	300	1	400	165	5,600
1942	TDN-1, Radio-Controlled Assault Plane	70	2	440	145	6,800
1942	XLRN-1, Transport Glider	1		Towing Speed	180	37,764
1943-44	PBN-1, Patrol Bomber	156	2	2,100	175	36,353
1945	KU2N-1, Gorgon Missile	1	Radio Controlled	Rocket Power 500+		

*Gas Capacity: 2,115,000 cubic feet.

of \$25 thousand. But early airplanes had many problems, and their operational effectiveness yet remained to be solidified. While the airplane captured the imagination of young men and military strategists, specific military benefits needed to be demonstrated. Despite the establishment of the first naval air station at Pensacola and the endorsement by the Secretary of the Navy, Josephus Daniels, in 1914 naval aviation had not shown much improvement over earlier years.

As the United States entered World War I, the aircraft being used were still very primitive. Assistant Secretary of the Navy Franklin Roosevelt reported that none of the 55 aircraft in the naval aviation inventory could be used as offensive weapons, and only 8 were capable of flying at all. According to Peter Andrews and the editors of *American Heritage* in their 1986 "Navy Air — 75 Years of U.S. Naval Aviation," Justice Charles Evans Hughes led an investigation into American preparedness in aviation and said that it was unfortunate that the provisions of the criminal statutes do not reach inefficiency. With the mood changing toward supporting the military, naval aviation was about to receive a big lift.

The Naval Aircraft Factory (NAF) was established at League Island, Philadelphia, in 1917. Collocated with the Philadelphia Naval Shipyard, this was the first and only aircraft factory ever owned and operated by the U.S. Government. This new facility was responsible for producing the majority of naval aircraft and for designing structures supporting launch and recovery of aircraft on board ships. As the role of aviation grew in importance for the Department of Defense, the NAF, together with Naval Air Station (Mustin Field), increased in size and mission.

With its start at producing one F5L flying boat per day toward the end of World War I, NAF would eventually make 2,272 aircraft. Figure 1 lists the aircraft produced at NAF. The NAF

Catapult and Arresting Gear school would train over 3,000 Canadian, British, French, and American soldiers during World War II. In addition to aircraft, the NAF's product line included the first U.S. airship, ZR-1 Shenandoah, support and launching devices, and full-pressure space suits for the National Aeronautics and Space Administration. Employment reached 3,600 employees during World War I, and 12,000 during World War II.

As the aviation industry grew exponentially in size after World War I, numerous corporations stepped up to the challenge of designing and building airplanes. The NAF's role of building aircraft during wartime changed during peacetime to designing and building prototypes and support equipment. As the industry evolved over the years to more complex and demanding products, the NAF changed too. First it became the major cornerstone of the Naval Air Material Center; then in 1962 the name was officially changed to the Naval Air Engineering Center (NAEC), a name that more closely reflected the function of the matured NAF.

As technology advanced and procurement laws changed, the need for a stand-alone, government-owned

manufacturing facility diminished. Although the desire to maintain an overall flexibility to permit the undertaking of a broad variety of industrial work still remained in the hearts of naval leaders, the available budget for such a large facility was decreasing. The naval air manufacturing capability was moved from Philadelphia in the early 1970 period, and settled in as part of the NAEC located at Lakehurst, New Jersey. With the number of employees at this time approximately 300, the role of the manufacturing department concentrated on fabricating specialized hardware for catapults, arresting gear, visual landing aids, and aircraft support equipment.

Present Manufacturing Situation

What started as the Naval Air Factory in 1917 currently resides at the Naval Air Warfare Center, Aircraft Division, Lakehurst, New Jersey, in the Prototyping and Manufacturing Department. This department has evolved into a multi-functional capability for the support of the Department of Defense. Its ability to quickly develop, design, and manufacture items to meet fleet emergencies continues to substantiate the need for an in-house manufacturing base. With a workforce of just over 200 employees, the role of organic manufacturing has

greatly changed from the days of delivering seaplanes for the Navy.

The current purpose of the department is to provide cradle-to-grave manufacturing technology support for the Aircraft Platform Interface products. Having moved away from maintenance and production-oriented work, the prevailing role of the department is multi-purpose. Key functions are concurrent engineering support to development programs, producibility studies, emergency manufacturing, drawing validation support, prototyping, and catapult and arresting gear support. Figure 2 provides a detailed look at the engineering development process and the prototype department's role.

With its primary focus the delivery of high-quality, cost-effective products and services to the fleet, the track record for the department is unsurpassed by any other similar entity. Its output-oriented, organizational structure complements the integrated program teams that are a critical part of the competency-aligned NAWC. Through the use of an automated manufacturing planning and control system, quality is stressed and implemented before a task is initiated. By continually reviewing the process, improvements and cost savings are

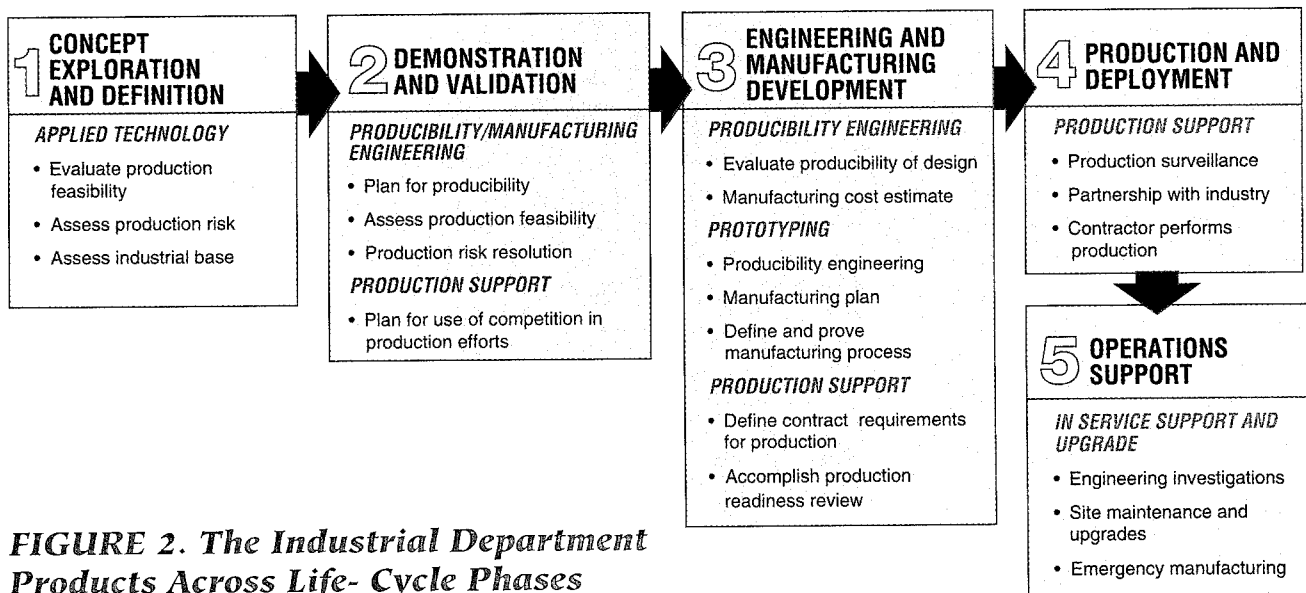
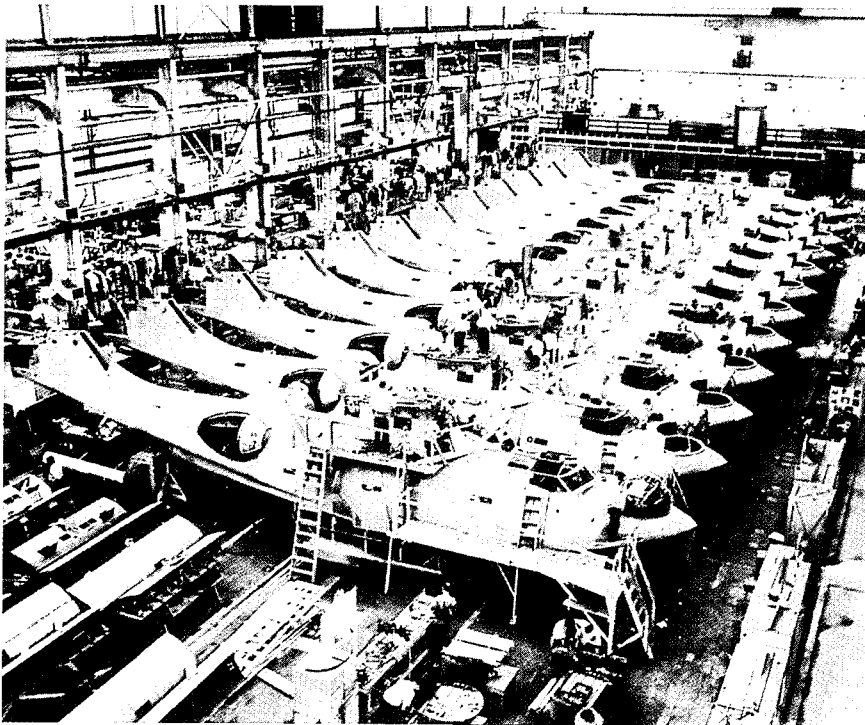


FIGURE 2. The Industrial Department Products Across Life- Cycle Phases



Interior view of Naval Aircraft Factory, Philadelphia, 1944.

often the by-products to comprehensive planning.

Product Lines

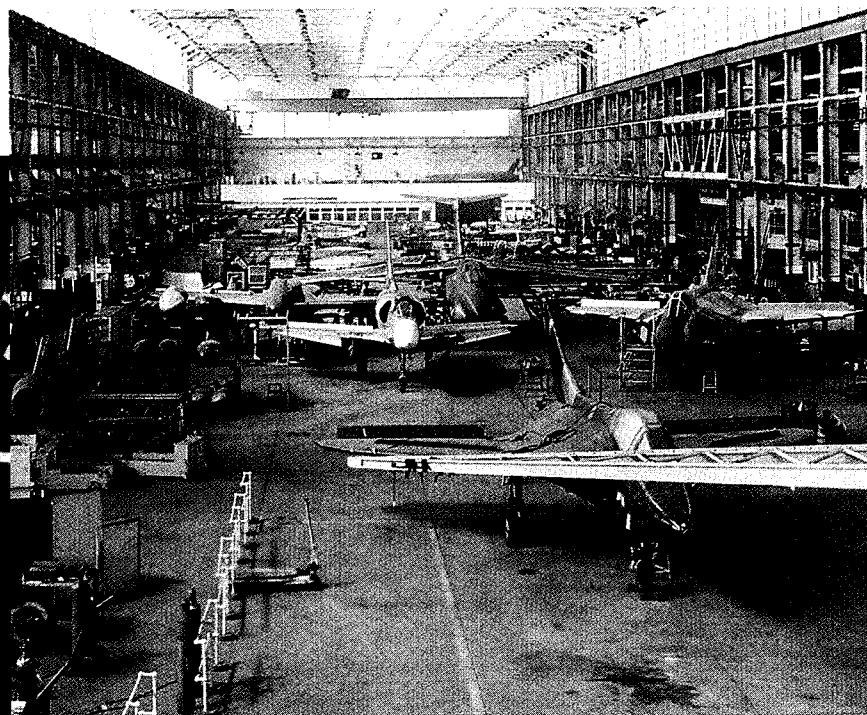
The Competition in Contracting Act of 1976, which defined areas of work the government could and could not contract out, served to greatly define the type of work permitted by the prototyping department. Since production-type work, i.e., work requiring repetitive manufacturing of the same identical item, is contracted out to the private sector, the product lines of the department vary widely. While defense depots enjoy legislation that protects their core business from private industry competition, i.e., the '60/40' rule, the prototype department's work consists mostly of work that industry tried, but failed to do correctly, or, for other reasons, cannot be performed by the private sector. The following paragraphs define four of the current key work areas.

- **Contractor Defaults.** A significant area of work arrives in the prototype department as a direct result of contractors defaulting on defense contracts. This work is identified by the



... THIS

THEN ... IS NOW



View of aircraft used in barricade testing at the Naval Aircraft Factory, Philadelphia, 1955.



products that were contracted to private industry, but for one reason or another, the contractor cannot deliver within the prescribed schedule. Oftentimes the department goes to the contractor's plant, collects all work in process, and tries to complete a partial delivery to the fleet to avoid or mitigate a fleet-readiness problem. This category also includes contractors that deliver inferior or unreliable parts.

An example of this kind of work is the swivel torque couplings needed to keep arresting cables from unraveling under the stress imposed from stopping 60,000-pound planes landing on aircraft carriers. One F-14 aircraft was lost after Operation Desert Storm because of a contractor-made arresting engine swivel coupling failure. A Lakehurst team of engineers and manufacturing artisans assessed the failed part; designed, prototyped, and tested new parts; examined fleet

Main building of the Naval Air Engineering Center, Prototype and Manufacturing Department, Lakehurst, New Jersey, 1995. The naval air manufacturing capability was moved from Philadelphia in the early 1970s.

MEMORIAL DAY OBSERVED



Memorial Day at the Naval Aircraft Factory, May 28, 1918. The board reads, in part:

"All departments that are not seriously behind in their work will be closed from 6:30 a.m. Memorial Day until 7:30 a.m., Friday, May 31. This day is proclaimed by Act of Congress and by President Wilson as one to be devoted to public humiliation, prayer, and fasting in the several places of worship and in our homes, and prayer to almighty God that He will give victory to our armies as they fight for freedom. And may each employee of this factory remember that he or she is part of that army and regard this holiday as a day in which he or she will by rest and thought come back to the job on Friday better fixed mentally and physically for the tasks immediately ahead."

Signed by Comdr. F. G. Coburn

inventory for similar defects in equipment; and manufactured a limited number of new parts to maintain carrier readiness.

- **Sole-source Items.** Due to extremely high-quality standards, low quantities needed, and unstable production demands, several unique products are made in the prototype department. At various times these items were contracted from private industry, but the products that were delivered failed inspection and testing, or the items were not open to private-industry bidding.

An example of such an item is the cross deck pendant. Part of the aircraft arresting system, the pendant is the cable system that can withstand a 169,000-pound pull force, which is the calculated strength required to stop an aircraft within 300 feet on a carrier deck. In the 40 years that the prototype department manufactured these pendants, no failures were attributable to a manufacturing defect. Given that in the last 5 years, over 2,000,000 launches and arrests were safely executed, this is quite a testimony of the exacting standards used to manufacture navy flight critical

equipment.

The cable manufacturing process, which includes purchasing the cable from private industry and testing for required strength and compliance with specifications, includes preserving, packaging, and shipping to U.S. Naval vessels around the globe.

- **Equipment Overhaul.** Since many of the items manufactured by private industry for military use are expensive, design considerations involve the potential for overhaul at some cycle point. Some of these items are overhauled in the industrial department. An example of this type of item is the Low Loss Launch Valve (LLLV).

The LLLV is utilized on CV and CVN class vessels. Its primary function is to provide direction of steam to the catapults for launching aircraft. The valve admits and shuts off the flow of steam to the launching engine cylinders during catapult operations. A total of 96 valves exists; 57 are actively in service. The remaining 39 valves are either waiting to be overhauled or are no longer usable.

This valve is required to be overhauled every 10 years or 50,000



Left: Assistant Secretary of the Navy Franklin Delano Roosevelt and escorting party at the Naval Aircraft Factory, May 2, 1918.



*Take off now...
Aircraft lining up behind two Jet Blast Deflectors aboard the U.S.S. Constellation.*

launches. When the valve body is shipped from the fleet and received by the prototype department, each of the components of the valve is examined and reworked, as necessary, to match original specifications. Welding processes are used to build up the valve seats that were eroded by sea water and super-heated steam. It takes 9 months to rebuild one valve—a rather lengthy and time-consuming business. The department overhauls four valves per year.

Prototyping

Concern for safety is of paramount importance to the Navy. This premise is unquestioned. But the implementation of the axiom starts early in the equipment life cycle. When you take into consideration the complexity, environmental issues, and durability required of military systems, juxtaposed with flight critical parts, you have the opportunity for minor details to transform into major disasters. To minimize the potential for catastrophic loss, prototyping is the best direction to take.

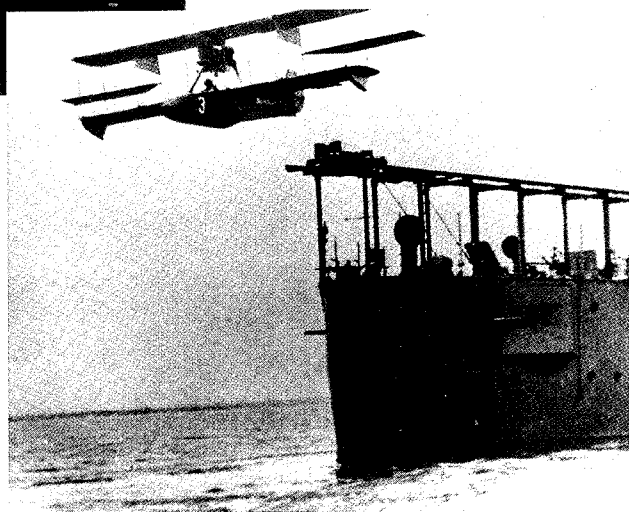
After engineering groups design new aircraft launch, recovery, and support equipment, the technical

teams in the prototype department take over. At this stage of the product design cycle, the engineers work hand-in-hand with artisans and technicians to make full-scale prototypes of new items. By providing rapid turnaround of pre-production samples, the final design can be refined and critical tests conducted on sample parts, prior to committing to extensive production contracts with private industry. By using this operation, it is not unusual to make multiple iterative revisions to what was previously thought to be the final design using computer-aided design software. Experience has proven that cybernating the design has not been completely reliable for flight-critical items. Clearly, the prototype process stabilizes the design before entering production.

One condition that facilitates this prototyping cycle is that NAWC, Lakehurst, also has an engineering department and test facilities located

at the same site. Ultimately, all three disciplines working together lead to robustness in design configurations and clearer understanding of each other's needs. Interim paperwork is replaced by face-to-face meetings between the builders, designers, and testers. Each group gets feedback immediately, thus reducing lead times, cutting costs, and increasing efficiency.

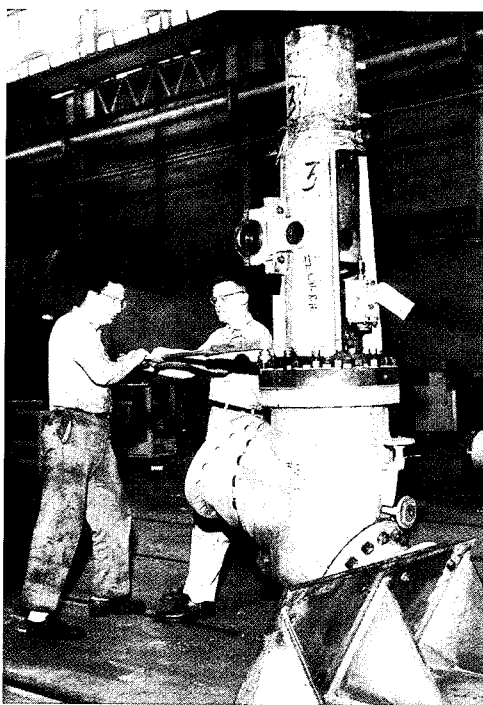
This collocation of the multi-discipline team provides a dynamic feedback mechanism to the design engineers. Artisans and technicians are in



*...Take off then
Catapulting from the U.S.S. North Carolina in 1916.*

a position to identify design problems in the prototypes, and, together with suggested improvements, these data are rapidly absorbed into the revised equipment designs. This design and engineering evolution allows the Navy to mature the design of a product over a short period of time rather than the life of a product in the fleet. As a consequence, product recalls such as those in the automotive industry are almost non-existent in the Department of Navy.

Seeing this process work is a splendid example of engineering application. Feedback is provided quickly to engineers on designs, which, in turn, can alter drawings and then have a prototype produced to the revised



*Launch valve then...
Launch valve at the Naval Aircraft Factory,
Philadelphia, 1965.*

drawings. Material can be changed on different prototypes and the results measured in terms of weight, strength, and durability. Various configurations can be made, producibility can be determined, drawing packages can be validated, leading to a well-engineered, well-researched item for the military. Teamwork such as this can resolve many problems early in a most economical fashion.

Future

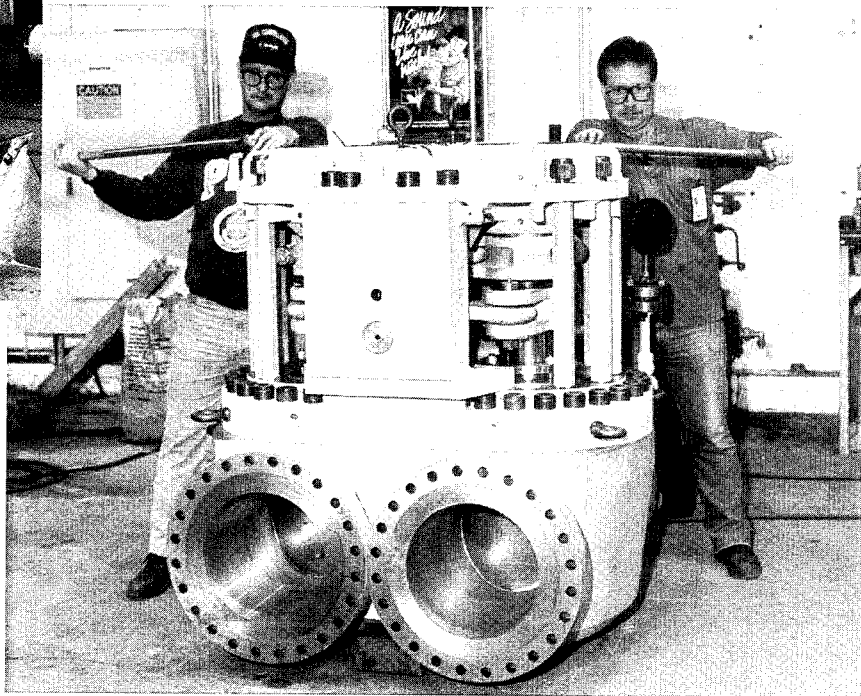
Due to downsizing initiatives throughout the government, organic manufacturing facilities are being reviewed for realignment or closure. Concurrently, those facilities that can't be closed due to military importance, such as the prototyping department at Lakehurst, are seeking ways to maximize the value of every dollar spent. To achieve this goal, new and innovative ways of doing business will have to be considered.

The prototype department at Lakehurst, for example, is entering into partnership arrangements with academia, public, and private entities. With the current staff represent-

ing a minimum core capability necessary to provide prototyping development and similar support, the department must concentrate the remaining staff on its core function. Work that is not critical to performing its basic chartered services will be obtained from other sources that are experts in those fields. This allows the Navy to take advantage of national and state

net for the few programs that cannot be satisfied by the present industry/government arrangement.

Maintaining and supporting an organic manufacturing facility requires a commitment of tremendous resources. To be able to support such a diversified product line requires a state-of-the-art facility, including computer numerical control machines, welding, heat treating, grit blasting,



*...Launch valve now
Launch valve at the Prototype and Manufacturing Department, Naval Air Engineering Center, Lakehurst, New Jersey, 1995.*

assets and still maintain a manufacturing facility to support its mission. This public and private partnership also supports the Secretary of Defense initiative to facilitate a healthy industrial base to produce Navy as well as private-sector products.

Summary

Procurement laws dictate that program managers purchase items from the private industry. But when contractors default, industry chooses to forego bidding on items, or military readiness needs dictate schedules that cannot be met by the procurement process, organic manufacturing may be a viable alternative. Possessing a controllable facility permits a safety

and fabrication centers. To efficiently function as a manufacturing and prototyping department, a well-trained, experienced workforce is necessary.

Organic manufacturing provides the necessary asset to maintain fleet readiness at all times. When fleet users identify a product as made by the organic manufacturing department at Lakehurst, such identification implies a "Guaranteed Correct" stamp on every part. A quality philosophy is endemic in every employee in the department. This commitment takes a long time to develop and nurture, but the return on investment is measurable in lives saved.

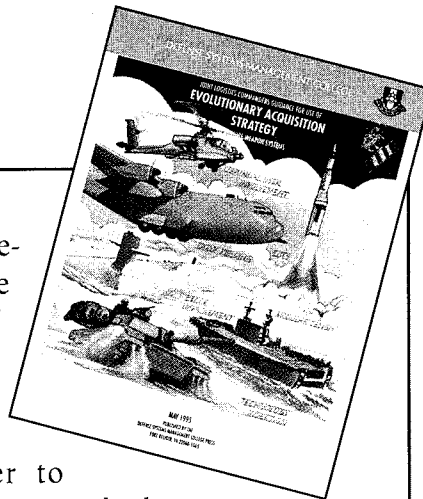
DEFENSE ANNOUNCES PUBLICATION OF REVISED JOINT LOGISTICS COMMANDERS GUIDANCE

The following revised publication is now available from the Defense Systems Management College (DSMC). Government employees can obtain a single copy of each publication by sending a written request on letterhead stationery to: DSMC; ATTN: AS-PR, 9820 Belvoir Road, Suite G38, Fort Belvoir, VA 22060-5565. Nongovernment employees and government employees requesting multiple copies should contact: Superintendent of Documents, Government Printing Office (GPO), Washington, D.C. 20404. The GPO accepts Mastercard and VISA orders over the phone at (202) 512-1800. When ordering please provide the item stock number, as listed below.

Joint Logistics Commanders Guidance for Use of Evolutionary Acquisition Strategy to Acquire Weapon Systems (May 1995). This edition of the *Joint Logistics Commanders Guidance for Use of Evolutionary Acquisition Strategy to Acquire Weapon Systems* replaces the March 1987 version titled, *Evolutionary Acquisition: An Alternative Strategy for Acquiring Command and Control (C²) Systems*. As revised, this update incorporates significant changes from the previous edition. Given the magnitude of change to the world political and military condition, and the reduced need for active military forces that those changes generated, the Joint Logistics Commanders (JLC)

believe a review of the principles of evolutionary acquisition (EA) is in order to evaluate the potential value evolutionary processes might have when used for other than Command, Control, Communications, and Intelligence (C³I) systems. Accordingly, this document extends the application of the EA process beyond C³I systems. It provides new guidance about how EA processes can be used to focus more clearly on the development of necessary military equipment and the systems that support our field commanders and their personnel.

The JLC offer this updated EA process as a tailored, streamlined acquisition strategy for acquiring weapon systems. The EA process is consistent with current guidance and can help shorten the time between the requirement genesis and weapon systems availability. The authors published this guide to encourage consideration and use of the EA strategy for future weapons systems development and when existing weapons are modified to improve their capabilities. **GPO Stock Number: 008-020-01363-3 (\$3.50)**



FROM THE CONSTITUTION TO FASTA — ORIGINS OF ACQUISITION REFORM

Scratching the Surface of a System That is Extremely Complex and Ingrained

Beryl A. Harman

The federal acquisition process is under attack and has been for some time. Our daily newspapers trumpet criticisms of \$600 toilet seats and large cost overruns. Because of increasing dissatisfaction with the procurement process, government has generated commission after commission in an attempt to solve this puzzling problem. Why do atrocities occur? Is there a way to make the system more efficient? Do federal employees need more training? What can be done to streamline the process? How do we provide more flexibility in a complex, overburdened system? What will it take to satisfy industry and the public that the federal workforce is, in fact, working in their best interests? Questions like these are generated every day, but answers are not so easily forthcoming. Let's look at past events, the passage of the Federal Acquisition Streamlining Act of 1994, and then consider what our future contains.

A Past Perspective

In 1789, the newly ratified Constitution of the United States, Article 1, Section 8, authorized the new Con-

gress "to raise and support armies, but no appropriation of money to that use shall be for a term longer than 2 years."¹ Therefore, the new Constitution empowered Congress to enact laws affecting military procurement based on acquiring funding in not more than two yearly increments. Article 2, Section 2 of the same document assigned a President as the "Commander-in-Chief of the Army and the Navy of the United States, and of the militia of the several states, when called into the service of the United States." Some factions interpreted this to mean that the President has responsibility for the government purchasing function. Therefore, a shared responsibility exists between the President and Congress, with Congress, in effect, controlling procurement through the appropriations process.

In 1792, 3 years later, the Department of the Treasury, as an Executive Agency of the President, received full responsibility for conducting purchases and contracts for the American Army. Yet, it was not until 1795 that the Department of the Treasury created within its own ranks the position of Purveyor of Public Supplies, to act as the government's purchasing agent. The issue of "agency" is, of course, well known today in government pro-

curement, since the government views the contracting officer as its "agent" in obligating funds.



President Clinton signs Public Law 103-355, commonly referred to as the Federal Acquisition Streamlining Act of 1994, 13 October 1994. From left: Senator Patrick Leahy (D-VT); Senator Strom Thurmond (R-SC); Rep-

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This "agency" responsibility was later transferred by Congress in 1798 to the chief officers of the Department of War and the newly established Department of the Navy. The position of Purveyor of Public Supplies still remained, though in a somewhat diminished capacity, since its only responsibility was the execution of orders received from the Military Departments for providing stores and supplies.² This arrangement is not unlike the division of responsibilities we have today between the Military Departments and the Defense Contract Management Command.

Ethics and Political Influence

The procurement process, of course, was extremely political. In fact, the first procurement problems and abuses arose out of the activities of

congressmen in securing contracts for friends and firms with which they were associated. Such that in 1808, Congress was finally forced to take action, and devised a provision entitled "Officials Not to Benefit," which established penalties to prevent these abuses of power. This provision is still included in government contracts today.

This issue of ethics for public officials and business firms came into question from the very earliest days. Accusations of graft and favoritism in the award of government contracts were extremely common. As a result, each administration and political party investigated the prior administration or political party's activities. In 1809, Congress attempting to resolve this problem, established a general requirement for competitive bidding

in the procurement of supplies and services. This established the requirement that "lowest price" be the determinant for contract award in certain instances. This was further expanded and institutionalized during the Civil War, and ultimately encapsulated in the Civil Sundry Appropriations Act of 1861. Even so, several scandals erupted concerning excess profits and war profiteering during and after the war.

The drawback to the use of competitive bidding, known as formal advertising, was the fact that it was very slow and inefficient in emer-

gency situations. So much so that in World War I, emphasis centered on negotiation to obtain supplies. This, in turn, generated the use of cost-plus-percentage-of-cost contracts. Under this type of contract, as the cost of the contract increased, so did the attendant profit. This was later perceived as an incentive to generate waste and create additional inefficiency. Consequently, after the war, the government banned this type of contract, and this ban is still in effect.

Formal Advertising of Contracts vs. Flexibility

The problems experienced in the purchasing system caused disillusionment and the search for a scapegoat. The "Merchants of Death" as contractors came to be called, were blamed for American involvement in the war on the assumption that they engineered American involvement to make excess profits. As a result, the War Policies Commission of 1930 and the Nye Committee of 1934 recommended limiting industry profits through price control and taxation. In fact, between World War I and World War II, Congress passed over 200 bills and resolutions to solve the problem, and the process of formal advertising was once again reinforced as the preferred method of contracting.

At the same time, Congress found the federal contract a useful vehicle for implementing socio-economic legislation. As a result—

...the United States went into the test of World War II with a procurement system governed by an astonishing mass of undigested and uncoordinated legislation. Statutes had accumulated on the books over a period of more than 100 years. Many were completely archaic. Many were conflicting, and not a few had been born to serve special and forgotten interests. In the aggregate, they presented a serious obstacle to efficient and speedy purchasing...



White House photo

Representative Patricia Schroeder (D-CO); Representative Jane Harman (D-CA); Representative John Conyers, Jr. (D-MI); Senator William Cohen (R-ME); Vice President Al Gore, Jr.; Senator Robert Smith (R-NH); Representative Ronald Dellums (D-CA); Senator John Glenn (D-OH); Senator Carl Levin (D-MI).

Many of these laws are still in existence and were considered as a part of the recent Section 800 Panel tasking activities.³

During World War II, the War Powers Act lifted some of the competitive restrictions. Contracts could be acquired through negotiation, but the government required contractors to warrant that they were not paying commission agents any fee for soliciting or securing a contract. Neither could they practice racial discrimination because Executive Order prohibited racial discrimination on government contracts. Once again, the government emphasized securing sources and production, not price. However, since many of these were temporary requirements and were passed in order to facilitate the emergency, the conclusion of the war necessitated a return to the old system of formal advertising. Yet, the War had demonstrated the need for flexibility.

In 1945, the Procurement Policy Board of the War Production Board recommended that government agencies propose new procurement legislation to take effect after the emergency. This legislation was to recognize the need for formal advertising, but at the same time allow for broad authority to negotiate price if circumstances warranted. The result was passage of the Armed Services Procurement Act of 1947, which was designed to pull together in one statute all Department of Defense (DoD) procurement authority and replace many of the former laws in the process. It was this law that established the ground rules for the formal federal procurement process we know today.

Standardized Rules for Defense Procurement

The Armed Services Procurement Act of 1947 established the Armed Services Procurement Regulation (ASPR). Its purpose was to establish a set of standardized rules for DoD procurement. Although still the preferred method, it established 17 exceptions

to the use of formal advertising. Fifty-two different sections documented a set of extensive procedures for ensuring the fairness and efficacy of the procurement process. This was closely followed by the Federal Procurement Policy Act of 1948, which extended this same process to all other federal agencies.

Socio-economic Impact of Procurement Legislation

During the next two decades, the procurement system became the natural target for the institution of socio-economic laws, legal constraints and extended competition practices. For instance, the Contract Work Hours and Safety Standards Act of 1962 established the requirement that laborers or mechanics working under certain government contracts be paid time-and-a-half for time worked in excess of an 8-hour day or a 40-hour week. The procurement process also facilitated the implementation of the Small Business Act of 1963, from the collecting of statistical data to the enforcement of small business goals, in the award of contracts to small business concerns. Furthermore, the Brooks Act of 1965 established special procedures to procure Automatic Data Processing equipment for government agencies.

The Federal Acquisition Regulation (FAR)

In 1974, the rules set forth in the ASPR came under attack because government and industry viewed them as voluminous and cumbersome. In addition, growing discontent surfaced with the requirement for two sets of rules for the Federal Government to follow: one set for DoD, and another for the other federal agencies. Therefore, in 1978 Congress amended the Federal Procurement Policy Act to direct creation of one reduced set of procurement regulations for the entire Federal Government — the Federal Acquisition Regulation (FAR).

The FAR, originally envisioned as a small, streamlined manual with lim-

ited guidance became, in fact, a set of specific constraints embodied in laws to control the contracting process. This living document is now considered the bible of all federal contracting officers.

Defense Federal Acquisition Regulation Supplement (DFARS)

At the same time Congress enacted the FAR, the DoD established the Defense Federal Acquisition Regulation Supplement (DFARS) to incorporate all the policies and procedures considered unique to the DoD. Other federal agencies followed suit and set up their own supplemental regulations. In turn, the lower operating levels of the agencies created their own supplemental operating procedures. As time went by, these procedures became more voluminous than the regulations they were meant to replace.

"Reforming the Procurement Process" Gains Momentum

Meanwhile, the "reforming the procurement process" movement grew in momentum. Defense acquisition personnel and industry representatives were discussing reform almost before the print was dry on the first set of regulations. As early as 1949, the Hoover Commission considered and recommended changes to the process. Since that time, government has repeatedly studied reforming the procurement process, with varying results: the second Hoover Commission in 1955; the Fitzhugh Commission in 1969; the Commission on Government Procurement in 1972; the Carlucci Initiatives in 1981; the Grace Commission in 1982; the Packard Commission in 1986; and the Defense Management Report in 1989.

All of these commissions suggested changes to improve the acquisition process in the name of efficiency, effectiveness, fairness and simplification, while each time the regulations grew and became more complex as

individual agencies tried to respond to the ever-changing world of procurement and the vagaries of Congress and the White House.

Meanwhile, Congress enacted further legal restraints upon the procurement system. The Contract Disputes Act of 1978 established the procedures for resolving disputes arising under government contracts. The Federal Courts Improvement Act of 1982 reorganized the courts to deal with federal claims, and the Debt Collection Act of 1982 set up a complex set of statutes and regulations to facilitate the collection of government debts. In addition, Congress extended and broadened the use of competition by the Competition in Contracting Act of 1984, which requires that the government pursue full and open competition on all government contracts wherever practicable. This made it decidedly more difficult to pursue negotiation as an alternative to full and open competition on all government contracts.

At the same time, both research and oversight activities alike made numerous recommendations for change. Yet, each time these activities gained ground, problems arose, such as the fiasco of the A-12 program and the vagaries of the C-17. These scandals generated more constraints and more penalties, not only for those in private industry, but for procurement officials as well. Procurement lead times increased, costs increased, dissatisfaction grew, and reform was seen as its saving grace.

The Federal Acquisition Streamlining Act of 1994

The resultant Federal Acquisition Streamlining Act (FASfA) of 1994 was reported out of Joint Conference on 19 August 1994 and signed by the President on 13 October 1994. Though 4 years in the making, this new law still only scratches the surface of a system that is extremely complex and ingrained. What then does the law contain? The most important provisions,

from the standpoint of impact on the process and the possibility of success, follow:

Expansion of Commercial Item Definition. A major recommendation of the Panel was to generate an expanded definition of what constitutes a commercial item, hoping to exclude certain acquisitions from burdensome governmental regulations. These included submittal of cost and pricing data in determining a "fair and reasonable" price, and the flow-down of unique government provisions to commercial subcontracted items.

Commercial companies had consistently argued that they would not subject themselves to government pricing rules and flow-down provisions, and had elected to remove themselves from prospective government competition. In this, the Panel recommendation was successful. The Bill contains a vastly expanded definition of commercial items and expresses a preference for using commercial items in developing government contractual requirements. For the first time, the definition not only covers items sold competitively in substantial quantities in the commercial marketplace, but also includes nondevelopmental items and commercial services. Purchasing officials are further charged with actively seeking commercial suppliers through market research. In turn, the Bill also empowers the Government Accounting Office to report on agency progress.

However, Congress constrained the process by upholding the government "best customer" rule, which requires a contractor to sell to the government at the lowest price they have sold an item, regardless of the quantity sold or the quantity being purchased. Many factors affect the determinant of price in the commercial market that are not recognized in government procurement: customer relationships, similar item offsets and international market pricing, to name a few. Since only the

head of the agency can waive these rules in exceptional cases, this factor may yet deter many commercial companies from submitting offers on government contracts.

Enlargement of the Simplified Small Purchase Threshold to \$100,000. A second success of the Panel was their recommendation regarding a Simplified Small Purchase Threshold of \$100,000. The Panel deemed this activity necessary to simplify the actions of procurement officials when issuing contracts with dollar values between \$2,500 and \$100,000. In other words, streamlining the process makes it more efficient and effective by simply making it easier.

This issue was strongly contested by representatives of small business who saw fewer opportunities to compete on government acquisitions and wanted to retain the status quo. Increasing the threshold to \$100,000, in their mind, would encourage procurement officials to combine acquisition quantities and effectively generate fewer acquisitions. In consideration of small business concerns, the Act reserves all acquisitions between \$2,500 and \$100,000 exclusively to small business.

This success should be a tempered one, however, since Congress tied this increase to a Federal Acquisition Network (FACNET) capability. The threshold cannot be exercised over \$50,000 unless the agency has a certified FACNET capability — to be defined by the Office of Federal Procurement Policy — in place, that increases the opportunity for small businesses to compete on government acquisitions. Has Congress appropriated additional funds for this technology? No! Funds are not authorized by this Bill, and must be budgeted and approved in the Authorization and Appropriations Bills. These Bills are issued each year by the Authorization and Appropriations Committees of the House and the Senate for each federal agency.

In addition, the drafters of the Act felt that adequate funds were already available to implement this activity. Will the agencies agree that no additional funds are necessary? Only time will tell if additional funds are needed and will be authorized and appropriated for implementation.

How then, will the agency pay for the cost of technology if additional funds are needed and are not forthcoming? Usually, this is accomplished in one of three ways, or all three: at the detriment of some other program; a reduction in manpower; or a reduction in performance initiatives. This could, therefore, be a minor victory in times of fiscal crises. In addition, small businesses may be required to obtain additional technology that interfaces with the government procurement system. This is a capitalization expense that could be passed on to the government as an element of overhead cost by those successful enough to win government contracts.

Stabilization of Threshold for Cost and Pricing Data. A third success resulting from a Panel recommendation is the recommended stabilization of the threshold for submittal of cost and pricing data under the Truth in Negotiations Act. To the aggravation of industry, this threshold and the amount of progress payments that can be withheld from payment under a government contract are easily targeted by Congress, and can change from one year to the next — at least in terms of the threshold Congress has finally conceded and allowed for automatic increases tied to inflation. Contractor payment methodology, however, was not revised and, in fact, was further restricted to proof of actual performance tied to measurable performance standards.

Changes to Protest Procedures. A partial success of a Panel recommendation can be inferred in the changes to the protest procedures. The Panel, in the short term, made these

recommendations: 1) disappointed bidders be given reasonable and timely debriefings of the weaknesses and strengths of their individual proposals; 2) a protest be given one single standard of review in all protest forums; 3) frivolous protestors be required to pay the costs incurred by the government in defending its actions; and 4) agency heads be authorized to pay bid and proposal costs, attorney fees and expert witness fees to settle meritorious protests.

The law now decrees that protestors can submit a protest 5 days after the government conducts the debriefing. This will avoid late debriefings because the longer the delay, the more potential the schedule impact on the acquisition if it has to be stopped in order to settle a protest. In addition, the law now allows for payment of attorney fees and expert witness fees up to \$150 an hour in support of meritorious protests.

The law is silent, however, on the issue of frivolous protest costs, and there is no single standard review process. Furthermore, the long-term recommendation concerning creation of a single administrative protest forum was not addressed.

There were other changes in this area not recommended by the Panel. Documentation submission and review times were altered from working days to calendar days. While this appears on the surface to provide the agency more time to prepare a case, it is, in fact, a misnomer. There was very little change in the preparation or review time, except in the case of the "express option" where the government provides slightly more review time. In addition, the law now allows submission of a "rule 4" file for review if requested by the protestor. This means that an agency could potentially be required to submit a copy of the entire acquisition file to the reviewing forum in defense of the protest. This could substantially increase the work of the protested agency.

The law further directs that an agency will now comply with the recommendations of the Comptroller General concerning protests within 60 days of receipt. If not accomplished, then the Comptroller General may bring some pressure to bear by awarding additional costs to the injured party and reporting the inaction directly to several committees within the Congress: the Committee on Governmental Affairs for the Senate, the Committee on Governmental Operations for the House, and the Appropriations Committees in both Houses. In this manner, Congress can be kept aware of agency compliance.

Congressional Additions. While the Section 800 Panel was somewhat successful in facilitating reform in government acquisition, other provisions in the law cannot be directly attributed to its research and recommendations. These include: relating pay to performance for government employees, establishing goals for women-owned businesses, and a provision entitled, "Sense of Congress on Negotiated Rulemaking."

First, the Secretary of Defense has 1 year to review and provide an enhanced system of performance incentives for government employees within the DoD. These incentives will ensure that the government adequately rewards its contractors for achieving cost, performance and schedule goals on existing and new acquisitions. Consequently, pay for performance will be the future basis of compensation.

Second, women-owned businesses are now recognized as a socio-economic discriminated group with regard to subcontracting opportunities on government contracts. Therefore, the government will encourage contractor and government acquisition officials to award 5 percent of total contract dollars to women-owned businesses. Contractors that comply will receive consideration for their achievements during the Weighted Guidelines profit determination pro-

cess, thus reaping the potential benefit of additional profit dollars.

Last, another provision recognizes the use of negotiated rulemaking and other policy discussion group techniques for avoiding litigation and achieving more effective relationships with industry. It appears to favor the use of group decisions in FAR rulings and policy initiatives. While insignificant on the surface, this provision could substantially alter the manner in which administrative decisions are made.

Is FASa Actually Streamlining the Process?

Is this the last we will hear of acquisition reform? The answer is categorically no! The Deputy Under Secretary of Defense for Acquisition Reform has several process action teams already underway to consider different aspects of acquisition reform, and additional legislation has been forwarded to the "Hill" — legislation that is even more far-reaching than that contained in FASa. The Office of Federal Procurement Policy has teams established to implement a series of "best practices" guides for use by all federal agencies. A FAR rewrite is being pursued to allow for more discretionary behavior, even though much of the FAR is embodied in law. Even industry is still "negotiating" for additional concessions. They are particularly interested in a comprehensive policy framework to direct the drawdown of the public and private sectors of the defense industrial base and are seeking statutory changes in competition thresholds, raising them from \$100,000 to \$500,000.

Will FASa actually streamline the process? While the Act attacks some fundamental issues, it still remains a long way from actually streamlining the process. The procurement system is extremely complex, created by the need to implement a process of fairness and equity to engender public trust. To this end, a set of rules arose, designed to provide a fair capability

While budget deficits force us to find new ways to satisfy requirements we cannot forget that failure to perform brings censure and control. Therefore, the downside to reform, could be yet more reform.

for anyone to obtain a reasonable share of government business. That the process receives a lot of attention is not surprising, given the fact that over \$73.5 billion (fiscal year 1993 appropriation for procurement, and research and development) is spent in 1 year on defense procurements alone.

National Performance Review's Role

Clearly, the National Performance Review (NPR) is having an effect. Reengineering and downsizing of the Federal Government are forcing agencies to streamline the procurement system and to invest in greater productivity — a major recommendation of the NPR. The incidence of reform is

spiraling at an increasing rate, and statutory and regulatory changes are taking place. A perfect example is the initiative of the DoD to move away from using unique Military Specifications and Standards by taking advantage of the specifications and standards that are used in the commercial marketplace.

Perhaps a better question is, will the culture of the procurement system be able to handle the responsibility generated by the changes? The functional independence of the contracting officer is seriously challenged by the introduction of the integrated product team and the need to learn new skills to cope with the changing environment. Yet, the system is very resilient. As changes occur, they are slowly integrated into the acquisition process. Responsibilities will eventually change with the passage of time.

Perhaps more pointedly, will Congress be able to handle the bad publicity if something like the A-12 happens because of the reforms? If problems occur, most probably Congress will generate more oversight. While budget deficits force us to find new ways to satisfy requirements, we cannot forget that *failure to perform brings censure and control*. Therefore, the downside to reform, could be yet *more reform*.

Endnotes

1. *The World Almanac and Book of Facts*, ed. Mark S. Hoffman (St Martin's Press: New York, 1991), p. 456.
2. *Government Prime Contracts and Subcontracts Service*, Volume 1 (Procurement Associates: Covina, Calif., 1980), p. A-1-1.
3. In 1991, Congress chartered a commission to review all the laws governing the procurement process (now referred to as the acquisition process). To accomplish this task, Section 800 of the National Defense Authorization Act directed the DoD to establish an advisory panel under the sponsorship of DSMC (commonly referred to as the Section 800 Panel).

THE FEDERAL ACQUISITION REGULATION (FAR)

Reforming the FAR A Proposed Roadmap

Debra van Opstal

The federal procurement system — with its hard-to-read laws, regulations, procedures and forms, and its “gotcha” culture — is the linchpin to the success of many of the Clinton Administration initiatives. Without effective reform of that system, many of its key policy goals simply cannot be achieved. These goals include sustaining military readiness with a declining defense budget; promoting greater reliance on commercial products and processes assisting defense industries to diversify; integrating commercial and military research and development (R&D), engineering and production; and fostering government-industry collaboration in multipurpose technologies.

Given the excellent work of the National Performance Review (NPR), even the most casual observer under-

stands the parameters of the problem. Government procurement rules are so complex as to be incomprehensible to all but the trained specialist. The pool of available contractors is limited to those firms that can hire a staff of attorneys and accountants to chart their way through the minefield of government regulations. Even when the contract requirements are well understood, the cost of complying with many of the government-unique contract terms and conditions either raises the price the government must pay for its goods and services (when the costs can be passed on), or makes it uneconomical for firms to do business with the government when they cannot. Criminalization of error adds unacceptable risk to the process; many firms are simply unwilling to bet their corporate reputations and risk legal liability on factors that are unrelated to price and quality.

The net effect is that no exhortation to explore lower cost commercial solutions will work without a significant change in the process. Attempts to assist defense contractors to diversify away from reliance on government contracting (a path already fraught with difficulty) will flounder or fail if the high overhead costs of government contracting are spread to the nascent commercial businesses. Few commercial businesses would ever

willingly commit business, financial, and market suicide by integrating their government and commercial operations, even where the technologies and processes are compatible.

The Clinton administration has made a concerted (and long overdue) effort to put reform of government procurement at the top of



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the list of national priorities. It successfully supported the pathbreaking 1994 legislation that removed many of the unique burdens of government contracting from prospective commercial item transactions. The Department of Defense is in the throes of the first major overhaul in 50 years of military specifications and standards (many of which are obsolete or describe products and processes in unnecessarily rigid detail). The NPR, chaired by Vice President Al Gore, proposed a rewrite of the Federal Acquisition Regulation (FAR), which is the master blueprint for federal contracting procedures, from prescriptive rules into guiding principles.

The FAR is clearly a prime target for reform efforts. As the NPR observed, the thicket of rules and procedures in the current FAR stifles creativity and innovation in contracting. It holds the contracting community captive to process rather than results. After-the-fact second-guessing by the audit and oversight communities creates a hidebound culture of fear and inflexibility.

At the Center for Strategic and International Studies, a Working Group on FAR reform, chaired by former Office of Federal Procurement Policy (OFPP) Administrators Karen Hastie Williams and Robert Bedell, was created to assess the NPR's proposal. Although the Working Group concurred that federal acquisition is profoundly flawed, it took issue with the conclusion that the proper remedy is to translate the rules of acquisition into guiding principles.

The FAR is not just a document; it is a system. Its intrinsic rigidity stems more from a breakdown in process than from overly prescriptive language. Although

no one would assert that the FAR is a perfect document, the Working Group concluded that merely changing the language of the FAR without simultaneously addressing the underlying process would have limited, if not perverse, effects.

Converting From Rules to Principles

The Working Group saw some clear benefits in providing the contracting workforce with guiding principles and greater discretion, as proposed by the NPR. Under no acquisition regime

First, many sections of the FAR are not in dispute. They are based on a long history of administrative interpretation, case law, and government-industry dialogue; sweeping away these commonly understood terms and procedures in a FAR rewrite would complicate rather than simplify the procurement process. The Working Group recommended identifying and targeting specific problem areas instead of scrapping the whole document.

Second, the FAR already provides a substantial degree of flexibility to contracting officers in many of its sections — a discretionary authority that is simply underutilized. Where little or no discretion is available, such as in the implementation of socio-economic goals, the requirements typically flow from law or executive order and could not, in any case, be unilaterally eliminated in a FAR rewrite. But the fact that contracting officers choose not to exercise the discretion provided in the FAR indicates that process and culture, not language, are first-order problems.

Third, the Working Group is concerned that granting contracting officers essentially a "green light" to interpret contractual requirements as desired runs the risk of creating an even more onerous procurement system. Clearly, the current "red light" approach — which sends the signal that anything that is not specifically permitted is prohibited — is far too rigid. Nevertheless, the pendulum swing to a "green light" mentality — which permits anything that is not specifically prohibited — might not yield the desired results. The danger of such an approach is that it fails to take into account the formidable and entrenched cultural barriers that will complicate, if not compromise, the reform effort. It sets no limit on the ability of contracting officers to impose additional contract requirements in an environment in which all contractors appear to be viewed a priori as profiteering felons; all contracting of-

THE CLINTON ADMINISTRATION HAS MADE A CONCERTED EFFORT TO PUT TAMING THE FEDERAL PROCUREMENT SYSTEM AT THE TOP OF ITS LIST OF NATIONAL PRIORITIES.

have contracting officers been given explicit guidance on the statutes, policies, or ultimate goals behind the regulations. Indeed, it recommends that a description of the objectives and purpose of the regulations should be provided for each section of the FAR and for the document overall. However, the group concluded that an across-the-board substitution of principles for rules is neither warranted nor desirable for several reasons.

ficers face the possibility of administrative, civil or criminal penalties for exercising too much flexibility and initiative; and the audit and oversight communities are actively encouraged to "second-guess" both the contracting officers and the industry contractors.

In the existing environment of fear and mistrust, there is room for honest doubt that guiding principles would work as intended. The geographic and cultural distance between the White House and field contracting offices (where contracting decisions are actually made) typically attenuates the impact of top-down policy directives. Moreover, the lack of any evaluating measures to assess how well the guidance is applied makes follow-through a virtual impossibility.

Problems in the Process

The Working Group found that the fulcrum for change resides in the FAR process, not in the language of the document. It identified five systemic problems so profound as to derail any policy reform effort:

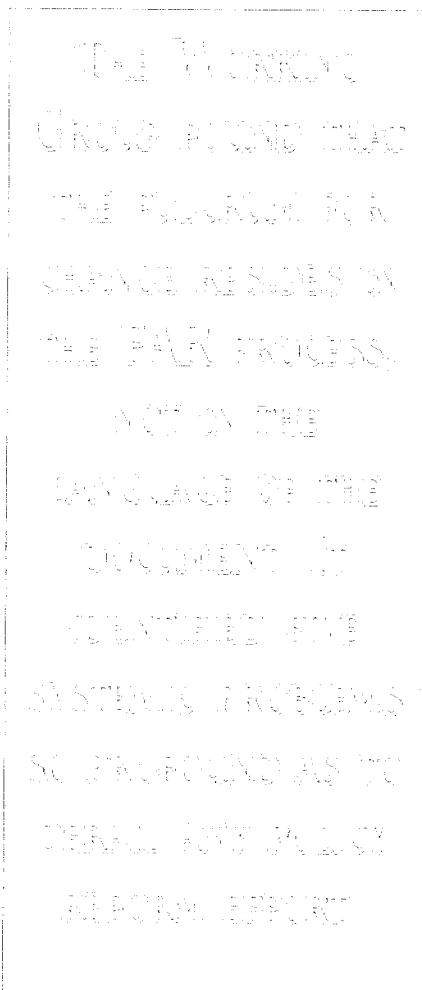
Lack of Leadership Over the FAR System. Although the OFPP has the legislative mandate to oversee the regulatory process and to eliminate unnecessary or burdensome regulations, it has never decisively exercised that authority. Without strong leadership, FAR reform cannot be successfully implemented. The Working Group recommended that, at a minimum, the president modify Executive Order 12931 in a way that—

- clearly establishes the preeminence of OFPP over the process (rather than sharing responsibility with the agencies); and
- provides the OFPP administrator with adequate authority to request temporary staffing as needed from other agencies.

Lack of Uniformity Across the System. Prior to the creation of the FAR, contractors found that doing business with different federal agen-

cies — even different offices within the same agency — was like selling to different foreign governments. The FAR was designed to bring some semblance of consistency and uniformity to the federal procurement system. Even before the ink was dry on the new FAR, however, the goal of a single regulation was undermined by volu-

- all agency and lower-level regulations, directives, and instructions that repeat, reinterpret, or conflict with the FAR be eliminated by a certain date; and
- agency supplementation authority be limited to requirements that are both specific and unique to their procurement needs, as approved by the OFPP Administrator.



minous agency-unique statutory requirements that were implemented in agency supplements. Lower levels within agencies began issuing their own guidance and interpretation of the FAR. Because agency contracting officials invariably look to their own sets of "shadow regulations" for guidance, effective procurement reform will require tighter controls on the ability to promulgate regulations at the agency level. The Working Group recommended that—

Lack of Internal Discipline. The FAR system, while imposing a great many restraints on industry, fails to impose discipline on itself. A multitude of conflicting signals permeate the system, such as oversight directives that contradict the FAR. Policy directives are not always followed in the field. Few means exist to enforce adherence, and even fewer ones to assess internal compliance. For example, although certain types of agreements, such as cooperative research and development agreements, are excluded from FAR requirements, they are routinely imposed on industry partners. Moreover, widespread and repetitive use of "nonstandard" clauses adds contractual requirements that have no basis in either the FAR or the agency supplements. The Working Group acknowledged that there are no "silver bullet" recommendations to create discipline on the government side of the contracting process. Nevertheless, a clearer management voice that can be heard through the contracting ranks of many agencies (and over the dull roar of competing directives), and well-established lines of management authority and accountability throughout the system are essential prerequisites to reform.

Systematic Barriers to Empowerment of Contracting Officers. Discretion is a double-edged sword for the contracting community. Few incentives, other than policy exhortation, encourage innovative contracting approaches, while disincentives abound. The personnel system does not reward acceptance of risk or exercise of initiative. Error or a failed pro-

curement could result, in the best case, in a black mark on the contracting officer's personnel file and, in a worst case, in a criminal investigation. Indeed, contracting is one of the very few functions in the Federal Government in which employees may be criminally liable for errors they make on the job. Moreover, their ability to innovate is constrained by the audit and oversight functions, which tend to drive the procurement process in more conservative directions. The Working Group recommended that—

- the contracting function be decriminalized except in cases of wilful misconduct;
- alternative evaluation criteria and reward methods be adopted to encourage contracting officers to manage risk; and
- the FAR be revised to eliminate the need for contracting officers to seek higher-level approval for any deviation from the audit opinion.

Overly Prescriptive Procedural Guidelines Imposed by the Audit and Oversight Functions. Just as military specifications and standards tend to specify a unique production process, the audit and oversight guidelines tend to prescribe a contractor's organizational and management structure. Although these guidelines have no basis in the FAR, they are a key determinant of the contracting process. In a number of key functional areas — accounting, material management, government property, supplier management procedures — compliance with quantitative, how-to checklists creates a structure that is at odds with best commercial practices. The problem is that the government tends to fixate on process when it should be focusing on end results. The failure to meet numerical targets or detailed process guidelines — developed years ago in a totally different business and procurement environment — often has little bearing on whether the company is delivering high quality at a reasonable price.

Reform of the FAR system must surmount the hurdle of an audit and oversight-driven culture. The Working Group developed the following recommendations:

- Oversight functions should set performance rather than process or quantitative targets.
- Agencies should be encouraged to establish a "Commercial Process Center of Excellence" to provide

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support to administrative contracting officers and auditors in evaluating key output attributes of commercial organizations.

- Government activities exemplifying progressive procurement practices should be recognized through a Baldrige-type award for excellence.
- Criteria should be established to measure how well the audit and oversight communities are supporting innovative contracting mechanisms, and these criteria should be part of their personnel evaluations.
- Audit efficiency should not be

based on the inflated number of expenditures that an auditor queries (which sends the unproductive signal that success is measured simply by questioning more expenditures), but on the more realistic number of cost savings through adjustments in contract price.

- Audit personnel should acquire greater exposure to state-of-the-art accounting practices through joint training with industry, participation in professional associations, or fellowships in industry.

Conclusion

The government is no longer a major buyer in many of the markets it once dominated, and it can no longer arbitrarily impose its ways and culture on U.S. business. It cannot afford — on economic or security grounds — to put U.S. companies at a competitive disadvantage simply because they sell to the government. Neither can the government afford to sustain its own captive industrial base.

Simplifying the purchasing procedures for commercial items is an important first step. But commercial item procurement, which has been the target of the most recent reform efforts, is only part of the solution — not a solution in itself. The ultimate goal of procurement reform should be to permit the government to take advantage of existing research, engineering, and manufacturing capabilities in the U.S. industrial base to provide the government with items developed for and tailored to its needs. Without a fundamental reorientation of the government's contracting philosophy and buying practices, current reform efforts will fail to achieve this objective.

Editor's Note:

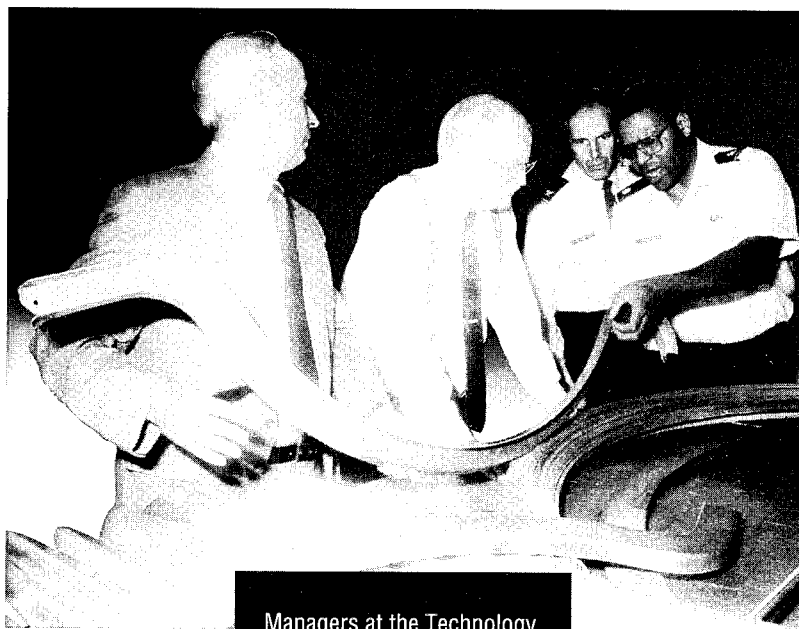
Copies of the full report, *Roadmap for Federal Acquisition (FAR) Reform*, 1995, are available by calling the Center for Strategic and International Studies, 1800 K Street, N.W., Washington, D.C. 20006. Telephone (202) 887-0200; Fax (202) 775-3199.

DEPOT MAINTENANCE RESTRUCTURING AND WEAPON SYSTEM SUPPORT

The Essential Role of Program Management Teams

Capt. Michael C. Bachmann, USN

The link between program managers and depot maintenance is crucial. Over the past several years, program management teams have increasingly recognized the importance of the weapon system life cycle support phase associated with their programs. Enumerated in countless articles, clearly the operational support phase costs for most weapon systems will exceed that of the combined design, development and production life-cycle stages. For this reason, ensuring program management personnel are cognizant of current policies is essential. Knowledge of the posture of both the commercial and organic depot main-



Managers at the Technology and Industrial Support Directorate, Air Logistics Center, Warner Robins Air Logistics Center, Robins Air Force Base, Ga., escort visiting dignitaries as they view a fluid cell press forming sheet metal parts. Second from left: Former Assistant Secretary of the Air Force for Acquisition, Honorable Clark Fiester.

tenance industrial base that will eventually provide the associated support for their Weapon Systems is also essential. Of additional importance is awareness of their critical role in accomplishing depot source of repair decisions during the early phases of their program in order to ensure continuing support of their particular weapon system throughout its life. What is the current status of the industrial sector?

Downsizing and Consolidation

On 15 March 1995, the Pentagon hailed the \$10 billion merger of Martin Marietta and Lockheed as a master stroke for the nation's security.¹ Major defense firm mergers have been the norm for the past several years, and will most likely continue as the commercial sector continues to size itself to accommodate the forecasts of a declining workload. In the past 3 years

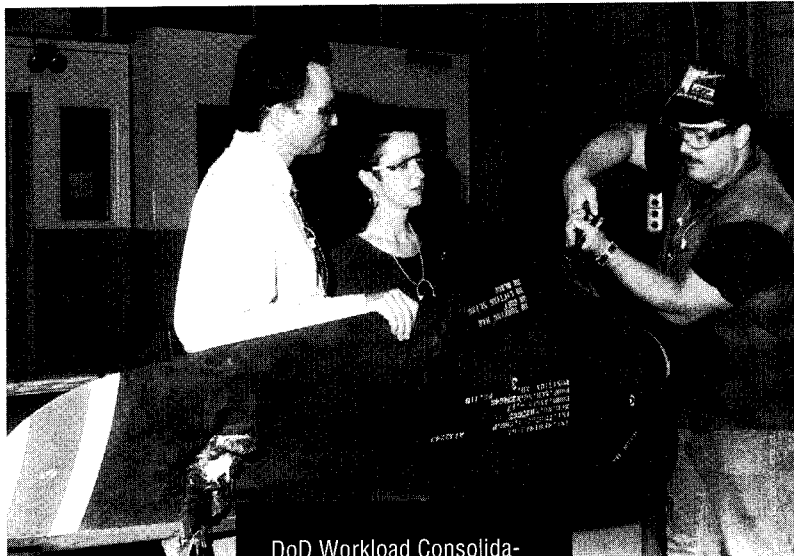
Capt. Bachmann, USN, is the Director of the Joint Depot Maintenance Analysis Group, Gentile Station, Dayton, Ohio. He is a U.S. Naval Academy graduate, as well as a 1992 graduate of the Naval War College.

alone, the defense industry has shed at least 700,000 jobs.

The downsizing initiatives being initiated by industry are not unusual and were expected. The 31 March 1994 Report of the Defense Science Board Task Force on Depot Maintenance Management included the results of a survey of 62 companies that was undertaken in order to collect capacity and utilization data from those industries involved in depot-level maintenance. The results illustrated that there was only a 46-percent capacity utilization across the sectors of Fixed Wing, Ground, Electronics/Missiles, and Sea Systems.

As excess capacity and pricing competition depress their financial performance, overhaul and maintenance companies within the commercial sector are being forced to consolidate. As an example, this was typified by the shutdown of the Page Avjet's maintenance operation in Orlando, Florida, during 1994. Consolidation of the powerplant overhaul and maintenance market is also underway as illustrated by Greenwich Air Services' acquisition of Pratt & Whitney JT8D maintenance assets from AAR, and Aviall's paring of its business jet powerplant assets by selling Dallas Airmotive.² These actions illustrate that the industrial sector will have to continue to shed its excess capacity in the future in order to remain profitable.

Another interesting trend evidenced among major industrial corporations is their drive to lower operating costs through reductions in overhead, inventory and other maintenance expenses. Continental Airline's contracts to Greenwich and Aero Corporation illustrate their strat-



DoD Workload Consolidation is a reality at the Cherry Point, N.C., Naval Aviation Depot (NADEP). Propeller Shop supervisor, Connie Gonzales, observes removal of a coverstock from an E-2 propeller blade with aerospace engineer Tom Bly (left) and aircraft propeller mechanic Chris Rusich (right). Mr. Bly and Mr. Rusich transitioned to NADEP from Alameda, Calif., along with transfer of the workload.

egy to distribute their maintenance operations to "third-party" Operation and Maintenance (O&M) shops. At the same time, O&M companies are being forced to revamp their internal operations through promises of shorter repair times and reliable delivery dates, in order to stay competitive since they are unable to cut prices much further.³

DoD Organic Depot Infrastructure

Consolidation initiatives, organizational personnel reductions, efforts to shed excess capacity, redistribution of workloads, and a renewed focus on maintenance repair and resource processes, are practices that are not con-

strained solely to the commercial industrial base. The Department of Defense (DoD) organic depot infrastructure has additionally been undergoing a profound transition over the past several years that mirrors the changes that are currently occurring in the private sector.

The DoD organic depot infrastructure is a big business.

Performed in both the public and private sectors, DoD expends approximately \$12 billion annually for depot maintenance work. Typically, about 70 percent of the work is accomplished in DoD organic depots, and 30 percent is contracted out for performance by commercial sources.

Guidance issued by the Office of the Secretary of Defense (OSD) in the 30 June 1990 memorandum, "Strengthening Depot Maintenance Activities," directed the Services to achieve increased efficiencies and savings in depot maintenance. The issuance of Defense Management Report Decision (DMRD) 908 on 17 November 1990 further established a savings target of \$3.9 billion to be achieved by FY 95 through increased efficiencies in depot maintenance near-term and long-range operations. The Defense Depot Maintenance Council (DDMC) Corporate Business Plan for FY 91-95, dated December 1991, catalogued those actions planned by the Services for achieving these savings. Included in those actions was the increased use of competitions, depot closures, workload realignments, and interservicing transfers. Clearly, the era of DMRD 908 essentially commenced the realignment of depot maintenance management within DoD. The organizational sizing initiatives that are currently occurring in

U.S. Army photo

the commercial sector mirror those actions that the public sector has already initiated.

Current policies continue to stress the need for improved depot efficiency while sizing the organic infrastructure to accommodate "Core requirements." The Services continue to emphasize increasing depot efficiency in order to reduce costs and to enable them to be more responsive to their customers. As a result of this restructuring, DoD is essentially moving from a competitive relationship with private industry to a partnership, especially as illustrated in DoD's current discontinuance of public-private competitions as a means of reducing the organic depot infrastructure. This trend is further illustrated in the DDMC Business Plan for FY 95-99, dated 30 January 1995. Organic workload projections show a downward trend from a FY 94 level of 121.1 million direct labor hours to a FY 99 level of 96.3 million direct labor hours, or approximately 20 percent. Likewise, the level of contract workload reflects increases from FY 94 through FY 99 from a level of \$3.1 billion to \$3.9 billion, or approximately 25 percent. Depot maintenance personnel levels are additionally projected to fall from a FY 94 level of 103,087 people to a FY 99 level of 81,262 people, or approximately 21 percent during this period. It should be recognized that all projections will be impacted by the final recommendations of the 1995 Base Realignment and Closure Commission.

As DoD's depots are restructuring to become more efficient, they are additionally enhancing their business processes through various initiatives in order to reduce their cost of doing business. One such ini-

tiative is their adoption of current information system technologies. The Services, working with the Joint Logistics Systems Center, Directorate for Depot Maintenance, selected a suite of eight applications that constitute the Depot Maintenance Standard System (DMSS). Each of the DMSS applications supports one or more of the functions of project management, reparables management, financial management, shop floor manufacturing, and specialized support. Modernized information system platforms, in consonance with tools to facilitate improved repair and resource planning, will provide DoD's depots with the tools necessary to support Program Management teams in their sustainment of DoD Core requirements throughout the next decade.

Implementation of the Core Concept

Currently, the Services are restricted in the amount of depot-level workload that can be pushed to industry. Under section 2466 of Title 10 of the United States Code (U.S.C.), 60 percent of all depot-level work must be accomplished by government per-

sonnel. Part of DoD's industrial base strategy for the depot maintenance community, however, is the achievement of an acceptable balance between the public and private sectors. Implementation of the Core concept supports this objective. It will also enable effective use of the strengths of the public and private industrial bases.

What is Core? In 1993, the DoD implemented the Bottom-Up Review to select the right strategy, force structure, modernization programs, and supporting industrial base infrastructure to provide for America's defense in the post-Cold War era. It was accomplished as a highly collaborative effort composed of a steering group, chaired by the Under Secretary of Defense for Acquisition, and included representatives of the offices within the OSD, the Joint Staff and the Services. Its scope encompassed all major elements of defense planning, from the formulation of strategy, to construction of force structure, to weapon system modernization, and finally reconfiguration of the DoD infrastructure. The Bottom-Up Review ultimately recommended establishment of a force structure to support an initial response to a single Major Regional Conflict (MRC) as follows: four to five Army divisions; four to five Marine expeditionary brigades; 10 Air Force fighter wings; 100 Air Force heavy bombers; four to five Navy air-

craft carrier battle groups; and Special Operations forces. The Bottom-Up Review concluded that the United States must field forces sufficient to fight and win two nearly simultaneous MRCs; which for the bulk of ground, naval and air forces would require duplicating the MRC building block described previously. The Bottom-Up Review also

An employee at Letterkenny Army Depot, Chambersburg, Penn., converts a self-propelled howitzer chassis to an M109A6 configuration.



U.S. Navy photo by Jacquelyn Randall

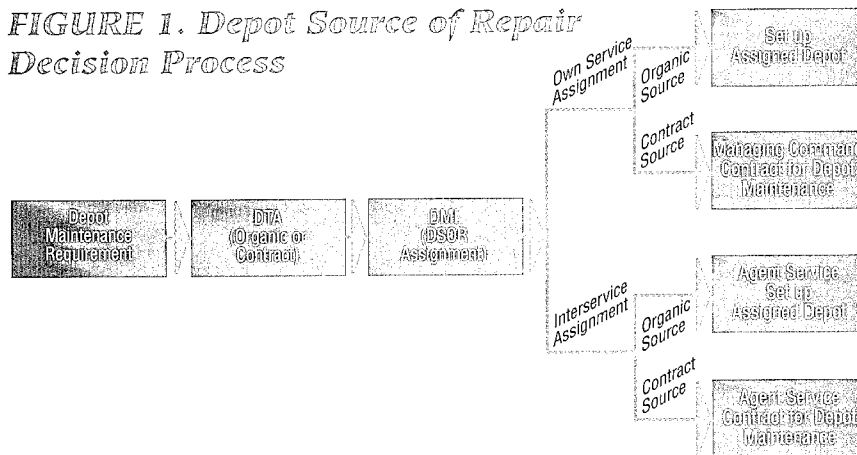
noted that a prudent level of peacetime forces should be planned for major intervention or peace enforcement operations.

The essence of the need for a ready and controlled source of depot maintenance capability is embodied in the term "depot maintenance Core." Depot maintenance Core is the minimum capability maintained within organic Defense depots to meet readiness and sustainability requirements of the weapon systems that support the Joint Chiefs of Staff contingency scenario(s). The requirement to retain organic depot maintenance Core is based in U.S.C., Title 10, Section 2464, which mandates that DoD maintain a logistics capability (including personnel, equipment and facilities) to ensure effective and timely response to a mobilization, contingency or other emergency requirements.

The DoD's Core Policy, as set forth in the Deputy Under Secretary of Defense for Logistics memorandum of 15 November 1993, states that Core depot maintenance capabilities will comprise only the minimum facilities, equipment, and skilled personnel necessary to ensure a ready and controlled source of technical competence. Organic Core resources provide a capability that can be quickly mobilized when needed to support a military contingency and a base from which commercial capability can be reconstituted in the event of an unplanned lapse in commercial support. The nature of organic depot resources enhances the depots' ability to provide a flexible, effective Core capability. The depots possess a wide variety of skills, facilities and equipment. Diverse depot workloads enable cross training of personnel. This broad spectrum of depot assets constitutes a solid foundation on which Core capability is based.

With completion of the Bottom-Up Review in September 1993, a planning baseline was established for the

FIGURE 1. Depot Source of Repair Decision Process



proper size of organic depot operations. Actions to streamline our depots to accommodate Core requirements will, by necessity, result in the redistribution of workload to industry. Actions to shift non-Core workload to the commercial sector, when ample market forces exist to repair these assets, can be evidenced at this time. As an example, AeroThrust Corporation, a Miami-based company, has demonstrated over the past 12 years its capability to repair U.S. C-9 aircraft fleet engines. The company's pursuit of JT8D repair work was boosted early this year when it won a 5-year, \$70 million contract to provide depot maintenance for all U.S. military JT8D engines. This includes power plants for all U.S. Air Force C-9As and T-42s, U.S. Navy C-9Bs and Air National Guard C-22s.⁴

Acknowledgment is widespread that the public and private sectors must complement one another. The private sector is an integral partner in both accomplishing depot maintenance and in providing goods and services to support organic depot maintenance. Program Management teams play a crucial role in the early stages of their programs in determining the optimum depot options that should be employed for supporting their weapon systems.

Depot Source of Repair (DSOR) Process

The Program Management team is

a key player in the Depot Source of Repair (DSOR) process that begins when depot maintenance support requirements are initially identified during an acquisition (Figure 1). The Secretary of Defense mandated the DSOR process as an activity of Integrated Logistics Support in DODI 5000.2, "Defense Acquisition Management, Policies and Procedures." The DODI 5000.2 requires that the acquiring DoD Component initiate the DSOR assignment process (Figure 2) within 90 days of engineering and manufacturing development contract award, and that the Services use the Joint Depot Maintenance (JDM) Program regulations: OPNAVINST 4790.14; AMC-R 750-10; AFMCR 800-30; and MCO P4790.10A, Logistics Depot Maintenance Interservice.

All programs that meet the following criteria are required to be included in the DSOR process: (1) all new weapon systems, sub-systems, major end items, components, support equipment acquisitions, or modification programs requiring depot maintenance support; (2) all depot repair programs transitioning from contract to organic or from organic to contract depot maintenance; and (3) any depot repair programs for which a change in support will require an additional capital investment of \$100,000 or more for depot equipment or facilities. The Services must make these decisions jointly in accordance with the JDM Program regulation.

In planning for a DSOR, Program Management teams should use their Service's decision tree analysis (DTA) process for determining whether organic or contractor repair is preferable for the support of their weapon system. Figure 3 illustrates a generic DTA logic chart that addresses such issues as wartime surge, workload mission essential status, availability of commercial repair sources, and costs associated with establishing the repair source. These issues, as an example, would be appropriately analyzed in order to determine the optimum depot maintenance support approach for their weapon system.



U.S. Army photo

M109 self-propelled howitzers like these at Letterkenny Army Depot, Chambersburg, Penn., await conversion to an M109A6 configuration in a training relationship with FMC Corporation.

and a renewed focus on maintenance repair and resource processes. These changes can be expected to continue in the future. As an example, more ambitious changes to the DoD logistical support structure are currently being examined by the congressionally convened independent Commission on Roles and Missions (CORM) of the Armed Forces.

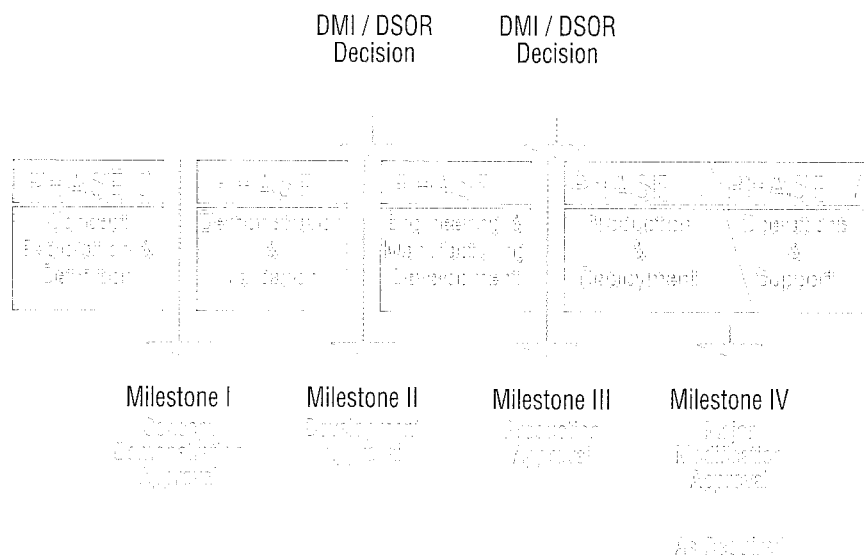
Tasked with recommending ways to streamline the military, the Commission is steadily moving toward advancing a proposal for large-scale privatization of defense support activities, including depot maintenance and supply logistical services. Although several commissioners recognize that roughly one-third of depot-level maintenance in DoD is already being farmed out to private firms, they have stated that more could be done.⁵

The DoD originally instituted the DSOR process to ensure that an economic evaluation of potential depot repair alternative actions was accomplished early in the life cycle. Alternative DSOR options include contract maintenance, intraservice organic depot repair and interservice organic depot repair. The DSOR process is still valid and significantly contributes to the avoidance of those costs associated with duplicating facilities, test equipment and training for the same or similar items being introduced by the Services. The process focuses on identifying potential depot repair sources, both organic and commercial, with available resources that should reduce costs for depot activation and interim contractor support. Further, the process seeks sources that can provide cost-effective, long-term support.

are currently undergoing major changes that include consolidation initiatives, organizational personnel reductions, efforts to shed excess capacity, redistribution of workloads,

Any efforts to pursue wholesale privatization will have to be scruti-

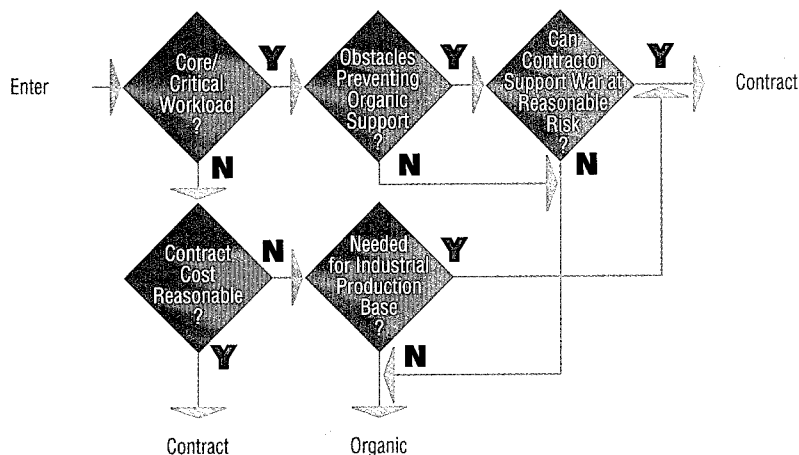
FIGURE 2. Depot Source of Repair Decision and Acquisition Milestones



Privatization

This article previously illustrated that the commercial and organic depot maintenance support structures

FIGURE 3. Generic Decision Tree Analysis



nized very closely. As an example, BRAC 93 resulted in the recommendation that the Air Force privatize the Aerospace Guidance and Metrology Center (AGMC) operation at Newark Air Force Base, Ohio. The General Accounting Office (GAO) initially estimated that the AGMC/Newark Air Force Base closure costs would be \$38.29 million, with a 13-year payback period. Subsequently, GAO reported that one-time closure costs had doubled in the past year and may still be underestimated, resulting in a payback period that has increased at least 17 years to as much as over 100 years. In addition, GAO has stated that projected costs of conducting

post-privatization operations could exceed the cost of current Air Force operations and reduce or eliminate projected savings.⁶

The DoD's current strategy continues to be a policy committed to sizing the infrastructure to support Core requirements. Wholesale privatization proposals, as advocated by groups such as the CORM, however, pose potential support issues for program management teams that are left unanswered. Nevertheless, the mere existence of such groups highlights the fact that program management teams must be cognizant of the continuing impetus to further streamline DoD's sup-

port structure. The role of program management teams in providing depot maintenance support planning over the life of their program may become more difficult in the future, but it will certainly not be relinquished.

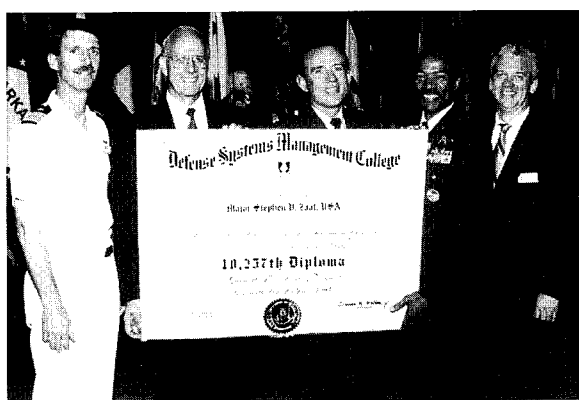
Summary

In summary, program management teams play a crucial role in conducting depot maintenance planning for their associated weapon systems in the early stages of their programs. Responsible for determining the optimum depot options that should be employed for supporting their weapon systems, their cognizance of current policies and the posture of both the commercial and organic industrial base that will eventually provide the associated support for their Weapon Systems, is essential.

Editor's Note: A working-level correspondence training course that teaches the entire depot maintenance interservicing process is available. Interested individuals should contact the Joint Depot Maintenance Analysis Group (JDMAG), Attn: Training Administrator, 1080 Hamilton St., Dayton, Ohio 45444-5370, or by telephone at (513) 296-8290 or DSN 986-8290. Reference the Depot Maintenance Interservice Support Agreement (DMISA) Training Course.

MAJOR RECEIVES LAST PMC DIPLOMA

A name ending in "Z" usually means that Maj. Stephen Zaat, USA, will be last in virtually any alphabetical ranking. However, in the case of the PMC 95-1 graduation at Fort Belvoir's Wallace Theater on 9 June 1995, Maj. Zaat enjoyed the distinction of receiving a very special diploma — the last diploma



awarded to a graduate of DSMC's 20-week Program Management Course. The College recently replaced the 20-week Program Management Course with the 14-week Advanced Program Management Course (APMC). From left: Capt. Daniel Brown, USN, Dean, School of Program Management; Maj. Gen. Lynn Stevens, USA (Ret.), Vice President and Manager, Precision Weapons Department, Northrop-Grumman Corporation, and former Commandant, DSMC; Maj. Stephen Zaat, USA, PMC 95-1; Brig. Gen. Claude M. Bolton, Jr., USAF, Commandant, DSMC; Mr. George Merchant, Director, PMC.

Endnotes

1. "Defense Giants to Merge Today Amid Heartache," *Washington Post*, March 15, 1995, p. C-1.
2. McKenna, James T., "Overhaul Firms Fight Excess Capacity," *Aviation Week & Space Technology*, March 13, 1995, p. 75.
3. Ibid.
4. Ibid.
5. Graham, Bradley, "Effort Building to Privatize at Defense," *Washington Post*, March 20, 1995, p. 1.
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COOKING UP A BATCH OF TEAM SYNERGY

Ingredients for Setting Up Successful Teams

Col. Willie E. Cole, USAF

Welcome, my friends, to an era when change is so fast and furious you don't dare blink for fear of losing your place in a reinvented or restructured society. Congress is madly restructuring political power bases as Republicans take over committees. The Administration is reinventing government, struggling to bring about their long-advertised downsizing. Why, even that dreaded, eight-page federal form, SF 171—the one used to apply for a job with the government—is being redesigned into a one-page resume. In our own arena, reform in DoD's massive acquisition community is being cheered on by businessmen and bureaucrats alike. Change is in the air, and along with it comes a taste for reinvention and a yen to restructure our established institutions.

Business Gets in the Act

Not one to be left out of any rage for change and reinvention, the business world is busy working on its own strategy to restructure itself. Forward-looking businesses are preparing for competition in a new world by taking a new look at their basic organizational structures and processes. Then they're

redesigning themselves through a process they call 'reengineering'. After that, one of the most popular building blocks they're using to build new versions of their old selves is cross-functional, product-oriented teams.

Surely you've noticed how businesses are going just a little gaga over the team concept. Thumb through business magazines and check out hardbacks in the business section and you'll find titles like, *The Discipline of Teams*, *Why Some Teams Don't Fail*, *Team-Based Organizations*, and *Empowered Teams*. And if you're like more than 50 percent of the workers in America's Fortune 1,000 companies, you've already been assigned to one team or another under your company's latest reorganization scheme.

The Team Concept — It's Here Now

As if to reiterate the point, well known management guru, Tom Peters, in his book, *Liberation Management: Necessary Disorganization for the Nanosecond Nineties*, states, "Success is the judicious application of sharply focused, management-nurtured, multi-disciplined, empowered project teams totally committed to customer involvement and satisfaction."

Col. Cole, USAF, is the Deputy System Program Director for Joint STARS, Hanscom Air Force Base, Mass. He is a graduate of PMC 83-2, and served as a DSMC military research fellow, 1989-1990.



With statistics and statements like these, it's easy to see that the team concept has arrived. These days, if you can't speak 'teamspeak', you're tagged as an old fogey stuck in the bygone era of stovepipes and functional fiefdoms.

Do these multi-disciplined teams work? Simple math says they do. Check with NCR, which reduced development time in half and product assembly time by a fourth for its new

terminal by using cross-functional teams. Or ask John Deere and Company, which reduced costs of developing its construction and forestry equipment by more than 30 percent, and reduced assembly time for harvesting equipment in its East Moline [Illinois] factory by 10 percent.

Still, dollars and cents aren't the only reason teams make sense these days. Companies in the fast lane of today's global competition are discover-

ing that they must be highly flexible just to survive, and one of the strongest advantages of being organized by teams is — you guessed it — flexibility. Teams can be organized and reorganized, and then directed and re-

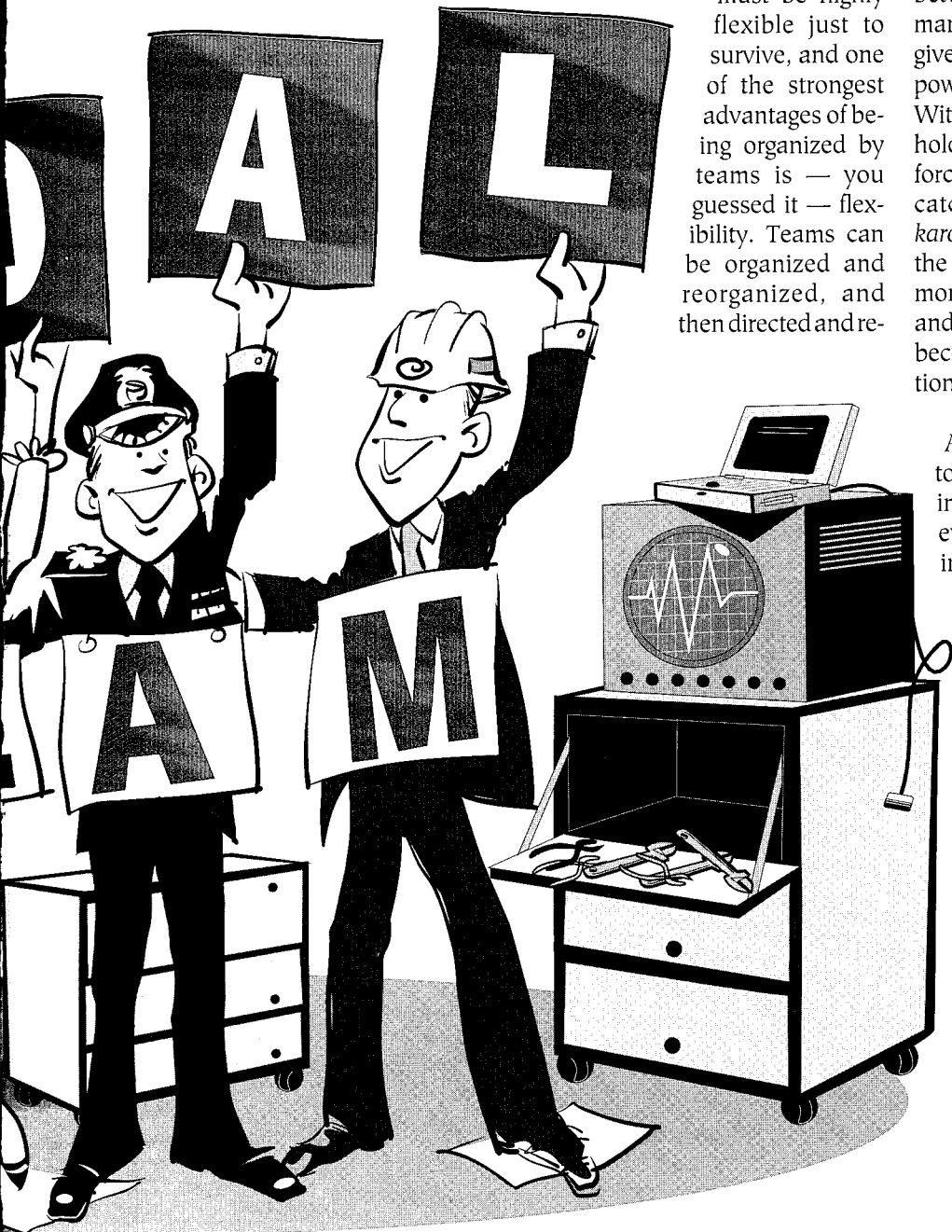
directed much faster than the unyielding bureaucracies of the past.

Along with the advantages of flexibility and cost savings, managers are recognizing that teams can be willing partners in their search for that elusive, holy grail of management — empowerment. Most companies include strong doses of empowerment in their new team philosophy, so it's fairly easy to hand a team a mission and tell them they own that mission. Even if there weren't such a good fit between teams and empowerment, managers are discovering they must give these new teams wide-ranging powers whether they like it or not. With "downsizing" becoming a household word, remaining managers are forced into empowerment, or they risk catching the Japanese disease of *karoshi* — death from overwork. Add the 'plus' you get from the improved morale of a well run, tight-knit team, and it's easy to see why teams have become the new darling of organizational strategists.

As the concept of empowered, customer-oriented teams works its way into the boardrooms of America, even the most static of American institutions, government, is seeing the same concept creep down its own hallways. Three years ago, the Air Force's Materiel Command began converting its programs to empowered, cross-functional teams under an approach it calls Integrated Product Teams. Not to be left out, the Navy sailed into this new sea change at the Naval Air Warfare Center at Patuxent River, Maryland, by breaking down their functionally oriented departments and replacing them with customer-oriented, multi-disciplined project teams.

Symphony or Cacophony

As always though, any new idea brings its own set of problems when you get down to the brass tacks of implementation. Many managers discover that it's



easy to reorganize into cross-functional, self-directed teams, but it's not always easy getting them to perform like a true team. Some make the mistake of throwing a new group of people together, slapping the label 'team' on them, and then standing back and expecting great things to happen. They usually don't. Uproot individuals from their old, comfortable positions and put them into a new team, and you're more likely to end up with a cacophony of discord than a symphony of teamwork.

Worse yet, many managers cut teams loose under the banner of empowerment and find out too often and too late that they're headed down a rocky sideroad to disaster rather than the superhighway to success. How then can leaders help create a synergy of teamwork that helps ensure team benefits such as flexibility, creativity, and cost savings? And how can you give teams enough freedom to keep them motivated while still monitoring them closely enough to catch them before they fall? Answers should be easy. After all, we've been forming teams of one sort or another since hunting parties sallied forth to stalk the woolly mammoth. Still, getting teams to perform at top levels remains difficult.

What Exactly Is a Team?

Much of the misunderstanding has to do with how loosely the word 'team' is used. Because teamwork is vital to the success of any organization, managers tend to label any group of people a team, believing that teamwork and cooperation will automatically follow. Labeling Northwest Airlines as Team Northwest, for example, hardly makes Northwest a true team, but managers and CEOs love it because it is a catchy phrase for corporate letterheads and advertising posters. There's nothing inherently wrong with calling such a large corporation a team, but large numbers of people are not likely to think of themselves as a real team, no matter how diligently managers apply the label.

Katzenbach and Smith, authors of *The Wisdom of Teams*, found that few successful teams were composed of more than 25 team members. Even Ralph Nader, that conscience of Congress and adversary of bureaucrats, has discovered the benefit of organizing into smaller rather than larger teams. In a talk in Washington D.C., he told of how his organization has reorganized itself into groups of 15 or less and noted that, "With small groups, it's much more difficult to pass ownership around." Group dynamics being what they are, groups of say, 30 or more, tend to break themselves down into smaller groups anyway.

Another related area of confusion centers around the concept that real teams always have a goal that's shared by all team members. A collection of people working on individual assignments with individual goals is hardly a team. A group of accountants examining tax returns with quotas on the number of tax returns examined each day can hardly be called a team.

One other key ingredient of teams is that they involve people with skills that complement each other as they work toward their common goal. Think of a baseball team. There's a pitcher, a catcher and fielders, all with different skills that complement each other as they work toward the common objective of winning a game.

What all this boils down to is that for a group to be a real team, they should be a relatively small number of people with complementary skills, and they must have a common goal. Glenn M. Parker, author of *Team Players and Teamwork: The New Competitive Business Strategy*, puts it this way: "A group of people is not a team. A team is a group of people with a high degree of interdependence geared toward achievement of a goal or the completion of a task. In other words, they agree on a goal and agree that the only way to achieve the goal is to work together." Notice the emphasis on a common goal and interdependence. If

these elements are missing or are unclear, managers can not expect to see high performance from a team, no matter how hard they try to force the square peg of a group into the round hole of a team.

Upsides and Downsides

Nor should they, no matter how popular the concept is these days. Teams are only one tool managers have at their disposal. On the downside, restructuring into cross-functional teams can interrupt and disrupt organizations' productivity, and with their thirst for functional experts, they can be one of the more expensive organizational structures. Integration of teams' activities can also be a nightmare. Like functionally oriented organizations, teams can get tunnel vision and forget that there are other missions and reasons for an organization's existence.

On the plus side, teams excel when creativity is needed or when there is a complex task that cuts across organizational and functional boundaries. Teams can also increase ownership and commitment. And teams fit well not only with the new organizational concepts, but also with recent concepts in management execution. Concurrent engineering and integrated product development, for example, rely on teams to execute their concepts. The real trick is to apply teams effectively, when appropriate.

Recipe For Success

That brings up the crux of the problem. Many managers are long on understanding what teams are, but short on understanding exactly how to get them to work. Fortunately, there are a few common ingredients that can help managers cook up something called team synergy, the state in which the sum of the whole is greater than the sum of the parts. Some of these ingredients are obvious; others are more subtle. Obvious or subtle, setting up and keeping teams working at peak

efficiency requires thorough and deliberate actions from managers and leaders. The first, and maybe the most important of these deliberate actions is the creation of an important and urgent challenge for each team.

Step 1 — Start With An Exciting Challenge

After studying hundreds of teams in the business world, Katzenbach and Smith came to the conclusion that all successful teams have one thing in common: an important and urgent challenge. Unlike individuals, teams don't put forth superhuman efforts to climb mountains just because they're there. Teams climb impossible mountains because they've been inspired that the climb is vitally important to the organization and individuals on the team.

Management's challenge then, is to establish an inspirational challenge, and then to communicate that challenge in a way that convinces the team of both its importance and urgency. Establishing such a challenge is a balancing act between creating a challenge that is a demand for the impossible or on the other end of the scale, an excuse for comfortable mediocrity. To get the most out of a team, a challenge should be just barely attainable, but not so easily attained that teams view it as a walk in the park. Like individuals, teams will tend to rise (or sink) to the occasion. If you want the best, you'll have to ask for it.

Think then of a team's challenge as a vision of the important job the team must achieve. It should be short, easily understood, and easy to remember. And it should describe the team's job in terms that are directly related to the purpose of the team. In Total Quality Management or 'TQM' speak, that means that in one way or another the challenge must point to the reason of existence for the team — the customer.

One example of a highly effective team challenge occurred when

Chrysler formed a team to develop their newest small car, the Neon. They challenged the team to develop the car in 42 short months with a sticker price of only \$8,600. The rallying cry became, "42 months, under \$8,600." Short and understandable, the team's challenge was easy for all to remember. Management also took the time to explain to the team how vitally important their challenge was — that without timely success jobs would be lost, and a hefty share of the market would be conceded to the Japanese. This team's challenge, which pointed the way to eventual success, had all the attributes of a good challenge: difficult, but not impossible; important to both the team and individuals; urgent; and finally, clear and understandable by all. Without a clear and challenging vision, teams can easily end up as a group of people who wander about wondering why management formed a team in the first place.

Step 2 — Mix Well With Winning Players

Once you've established a challenge that's sure to inspire, it's time to pick team members to meet that challenge. Skill and experience in specific areas will be traits most look for first. These traits are certainly important, but they may not be most important within a team context.

In a highly motivated team, a group of workers and doers with adequate functional knowledge will often get more done than a group of renown experts interested only in excellence in their specific area. Select not only for skills, but consider personality and mind-sets also. Managers would do well to look for motivated team members who have adequate expertise with highly developed interpersonal skills. Keep in mind that the nature of an enthusiastic, motivated team will help compensate for team members with less than perfect skills and experience. If a motivated team can't compensate for lower skill levels or experience, they will tend to go looking for additions or help. Observant manag-

ers can watch for such activities and help with additions or temporary assignments as necessary.

There is, however, one member a team cannot compensate for no matter how hard they try. That member is the team leader. With some of the new concepts of teaming surfacing such as open communication and consensus building, many believe that a strong team leader is not necessary. They couldn't be further from the truth. As Capt. Charles Barco said in his article, *Valuing Leadership in an Era of Prophets, Politicians, and Pugilists*, "Leadership doesn't end with the formation of quality teams; it is the heart of quality teams."

And while today's prevailing management wisdom says a team leader's primary role is as a coordinator, the leader must at times fulfill the role of director. James P. Womack, Daniel T. Jones and Daniel Roos, authors of *The Machine That Changed the World*, point out the importance of a competent team leader, not a coordinator, with authority commensurate with responsibility. Assigning functionals who owe their heart and pocketbook to the home office, and then asking team leaders to cajole and persuade them to do what is best for the team, not the home office, is next to impossible. As proof they point to the successful Japanese *shusa* system, pioneered by Toyota, which calls for a strong leader with functionals being formally assigned to the team (and this is key, they say), with the functionals' careers tied to the success or failure of the team. Choose the right team captain to lead and inspire a team, set up the team properly, and whatever the team's job, amazing results can occur.

Step 3 — Throw In Expectations, Stir With A Charter

After establishing a challenge and picking team members, it's time to establish exactly what you expect from the team. One method of doing just

that is a charter. Perhaps one of the best known examples of the use of a charter in earlier times was Christopher Columbus' charter for his trip to the New World. Before he sailed off on his quest, Columbus and Queen Isabella's agents negotiated a charter called the Capitulations. Queen Isabella would pay for ships and other expenses, and Columbus would make discoveries in Queen Isabella's name. By negotiating the agreement with Columbus, Queen Isabella's agents gave Columbus a sense of ownership of the terms of the charter. And by agreeing that Columbus would act in her name, Queen Isabella gave Columbus full empowerment to accomplish his mission.

The same concepts hold true today. Before a team starts off on its own quest, a charter of some sort should be negotiated between the team and management. Under the concepts of TQM, the vision and mission [read challenge here] of any organization should be broken down into goals and objectives, and teams are no exception in this respect. With a set of objectives laid out as yardsticks in a charter, teams have interim targets to shoot for that tells them whether or not they are making progress toward their challenge. Without such measurements, the long climb up the mountain can often seem unachievable.

Concerning the resources a team will need, the charter should list such resources as manpower and money available to the team. By listing these resources, it's not only the team that's making a commitment, it's management's way of committing itself and agreeing that the team is empowered to use those resources. No team wants a charter that lists only their 'to dos' and responsibilities. Under such a scenario, a charter becomes just another set of orders, rather than an agreement between the team and management.

Another, perhaps just as important aspect of a team charter deals with the

boundaries you want the team to stay within. Some teams will not have the experience to recognize when they're getting into trouble, while others will know they're in trouble but they'll wait until the last minute to ask for help. Without some sort of mechanism to signal that a team is approaching trouble, managers can find themselves trying to bail out inexperienced teams after their boat has already sunk. Many managers assume that teams will somehow sense how far they can go before they report back to their boss, but that's not always true. Nobody wants to admit they're getting into trouble, especially when the admission must be made to the boss.

To help keep teams out of such trouble, the charter should give the team thresholds associated with the budget (or other restraints such as schedule). If the team has a 10-percent safety pad in their budget, the manager may want to know when that pad is down to 5 percent, for example. If thresholds are going to be breached, the team should come back to management for help and consultation. As long as they stay within their limits and thresholds, there should be no need to consult with management on team-initiated changes.

While the temptation will be to write down all details about a team's existence in a charter, a good charter is not elaborate or extensive. A perfect example of less is more, charters are most effective when they're simple. Too much detail and the team will have its hands tied behind its back. With simplicity comes flexibility and empowerment. Nor is the charter something the manager writes and forces down the team's throat. On the contrary, the establishment of boundaries, goals, and objectives in the charter must be a group project between the team and management if you want the team to buy into it.

Really then, a charter is nothing more than a simple agreement between management and a team as to

what the team's mission, goals, and objectives are; a list of resources available to the team; any important thresholds; and a short explanation of its responsibilities. Moreover, a charter forces a team to take care of business with a back-to-basics approach. In the vernacular of standard management principles, it is the team's 'plan' part of plan, organize, direct, coordinate, and control. With thresholds, it can also act as management's 'control' of the same.

Step 4 — Bake Well In A Team Environment

With the challenge established, members chosen, and a charter written, it's time to make sure the team is living and working in an environment that's supportive of teams. Setting up a team environment is like building a house — if you get the foundation right, everything else fits together a lot easier.

When you build a team, you create a brand new culture with its own values and behavioral norms that translate directly into specific behavior. Take advantage of this concept and encourage team members to set up team-oriented rules of engagement as soon as possible after a team is formed. House rules with established concepts — e.g., team meetings take priority; all team members get confidentiality and support from each other; no finger pointing; and other such rules — can go far in creating an open and creative team environment.

Early in the team's life is also the time to train team members about what it means to be on a team. For those who were always told what to do and when to do it, the freewheeling atmosphere of an empowered team can be confusing. A common mistake of managers is that they assume their workers are as up-to-speed on new management concepts and philosophies as they are. Concepts in the charter like mission, goals, and objectives can be puzzling to those who haven't been told the subtle differ-

ences between the three. As a minimum, managers should set up sessions where basic team concepts and expectations are explained. Without such sessions, you'll have as many interpretations as you have teams.

Another vital step to setting up the right team environment is to examine current procedures and processes and modify them as necessary to support your new team structure. If written procedures require that any new design be reviewed and approved by functional organizations, you've squashed any hope of your team's feeling empowered and responsible for the design of their product. Many managers rush into a new team structure thinking they'll change procedures as they go along. It's not long before those managers find that transitioning to a team environment takes a lot longer than they ever expected.

It may sound trite, but one of the best ways to get a team to act like a team is to treat them like a team. One way to do this is to reward the team for its efforts as a team. If you reward individual accomplishment, individual accomplishment is what you'll get. While leaders and managers have always been able to come up with individual rewards, the trick in a team environment is to think team awards, not individual awards. If you do give out individual awards, make sure they are for acts that contribute directly to meeting the team's mission and goals, and make a point of this when the award is handed out. Team awards for collective work products can range from recognition in front of other teams, to team time off for accomplishments. One easy way to make sure everyone benefits from an award and to build team cohesiveness is to make a celebration out of meeting a milestone in the team's charter. Smart team leaders will negotiate their charters with a few easy milestones up front, and give themselves a built-in chance to celebrate and build team spirit early in the team's life.

Another effective idea for building team spirit is to create a unique, identifying feature for the team. One team leader who fought for years to collocate his team, was finally successful when an organization-wide move was initiated. A few days after the team was collocated, American flags sprang up on all of their offices and cubicles. Soon, everyone in the organization knew of the 'flag team', and team members had a feeling of belonging to a special team.

There are a number of such team-building exercises that managers and leaders can apply, but the real trick is to give serious thought to creating teams and then to take positive action to create a team environment. Don't assume that team cohesiveness and team spirit will automatically happen. That elusive phantom of team synergy is just that — elusive. To capture it takes work and thought from leaders and managers.

Step 5 — Serve With Generous Helpings of Leadership and Management

The recognition that setting up successful teams is an art and science in its own right is the final ingredient in setting up successful teams. None of the previous tips will insure that your teams are successful unless they're combined with the realization that creating successful teams requires a lot more than just reorganizing your current organization.

Nor are any of these tips rocket science. Creating a challenge, drafting winning players, establishing a plan and expectations, and creating a team environment require the application of good old fashioned leadership and basic management principles. And remember, synergy doesn't just happen. It's cooked up with hard thought and conscious actions by the leaders and managers in an organization.

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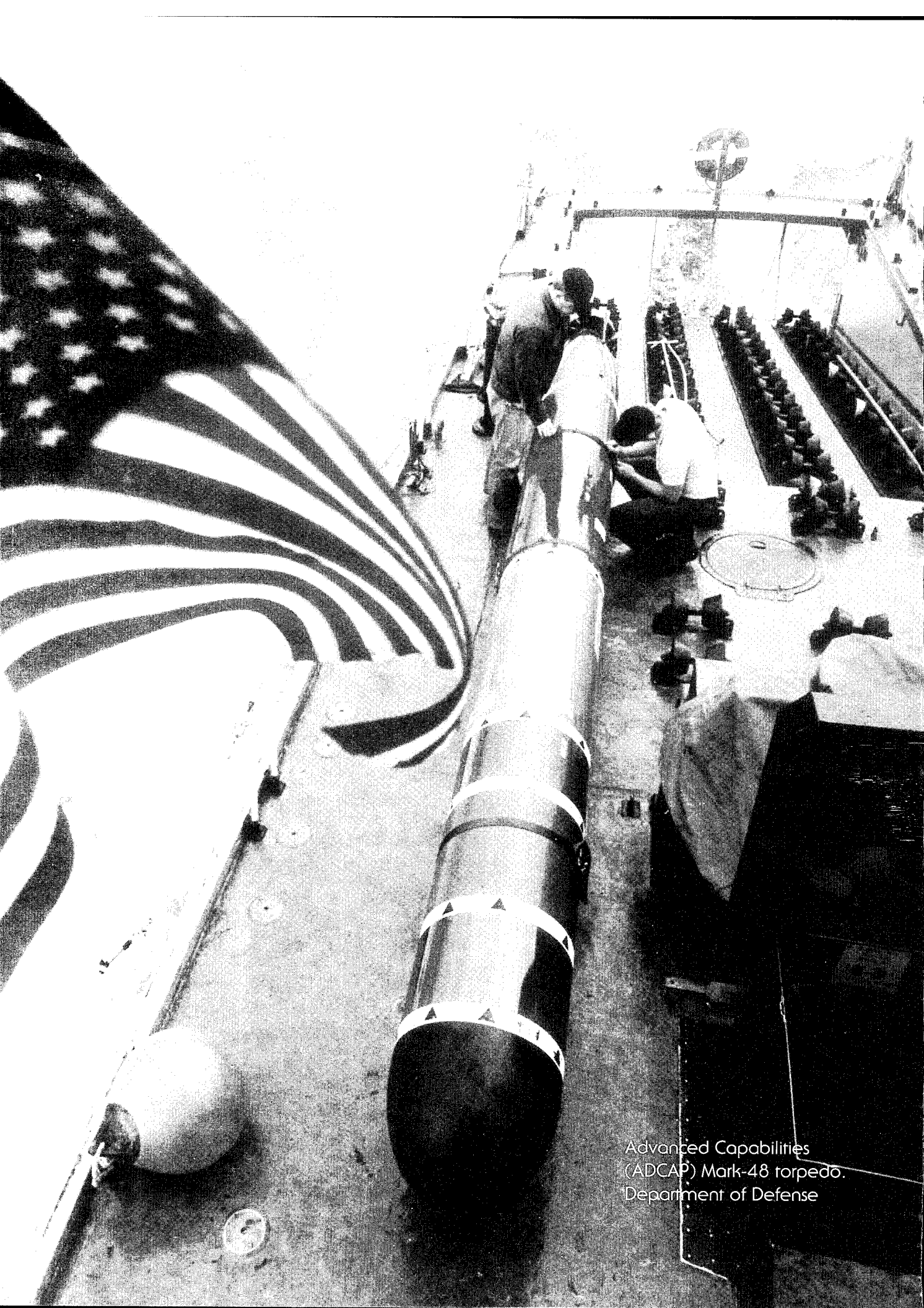
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Advanced Capabilities
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Department of Defense

FOREIGN MILITARY RESOURCE DEPENDENCY

Inevitable International Interdependency Undermines Tactical and Strategic Sustainment

Maj. William J. Norton, USAF

In 1982, Argentina was at war with Great Britain over possession of the Falkland Islands. The South American nation had only recently purchased 14 French Super Entendard aircraft and a like number of their AM.39 Exocet air-launched anti-ship missiles. However, only five of each were delivered by the onset of hostilities, and these were still being prepared for action.¹ The French, quite naturally, found it impolitic to deliver the remaining equipment for use against its neighbor, or to assist in its integration — all in breach of contract. The Argentines were then forced to cannibalize one of the aircraft to keep the others operational. The tremendous effect of the five Exocets on the Royal Navy task force (two ships hit and both sunk) demonstrated the significance of the French ability to deny Argentina additional missiles and launch aircraft. Had Argentina sunk a British aircraft carrier or other major warship, the Argentines may well have forced the United Kingdom (U.K.) to withdraw.

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Past Experience

The Falklands experience shows the possible consequences of operating weapons not produced and sustained in one's own country. Familiarity with indigenous systems that many local personnel often possess, both in and out of uniform, is a distinct advantage. Manuals and equipment markings are in a familiar language. Connections and electrical requirements are interoperable with other equipment. Parts and supplies are unlikely to be immediately impacted by embargo or blockade. In addition, the manufacturers are readily accessible and generally motivated to assist their nation's forces in principle as well as for financial reward. This allows surge production and equipment modifications to be effected with greater ease. The events of 1982 also illustrate the more dire consequences of dependency on a foreign supplier of military resources. Yet, many more subtle aspects of the dependency are no less significant.

Few nations are large enough or wealthy enough to sustain a military industrial base for a complete range of weapon systems on their own. Even those that can will probably find that components of their weapons are dependent upon external sources for essential production elements and sustainment spares. Few suppliers of such complex end items as armored

vehicles, warships, or combat aircraft manufacture all elements of the product. Today, few if any American-supplied equipment items, especially electronic-intensive articles, are free of foreign parts. A diesel engine may be purchased from an American manufacturer, but certain specialized fasteners, gaskets, and filter material may be exclusively supplied by a foreign producer. Because of inventory expense, the American engine maker may have only a few days' supply of these items to keep the production line operating and to supply repair facilities. It then becomes the responsibility of the military operator of the vehicle powered by the engine to ensure that enough of these items, or parts that incorporate them, are available within organic supply channels to meet expected needs for some worse-case level of conflict.

Because of the vast number of such items, and the possibly unclear initial source of each, it becomes an exceptionally difficult logistics exercise to plan for such contingencies. Like the old adage of the war being lost for want of a shoe on the messenger's horse, a contemporary conflict may be lost for want of a foreign-produced O-ring for main battle tank engine fuel pumps. The program manager for the initial acquisition and later support of a weapon system can assist the user by identifying foreign resource depen-

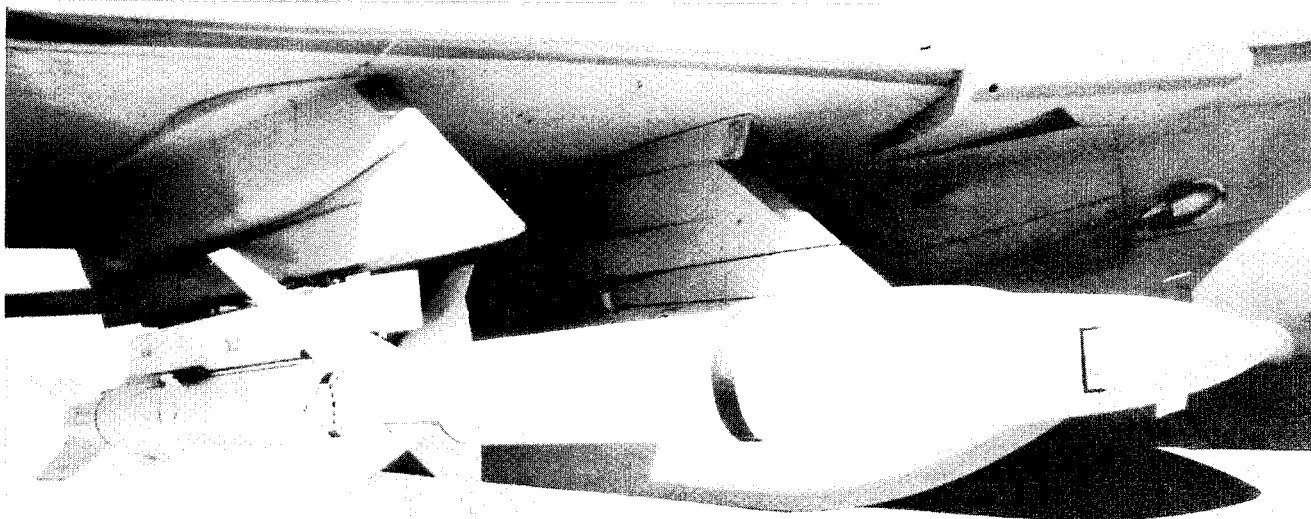


Photo courtesy of Texas Instruments

AGM-88A High Speed Anti Radar Missile (HARM), now in production for the U.S. Navy and Air Force.

dencies and reducing them as much as possible. This, however, is made difficult by complex and contradictory regulations and policy, the unexpected decisions of more influential government agencies, and the very nature of today's world economy.

Dimensions of the Problem

The economies and industries of the world's industrialized nations are irrevocably intertwined. It has become virtually impossible for these nations to maintain a completely independent military industrial base and supply system. Any comprehensive effort to eliminate foreign resources in weapons would be counterproductive to relations with international trading partners. Basic fiscal realities, the pressures of peacetime commerce, and the vast material needs of a modern military force have contributed to this complex system of international interdependency.

Buying products from foreign sources, even if assembled in the United States, also reduces the experience level of American engineers and scientists. This can hamper the development of future high-technology products, becoming especially troublesome when classified programs preclude active foreign involvement. The ability to keep up with and even

drive emerging technologies will be essential for leadership in developing the next generation of weapons.

Buying foreign technology or weapons also presents the potential for adversaries to obtain them as well, allowing them to acquire or deploy hostile countermeasures. Foreign resource dependency creates the possibility that critical items can be denied to a nation during a period of surge procurement in an emergency or mobilization for total war. These factors still remain very significant in determining the world balance of power. There are those who advise that the next war will be short, and that only what is possessed at the start will be significant. This view, however, holds the risk of preparing for the last war.

Tiers of Dependency

A weapon system can be dependent on foreign suppliers at many levels, referred to as tiers by many researchers.² At the bottom tier are basic

raw materials. Above this are refined or manufactured materials from which assembly elements are produced. Assembly elements on the next tier are bolts, gaskets, resistors, and similar piece parts. Components are then made up of assembly elements and general industrial supplies like adhesives and paints. Subassemblies such as engines, specialized digital processing units, gun sights and the like come next. Finally, complete end items constitute the top tier. The supplies to sustain the end item, probably falling under components or assembly elements, can become critical resources during lifetime support. Also readily identifiable at any of the tiers are manufacturing resources such as machine tools, industrial supplies, and manufacturing processes that are essential for production. Add to this considerations such as foreign controlling interest of a company, how much of the firm's financial vitality is determined in foreign markets, and how much the electrical power used in the manufacturing process is dependent on foreign oil, and the picture can become convoluted very quickly.

Examining the bottom tiers, it is simply impossible to meet all raw or refined material requirements for advanced weapon manufacturing with indigenous resources alone. While the

United States is still a resource-wealthy nation, even it does not possess natural deposits of all raw materials required for modern armament production. Many strategic materials, such as chromium, are essential elements in weapon systems manufacturing processes, yet are only available to the United States via importation. Most countries have fewer natural resources to draw upon. The availability of these domestic materials can also be dictated by the market and competition. The best that any country can do is to subsidize its own strategic industries and maintain a strategic reserve of such resources to meet the needs of a conflict — the length and intensity of which would be predicted by analysis. Subsidies and strategic reserves are expensive to maintain, and reserves simply cannot meet all requirements of material type, quantity, and quality. Efforts to rapidly expand such reserves are difficult to conceal, and can serve as a warning to a potential adversary of impending military action.

The most apparent and significant raw material dependency is crude oil. Many nations are dependent on foreign sources of oil to fuel their industries, meet consumer demand, and supply their military. The United States still possesses a sizable natural reserve of oil, but it is becoming very expensive to extract and is of relatively low quality. The high-quality light crude required by many industries can only be economically obtained overseas. As a result of the Middle East oil embargo of 1973, most nations built up a strategic reserve of oil to see them through similar circumstances in the future. The size of these reserves may or may not be adequate, depending upon future circumstances. The Middle East war that prompted the embargo could well have sparked a major war in Europe. The embargo would then have placed the West at a potentially catastrophic disadvantage.

Looking at the manufacturing tiers more broadly, program managers may

find that their systems are dependent on foreign suppliers due to a number of complex factors. As with raw materials, there may simply be no domestic source for the required item or process. Perhaps domestic sources cannot fully meet requirements or are not competitive in terms of quantity, quality, price, delivery terms, or general product performance. This may be due to such factors as wage rates, taxes, commerce restrictions, and environmental regulations. Foreign-held patents may also dictate the use of non-domestic resources. Foreign articles may offer the best technology and processes to solve design problems. Where non-developmental items are used, foreign dependency may simply be an inherent feature of the items. The use of a foreign supplier may also be a national policy-motivated directive. This can include measures to improve equipment commonality with allies, a decision to buy a foreign item to meet a political end, or part of an offset agreement with a foreign government.

Why Does Domestic Manufacturing Atrophy?

The following paragraphs lend insight into some of the reasons why domestic manufacturing capabilities atrophy. For many unique elements and components, it may simply not be economical for an indigenous manufacturing capability to support local military needs. The manufacturers of such supplies must frequently have a considerable commercial market for their products to justify the cost of production. In more and more cases, the military market has become economically unable to dictate availability or volume of unique products. With today's shrinking defense expenditures, a pervading concern is that the military cannot influence suppliers to retain a surge or reconstitution production capability, thus affecting our nation's ability to respond to wartime exigencies. Local suppliers of critical resources may require substantial subsidies from the government to sustain production of unique items or main-

tain excess capacity. In the United States, examples abound of systems and major weapons being procured (the Seawolf submarine as an example) for the sole purpose of retaining an industrial base to meet future emergency requirements. These constitute an extremely expensive form of subsidy, which probably cannot be continued indefinitely owing to constrained fiscal conditions.

The possibility that a required item will simply go out of production should be addressed by the program manager. This issue is complicated by foreign dependency. The risk of production termination grows as weapon system lives are stretched, while technology continues to advance at a more rapid pace. It then becomes economically impractical for manufacturers to continue producing an outdated item for a single customer. Even a customer as large as the U.S. military can no longer dominate many technological fields nor command the direction of development and production. This effect will only grow as the military adapts more commercial products. These items tend to have a shorter technological life than military systems and, driven by the commercial market, may be rendered insupportable as production lines turn over. It also becomes financially impractical for the government to subsidize the production of certain items when a more lucrative commercial market demands all of a manufacturer's production capacity. Again, the program manager may pay for excess production capacity to meet these contingencies, but the pressures to reduce system development and production costs will restrict this to only the most critical components and subassemblies, if any at all. Highly probable is the possibility that these critical components are, in turn, dependent on lower-tier resources that cannot meet an accelerated production pace.

Beyond basic contractual terms, how the U.S. government can influence foreign suppliers to meet recon-

stitution or surge requirements remains unclear. Even more worrisome, foreign resource denial can occur during wartime or periods of heightened tension. Delivery of supplies may be suspended through coercion, by the policy of a supplier's government (hostility, neutrality, change of alliances, etc.), or by conscientious choice. Supplies may be interrupted by political unrest and labor strife in the supplier nation. Of course, natural causes (storms, earthquakes, etc.) may also prevent delivery. The possibility of a natural supply interruption is increased by the distance the product must travel during delivery. Also, an embargo or blockade, internationally sponsored or otherwise, can interrupt supplies. More drastic yet, the enemy may take active measures to divert or destroy supplies enroute.

What Can Be Done?

The measures a program manager can take to reduce the impact of foreign resource denial begin with identifying the origin of all resources used to manufacture and sustain the weapon system. This may not be an easy task since research has demonstrated that even prime and subcontractors are frequently unaware of the origin of resources at any but the upper two or three tiers. With this information, and

with assistance from other government agencies, the program manager can determine the likelihood that foreign suppliers will continue deliveries, come what may. This is naturally dependent on an examination of indi-



F/A-18A Hornet aircraft aboard the nuclear-powered aircraft carrier U.S.S. Dwight D. Eisenhower (CVN-69) during Fleet Exercise '90.

vidual foreign suppliers, the laws under which they operate, the policies of their governments, and the general character and attitude of those governments. Where this examination reveals a supplier of questionable constancy, alternative sources can be sought or design options and alternative technologies may be developed to eliminate the dependency. Contractual vehicles to develop a second source for critical items can help create a domestic supplier or at least reduce the impact of a loss of deliveries from a single source. When many critical items are found to originate from a single country or region, it may be wise to make efforts to find more widespread sources to reduce

the impact of interrupted deliveries from this one area.

The measures just described are understandably difficult to enact under the current conditions of marginal manpower and fiscal resources. With system cost and affordability now of primary importance in weapon system development, it becomes less likely that cost increases associated with eliminating foreign dependencies will be found acceptable. The program manager is assisted by the Commanders' in Chief Critical Items List and the Defense Key Technologies List in identifying items that are already recog-

nized as critical. In individual cases, it may be necessary for senior leadership to make a determination of how critical the system is to the nation's defense, and how significant an interruption of foreign resources to support it will be in both the short term and long term. This permits an educated trade-off of cost and system vulnerability. As pointed out earlier, developing weapons that require only indigenous support is almost impossible given the current interdependency of the world's economies. However, only the investigation of options and their cost impact can show what is possible. At the very least, the program manager should attempt to document all dependencies. The program office logistician can then work to ensure that items vulnerable to supply interruption are procured in sufficient numbers and frequency to meet the most likely surge or wartime contingencies. A recommendation for stockpiling the most vulnerable resource can also be made.

On a national diplomacy level, the government can also assist in ensuring a continued supply of required foreign resources. The government can take measures to sustain active or inactive alternate sources, domestic or foreign, which are judged to be dependable suppliers in emergencies. Diplomats can help to ensure that supplier nations remain dependable trading partners regardless of U.S. foreign policy, or can issue warnings when continued deliveries appear to be at risk. Another consideration where statecraft comes into play is the retention of sufficient political clout to ensure the continued flow of foreign resources or the retention of allies who can provide alternatives. In concert with this, the government must have adequate fiscal resources (cash and credit) to obtain alternative components or end items from these allies. Finally, the nation must have the military might to break blockades by force to ensure an unhindered flow of international commerce.

Law, Regulations, and Policy

While most will admit the desirability of having armed forces free of foreign resource dependency from a warfighting perspective, U.S. policy generally reflects more fundamental economic realities. The Buy American Act, conceived more than 60 years ago to ensure that the government buys only from domestic suppliers, has been largely overcome by a changing world. Not only must government agencies comply with the terms of the Act, but contractors and their subcontractors/vendors must also comply. The Act has been applied all across the spectrum of manufacturing tiers, but is today most often limited to end items or major components. Buy American has also been undercut substantially by contemporary international agreements. Current exemptions include certain defense procurements, and many allied nations are exempt from its exclusionary provisions.

More detailed guidelines and exemptions are embodied in the Agreement on Government Procurement and the Trade Agreements Act of 1979. In an effort to address trade imbalances and the eroding military industrial base, Section 232 of the Trade Expansion Act allows U.S. firms to petition the government to restrict imports when they will adversely impact domestic production capacity or national security. The Defense Production Act also authorizes the use of incentives to reinforce the domestic industrial base. However, other legislation and directives, plus the admonishment to seek affordable systems, present the program manager with conflicting pressures. The 1985 Quayle and Nunn Amendments to the Arms Export Control Act of 1976 encourage cooperative research and development projects with U.S. allies, waiving some procurement laws to facilitate this. The DoD regulations list five prioritized material alternatives to meeting a military requirement.³ The second and third alternatives are the purchase of existing

commercial or allied systems and a cooperative development program with allied nations, respectively. The government's international policy, offset agreements, and treaties can also affect military procurement activities. Thus, economic and political motivators have overridden the operational rationale of avoiding foreign military resource dependency, in many cases encouraging it as a byproduct of activities in pursuit of other national objectives.

For major defense programs, regulations require program managers to provide, in Annex C of the Acquisition Strategy Report, an analysis of the industrial base necessary to produce and support their system in an efficient and cost-effective manner.⁴ The analysis must specifically identify items that can only be obtained outside the national base, alternatives for obtaining the item within the base, and the vulnerability posed by reliance on an outside source. It should also address the likelihood that the industrial base can or will continue to produce critical resources for the life of the weapon system. Unfortunately, there is no requirement for this analysis to go below the top two or three manufacturing tiers. Also, no established criteria determines when a system is overly dependent on foreign resources. In addition, the implications for peacetime support, contingency support, and reconstitution objectives are issues to be considered at each milestone decision point. These requirements clearly presuppose a strong potential for foreign elements in U.S. weapon systems. Concern has also been expressed about American firms that have been acquired by foreign entities. Regulations prohibit award of a defense contract to a firm controlled by a foreign entity if the program requires that the firm be allowed access to a proscribed category of information.⁵

Acquisition Examples

In a study of three U.S. Navy weapons (HARM missile, Verdin commu-

nications system, Mark-48 ADCAP torpedo),⁶ it was found that 5 percent of the companies supplying the prime contractors of these weapons was foreign, yet they supplied as much as 40 percent of the value of the systems. Furthermore, 2 to 3 percent of the total value of the weapons was supplied by domestically located but foreign-owned firms. While the study found that the National Defense Stockpile contained inventories of each of the foreign-supplied raw materials for which the weapons were dependent, in some cases they were of insufficient quality to meet the manufacturers' needs. While the majority of the foreign suppliers were longstanding friends of the United States, like any nation their first priority is their own welfare. Circumstances could influence their willingness or ability to supply the United States in an emergency. During the 1990-91 Persian Gulf conflict, the Japanese Diet and the Swiss Parliament were required by their laws to vote on whether their country would supply the United States and its allies. Had some circumstances been different, they may well have decided to remain strictly neutral. More to the point, the U.S. did make an effort to significantly increase the production rate of some expendable items during the conflict, but found that the availability of foreign parts was a pacing consideration.⁷

The following is an example of how a program manager may be the recipient of "help" in the area of foreign resource dependency.⁸ In the Fiscal Year 1983 Appropriations Act, the source of the ejection seat for the U.S. Navy's F/A-18 aircraft was specifically restricted to American suppliers. This was the result of lobbying by a domestic ejection seat manufacturer, urging the insertion of the Buy American restriction into the legislation. This was aimed at excluding a major British supplier from competing, and one with which the Navy had a long and rewarding business association. The effect was to greatly enhance the American

firm's chances of winning the contract. The Navy and the British Government protested the restriction on several points. Both noted that it contradicted an existing policy, presented in the Fiscal Year 1977 Defense Authorization Act, for enhancing standardization and interoperability within NATO. It was also contrary to U.S. government agreements with NATO allies that guaranteed access to each other's defense markets. The Navy pointed out that the exclusion of certain manufacturers by law set a dangerous precedent of permitting congressional interference with a source selection. The restriction might hinder the benefits normally expected of competition, these being inducement to lower price and increased quality. The following year's Appropriations Act exempted from the restriction foreign suppliers whose nation allowed American access to their markets. As a result, the U.K. manufacturer won the ejection seat contract for the initial blocks of F/A-18 aircraft.

Come What May

Those defense industries that survived the recent downsizing are feeling great pressure as their local markets continue to dwindle. Even a wealthy nation like the United States cannot subsidize or even substantially influence all industries to create a completely independent military industrial infrastructure. The ability of the U.S. government—the single largest purchasing agent in the world—to influence critical industries to the benefit of its military procurement activities has eroded markedly because of the dominant commercial market. Nations are frequently finding it necessary to collaborate on the development of complex and expensive weapon systems to maintain some vestige of a latent indigenous military industry. This simultaneously creates a foreign military resource dependency and possible materiel denial, which is contrary to good strategic sense.

It has also become necessary to seek foreign markets for weapons to provide any semblance of an economical production run. The worst aspects of the "military industrial complex" may be seen as taking on a self-perpetuating international character. Although the U.S. limits the export of some technologies in deference to security concerns, this policy is not consistent. In a period of reduced tensions, commercial interests generally take the upper hand in this regard. This often creates the unpleasant situation of selling arms to unstable or aggressive regimes that the supplier nation may come into conflict with at a future date. The supplier nations can then find themselves facing the weapons they produced or at least the technologies they developed. In an effort to sustain their own military capabilities, a nation can place its armed forces at a disadvantage, while simultaneously sacrificing long-held principles and values.

Endnotes

1. Burden, Rodney A., Michael I. Draper, Douglas A. Rough, Colin R. Smith, and David L. Wilton, *Falklands: The Air War*, British Aviation Research Group, London, 1986, pp. 34-37.
2. *Industrial Base: Assessing the Risk of DoD's Foreign Dependence*, GAO/NSIAD-94-104, April 1994, p. 18.
3. DoDI 5000.2, Defense Acquisition Management Policies and Procedures, Part 1, 23 February 1991.
4. DoDI 5000.2, Part 5, Section E, and Defense Federal Acquisition Regulation Supplement (DFARS), Part 207.
5. DFARS, Subpart 209.1 and 225.702.
6. *National Security Assessment of the Domestic and Foreign Subcontractor Base: A Study of Three U.S. Navy Weapon Systems*, U.S. Department of Commerce, Bureau of Export Administration, Office of Industrial Resource Administration, Strategic Analysis Division, March 1992.
7. GAO/NSIAD-94-104, p. 6.
8. *Industrial Base: Significance of DoD's Foreign Dependence*, GAO/NSIAD-91-93, January 1991, p. 23.

Inside DSMC



Col. Samuel D. Brown, Jr., USAF, became the new Dean, Academic Programs Division, effective 30 June 1995. Prior to joining the DSMC staff, Sam served as Chief, Product Management Division, Directorate of Requirements, Headquarters, Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio. His Air Force career spans 27 years and includes

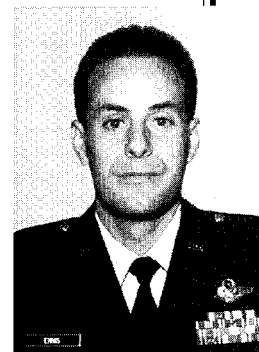
several key assignments at Hill Air Force Base, Utah; Wright-Patterson Air Force Base, Ohio; Eglin Air Force Base, Florida; and Nellis Air Force Base, Nevada.

A distinguished military graduate of the Reserve Officer Training Corps program at Texas A&M University, Sam holds a B.S. in Aerospace Engineering from Texas A&M, and an M.S. in Engineering Administration from Southern Methodist University. His professional military education includes Squadron Officer School, Air Command and Staff College, Air War College, and DSMC's Program Management Course, 1980. A member of the Acquisition Professional Development Program, Sam is certified at Level III in Program Management as well as Acquisition Logistics.

Sam's awards include the Meritorious Service Medal (3rd Oak Leaf Cluster); Air Force Commendation Medal; Air Force Achievement Medal; and numerous organizational awards. He also wears the Senior Missileman Badge and the Master Acquisition Management Badge.

A native of Conroe, Texas, Sam resides in Springfield, Virginia, with his wife, the former Willa F. Nettles of Houston, Texas. Their daughter, Christin, is married to an Air Force officer, and their two sons, Scott and Andy, attend college in Texas.

Lt. Col. Michael S. Ennis, USAF, became the Executive Officer to the Commandant, DSMC, effective 1 July 1995. Prior to joining the DSMC staff, Mike served as Deputy, Command and Control (C²) Division, Fighter, Weapons, and C² Directorate, Assistant Secretary of the Air Force (Acquisition), The Pentagon, since April 1994. His duties included supervising 52 acquisition programs through the Program Objectives Memorandum. More recently, he served as a research fellow in DSMC's Research, Consulting, and Information Division.



Mike's Air Force career spans 17 years and includes several key assignments at Mather Air Force Base, California; Yokota Air Base, Japan; Rhein-Main Air Base, Germany; Little Rock Air Force Base, Arkansas; and Hansom Air Force Base, Massachusetts. His military awards include the Meritorious Service Medal (2nd Oak Leaf Cluster); Air Force Commendation Medal; and the Army Commendation Medal. He is also a master navigator with 3,000 flying hours in C-130 aircraft.

Mike is a graduate of St. Olaf College, with a B.A. in Biology/Education. He also holds an M.S. in Operations Management from the University of Arkansas and completed Program Management Development at Harvard Business School. His professional military education includes Squadron Officer School; DSMC's 20-week Program Management Course, 1991; and DSMC's Test and Evaluation Management Course, 1994. A member of the Acquisition Professional Development Program since 1988, Mike is certified at Level III in Program Management.

A native of Faribault, Minn., Mike resides in Alexandria, Virginia, with his wife, Barbara, and son, Kyle.

SOME PAIN, LOTS OF GAIN AVAILABLE AT DSMC

*Healthy Students, Staff, and Faculty are
Becoming "Business as Usual" in
DSMC's Main Campus*

Collie J. Johnson

During our working careers, not many of us land the ideal job, suited for us in every way. Sgt. Terry Davis, USAF, Defense Systems Management College (DSMC) dreamed big, and with a little initiative on his part, got the job he's grown to love — Health, Fitness, and Sports NCO in DSMC's Wellness Center. Since then, Terry has elevated the Center to a level of excellence recognized and appreciated by the entire College. A true believer in physical fitness, he is interested in basketball and running, and works out in some manner every single day.

Equipment

As Director of the Center, Terry knows the equipment — no small feat in itself because DSMC provides students, faculty, and staff an array of exercise equipment many private clubs would envy. Two types of equipment, according to Terry, are the most popular — the STARTRAC treadmills and Life Step machines. By no means left unused are other favorites such as the Nordic Tracks, Life Cycles, Climbers, and Cybex Hip Abductors/Adductors. For those who lift weights, the Center boasts several Nautilus machines as well as free weights.

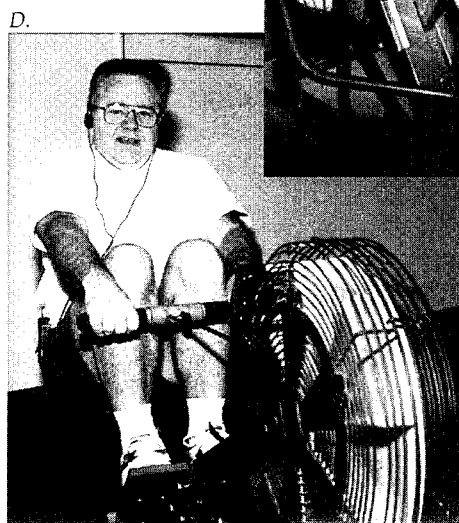
Ms. Johnson is Managing Editor, Program Manager, DSMC Press.

In addition to instructing on and managing the Center's equipment, Terry coordinates several aerobics classes each week from low-impact, step, toning, and slimming, to actual high-impact aerobics. Depending on the class, DSMC's five certified aerobics instructors offer a wide variety of exercises and options. For those who want to "do their own thing," the Center offers a specially equipped aerobics room, television, and VCR for those who want to use their own video exercise tapes.

Health Assessment

Terry also maintains the College's physical training (PT) records for military students, and keeps track of each Service's physical training requirements, as well as scheduling required PT tests. As a part of that training, he also coordinates and conducts health assessments at the beginning and end of each Program Management Course. Popular with students and faculty, these assessments measure blood cholesterol, glu-

A.
Photo by Richard Mattox



A. Sgt. Terry Davis, USAF, Health, Fitness and Sports NCO, DSMC, provides instruction on Center equipment.

B. Donald Snyder, Intermediate Systems Acquisition Course.

C. Maj. Freeda Ostio, USAF, PMC 95-1.

D. Ed Durr, PMC 95-1.

E. Lt. Col. Louise Guida, USAF, PMC 95-1.

F. Comdr. Terry Briggs, USN, PMC 95-1.

cose levels, and blood pressure — often warning individuals of serious health risks.

Not for Men Only

Cleaning up after a workout is no problem. "We have both men's and women's locker rooms," Terry empha-

sized, "and you'll never encounter less than a high standard of hygiene in our locker rooms. If anyone is concerned about coming into a wet, dingy locker room, they will not find that here." Daily-use lockers are provided for temporary storage, and such amenities as a hair blower and several electrical outlets provide the means to use curling irons or personal hair blowers.

Physical Fitness — A Way of Life

The rewards to Terry's job are more than a paycheck and a great place to work. According to Terry, when people come to him for advice on exercise and losing weight, "it's extremely gratifying to see them follow that advice and achieve fitness along with their weight-loss goals." Such comments as "Hey Terry, my cholesterol has gone down," "I feel good, man" or "check this out, I lost weight" are common at the completion of a course.

No Pain, No Gain

Terry believes a lot of people do not exercise regularly because, by nature, people do not like pain. If they experience any kind of discomfort while working out, they do not come back, and therefore put themselves at risk for several diseases related to a sedentary lifestyle. Dedication and commitment, he believes, are the cornerstones

of starting and sticking to any exercise program. As a caveat to his remarks, Terry cautioned that a complete physical examination should be completed before beginning any exercise program.

Stick-to-It-iveness

Terry's personal philosophy on physical fitness reflects the way he approaches life: "To start an exercise program and stick to it requires sheer commitment, determination and belief that once you start a program, that you are going to see it through, all the way."

"...a lot of people do not exercise regularly because, by nature, people do not like pain..."

Sgt. Terry Davis, USAF

"I've been working with weights since I was 13, and I must tell you the Center has every type of equipment needed to maintain a high level of physical fitness, be it weights, bicycles, treadmills, or whatever."

Lt. Col. Louise Guida, USAF

"The College makes it easy for a person to stay in shape. It's gratifying to have the Center right on the College campus — and the array of exercise equipment is also a big plus."

Donald Snyder

"I like to eat, so working out isn't an option for me. It's a must. The College certainly provides everything I need to stay fit."

Lt. Col. Sharon Holmes, USA

Editor's Note: The DSMC Wellness Center is restricted to students, faculty, and staff.

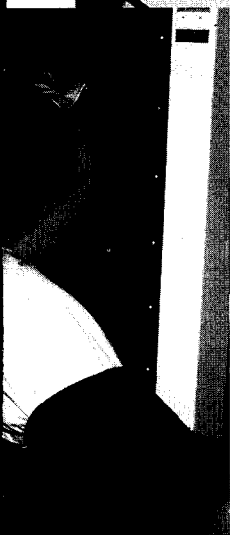


Photos by Ed Boyd unless otherwise noted.

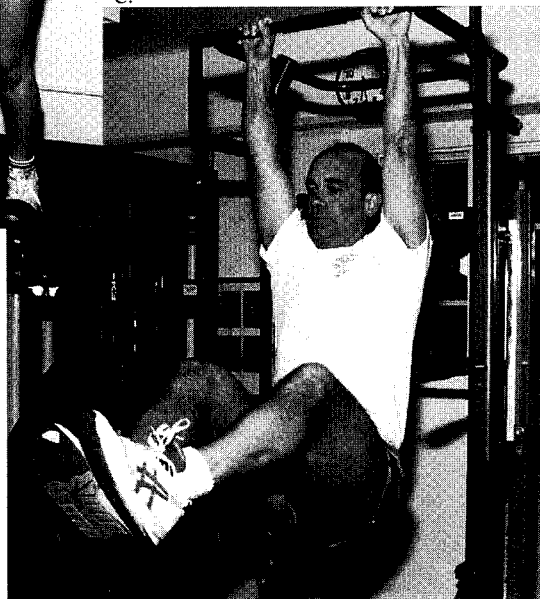
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MAJ. GEN. LYNN STEVENS, USA (RET.), SPEAKS TO GRADUATES OF LAST PMC, FIRST APMC

"Equip Them Properly to Avoid War, and to Win If They Get Into It"

Collie J. Johnson

Speaking to the graduates of the last 20-week Program Management Course and the first 14-week Advanced Program Management Course on 9 June 1995 at the Defense Systems Management College (DSMC), Maj. Gen. Lynn H. Stevens, USA (Ret.), delivered a humorous, thought-provoking message on acquisition reform, its opportunities and limitations. Referring to his mother, an educator who devoted her whole life to influencing improvement of society through education, General Stevens noted that DSMC, as an institution, has that same role. "The graduates of this school are everywhere, and they do influence society for the better. We are all focused on the defense of our country — on the kinds of things that maintain the freedom that we enjoy. We know freedom is not free. We know that equipping the fighting forces is an enormous responsibility, and you graduates will have the opportunity to go forth and do just that."

How Industry Sees Us

General Stevens, a former DSMC Commandant, spoke of his interface with industry throughout his tenure as DSMC's Commandant, and the defense industry's admiration for DSMC

as an institution. Describing a visit with senior officers of Martin Marietta [Lockheed Martin], he asked about the corporation's process of growing executives. The reply was startling, and ultimately revealing. Their executive development program included three educational options: Harvard, MIT, or DSMC. According to General Stevens, "I do not know that, institutionally, we could receive a better compliment than to be ranked in the mind of a businessman like Norman Augustine alongside the schools which train managers for that corporation." He then reminded his audience that industry students are indeed of great value in the classroom, and DSMC must campaign aggressively for their continued attendance and support.

Speaking of past DSMC graduates, General Stevens noted that industry students and their military counterparts with whom he came in contact while Commandant, ultimately did quite well. Within the Northrop-Grumman Corporation, for example, several DSMC industry graduates rose through corporate ranks to become vice presidents. Likewise, many generals and colonels completed DSMC courses during his tenure as Commandant, and emerged as leading members of the professional acquisition workforce. "For whatever bad you

may think of the last 20 weeks you spent here, or even the last 14 weeks, forget it. It was a good experience — someday you will realize that."

Doing More With Less, Doing the Same With Less, Doing Less With Less

General Stevens reiterated that the acquisition world is changing very rapidly, but perhaps the most challenging and interesting change — doing more with less, doing the same with less, doing less with less — will be our most daunting challenge. Daunting because, simultaneously, we are expected to perform more, particularly in the budget process and manning areas.

Comparing the 1995 budget with past years, General Stevens stated that the 1990 Five-Year Plan called for a DoD budget projected to be \$312 billion in 1995, of which \$131 billion would be for research, development, and acquisition (RD&A). Now, he continued, we are in 1995; the budget is \$252 billion, with \$71 billion in the RD&A portion — 100 percent of that \$60-billion cut came from RD&A. "Therein, ladies and gentlemen, lies your challenge."

To illustrate the disparity between manning and oversight dollars versus

Ms. Johnson is Managing Editor, Program Manager, DSMC Press.

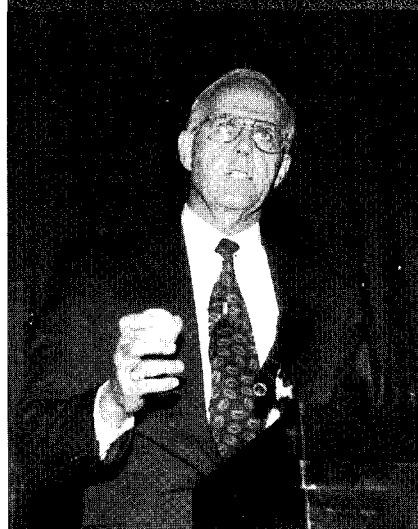
the dollars allocated to actually go out and develop weapons, he related a practical indicator of today's reality. Northrop-Grumman, 3 or 4 years ago, was a difficult place to park at 08:30 or 9:00 in the morning. Now, you can park just about any place you want, any time of the day. More than a million defense-related aerospace people have been taken out of the national system since 1987-88. Again, 4 or 5 years ago you could go to the Pentagon at 8:30 or 9:00 in the morning and not find a parking place. "I went by there this morning," he stated, "and guess what — you still can't find a parking place."

According to General Stevens, this is interesting because the size of the manning and oversight, and other aspects of government interaction are not visibly reduced, yet the budget that the graduates will manage — to go out there and make hardware for fighting troops — has been cut by over 40 percent in the 5 years of a Five-Year Plan. "The challenge is not small. You are going to have the opportunity to decide where the 'value added' resides. Are we going to maintain staff levels at their current manning in the laboratories and engineering offices? Or, are we going to bite that bullet and downsize along with industry so we can apply the money to equipping the fighting forces? That is the challenge — I know of no other way to present it."

Roles and Missions Commission Report

General Stevens believes there is room for consolidation within the Department of Defense. He discussed his interest in the Roles and Missions Commission Report, and emphasized that he understands that it deals more with Washington-area roles and missions, and headquarters-type roles and missions than it does with the battlefield. In many respects, he noted that it appropriately recognizes that the Service headquarters are probably over-staffed. It does not, however, appropriately recognize that the next level up is equally over-staffed, and,

"We need to get away from some of the tremendously tight controls. I used to talk to retired generals who would come back and say, 'Gosh, if I had known all that I know now about industry when I was on active duty and had a position of influencing policy, I would have tried to do things differently.'"



Maj. Gen. Lynn H. Stevens, USA (Ret.), speaks to DSMC graduates of PMC 95-1 and the College's first APMC, 9 June 1995, DSMC's Scott Hall, Fort Belvoir, Va.

in fact, moves some of the functions up. "I am not challenging the Roles and Missions Commission," he reassured his audience. "I am challenging

that the world we will proceed into — our new acquisition arena — will be one of streamlining and downsizing. So consolidations, ultimately are appropriate."

Specifications and Standards

Another area General Stevens discussed was the elimination of specifications and standards, and dealing with performance specifications. Though he believes it to be a great idea, he foresees major challenges in implementing specifications and standards reform. "There are people who have made an entire lifetime career in sincerely enforcing compliance with rules, and now they're being faded out. They really believed that what they were doing was right, and it probably was right in many respects."

Teaming

Teaming, General Stevens believes, in terms of the Integrated Product Team, will inevitably be another wave of the future. Moreover, he noted that there is already a tremendous amount of forward motion in that regard. He emphasized that teaming is very, very important in developing mutual confidence, mutual respect, and efficiencies of dollar savings.

Restrict Number of Controls

"We need to get away from some of the tremendously tight controls," he stated. "I used to talk to retired generals who would come back and say, 'Gosh, if I had known all that I know now about industry when I was on active duty and had a position of influencing policy, I would have tried to do things differently.'" He referred to the apparent irony that we, the government, ask contractors to do things that we really do not need to have them do, and then we pay them to do it. "The acquisition reform of the future," he countered, "is going to cause us to eliminate such practices." Speaking frankly to the graduates, he cautioned them not to expend all their manpower and money on oversight, checks, or other reports and plans that do not add to the product we [the

Photo by Richard Maltrox

Maj. Gen. Lynn H. Stevens, USA (Ret.), is the Vice President and Manager of the Precision Weapons Department, and Program Manager for BAT Weapons, an anti-armor submunition being developed under contract for the Army by Northrop-Grumman Corporation. Previous to this, he held the position of Deputy Program Manager for BAT Weapons at Northrop. Prior to his retirement from the U.S. Army in July 1991, he was the 10th Commandant of the Defense Systems Management College.

professional acquisition workforce] are trying to get.

How Do We Get There

"How do we get there," he challenged the graduates. General Stevens then systematically outlined what he believes are key components toward this end. An important first step — get the test community on board. The operational tests are very expensive, he noted, and are not subject to the same kind of legislative reform as the acquisition community's policies and procedures. Because testing is very expensive, he reminded the graduates that those who planned a career in test and evaluation or who might wield some influence in that area needed to be sure that testing being required was indeed necessary. "The test community," he related, "has a very important and appropriate charter. They are independent and clearly have a reason to be. In your role as managers, you really do need to assure a proper balance of testing in light of the overall budget available."

Political Appointees And the Congress

The second step, according to General Stevens, involves communication with political appointees and Members of Congress. Political appointees, he observed, are also key players in the acquisition process. Knowing how to deal with political appointees and the Congress, in his view, is essential. "They are real, they are there, and they're very important. We cannot get the job done without them. Know who they are, their background, know their personal desires and strengths, because if you are trying to sell your program or justify something that they are challenging you on, you need to be aware of who you are dealing with. Be sure that you're attuned to what they want to do."

General Stevens admonished the graduates to be prepared to present their cases strongly and adequately. "It is futile," he stated, "and very ineffective to try to battle the Congress or political appointees. They are the tools to get success; bashing and working around them will bring you failure. Do not forget that as you go out to be successful, you need to be quite realistic about budgets — and effective interaction with the Congress and political appointees is integral to that process."

Ethics and the Government

General Stevens pinpointed, in his view, the single most important attribute of an acquisition workforce professional — integrity. He noted that in Northrop-Grumman, the code of ethics and rules of integrity are more severe than the DoD rules of ethics — and that is good. "Those folks are genuinely honest. If there is one thing you can get fired for without ceremony, it's being dishonest within your company or with your customer. I think that is widespread in industry."

Listen to the Voice of Experience

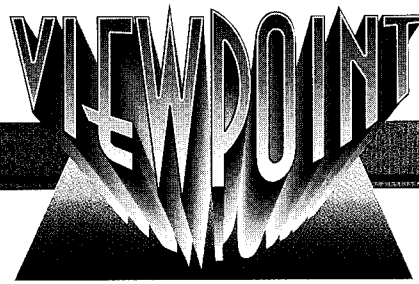
Offering further guidance to the graduates, he counseled them to take

advice from people who know what they are talking about. "And for those industry students in the audience," he continued, "this is an opportunity for industry to help." As the professional acquisition workforce prepares their requests for proposals and other related documents, he challenged them to invite the participation of their industry counterparts — and pay attention to what they have to say. "Allow for cooperative participation," he enjoined them. "Seek advice and listen to varied sources of advice — from people who know what they are talking about. It is very important that we do not let our ego cloud our thinking to the point we are not listening to someone who is giving us advice — someone who knows what they are talking about. Ultimately, failure to listen and heed good, sound advice, can ruin your whole program."

Summary

Concluding his remarks, General Stevens told the graduates that there are a lot of things going on now in the acquisition arena that have not been done before. "You are going to break new ground. You are going to have the opportunity to take risks and to see if it pays off. We can indeed learn together in this business of acquisition reform." Quoting Jim Jenson who worked for IBM, General Stevens remarked, "It is much easier to change the intentions of people, than it is to change their behavior." He believes that we need to consider behavioral changes to be successful in budgeting for defense, in projecting the national image of what defense is all about, with regard to equipping the forces in the face of acquisition reform and downsizing.

He then offered the graduates their last challenge from DSMC: "Let's get out of here and be successful managers. Congratulations — and may your entire future be full of good things for the soldiers, sailors, airmen, marines, and others who depend on your wisdom to equip them properly to avoid a war, and to win it if they get into it."



As a fledgling engineer, working for one of the largest aerospace companies in the private sector, I designed an analog power supply for use in a C³I system. After test and evaluation, this power supply was mounted inside a standard S280 equipment shelter. The entire C³I system underwent Initial Operational Capability and passed with flying colors.

Several months later, as I entered my supervisor's office, I noticed a military man (a major) sitting in a chair, talking with the supervisor. His words went something like, "Your mechanical types and your Human Engineering people need a Brain-Housing Group check! You know that power supply that you guys mounted on the wall, inside the shelter? Well it's 4 inches from the *top* of the shelter, and it has a potentiometer (adjustable resistor), recessed in a hole, on *top* of the power supply! Besides that, your Technical Manual (TM) authors need psychiatric help! They wrote a maintenance manual that calls for a *6-inch* long screwdriver as the tool to use to adjust the potentiometer that's mounted just *4 inches* from the top of the shelter! The maintenance technician can't even see the potentiometer, let alone use a screwdriver *2 inches too long* to adjust it!

You folks need training courses in Concurrent Engineering (CE), Supportability Testing, and Validation/Verification!" The major arose and, without listening to any response from my supervisor, left the office. I said, "WOW! Who was that masked man?" My boss said, "He's the user...and we blew it."

An Engineering Change Proposal (ECP) was required to correct the situation described above. This included the labor to administratively process the ECP, drawing changes, TM changes, training material changes, and more. Initial cost to the government for this mishap...\$460,000.

Two Messages

- Lack of Communication is the key culprit in the above situation. The *key* to effective CE is constant communication (to the point of getting on each other's nerves, if required) between the System, Supportability, Reliability and Maintainability, Human, Mechanical, Test, and other engineering disciplines, and more.
- Get the user involved in the acquisition process, *up front*, and personal. The *user* is the key to successful development of a weapons (or training) system. In the long run, it's the user's life on the line with the system.

Jim Ash
Electronics Engineer
Naval Warfare Assessment Division
Corona, CA 91718-5000

FROM THE COMMANDANT

Hello and welcome again to the Commandant's Corner. It seems as if I am always saying, "it has been very busy at the College since our last chat." Well, I guess nothing along those lines has changed — it has been *extremely* busy here since our last chat. I am happy to say many of you have been the reasons for that — or at least have participated in a number of activities over the past 2 months.

As I mentioned in the July/August issue of *Program Manager*, we graduated the last of the 20-week Program Management Course students and on the same day graduated the first of the 14-week Advanced Program Management Course students. With that significant milestone behind us, we co-hosted the Acquisition Research Symposium in Rockville, Maryland, 28-30 June 1995. This is a biennial event that we co-host with the National Contract Management Association. The symposium's theme this year was "Acquisition Reform: A Mandate for Change — Reengineering the Acquisition Process." We had several hundred in attendance, with over 60 papers written — many presented in a variety of seminars/workshops.

We had a number of guest speakers including Ms. Colleen Preston, Deputy Under Secretary of Defense for Acquisition Reform (DUSD[AR]), and sponsor of the Research Symposium. Other speakers included Honorable Thomas M. Davis III (R-VA); Dr. Paul G. Kaminski, Under Secretary of Defense for Acquisition and Technology (USD[A&T]); Federal Government officials; Service Acquisition Executives; Defense Logistics Agency representatives; industry representatives; educators; and other members of the professional acquisition workforce. This year's symposium was the best ever, and provided all the participants a very good idea of what acquisition reform is, how it is working, where it is going, and most of all, how we all can make it happen. If you need more information on the symposium, please contact our Research, Consulting, and Information Division at (703) 805-2289 or DSN 655-2289.

Shortly after the Research Symposium concluded, DSMC hosted the International Defense Educational Arrangement (IDEA) Seminar. We have written about IDEA in previous issues of *Program Manager*, and have



an article in the current Defense Acquisition University's *Acquisition Review Quarterly*. The agreement is between similar educational institutions in Germany, Great Britain, France, and the United States. Each year during the second week in July, one of four member countries hosts the seminar. During the week, a multi-national course is taught to students from the four member countries as well as other invited countries. This year was the largest IDEA seminar ever. We had well over 100 students attending the course.

Topics covered during the week-long course included national presentations, comparative acquisition, international program management, and related seminars. We were extremely pleased to have Dr. Kaminski as our keynote speaker. He stressed the need for more and better multi-national cooperation in acquisition for the future. This hit home with all of the seminar participants since a large portion of the course discussion centered on the need for and methods of increasing multi-national acquisition. Because of the downward spiral of all our defense budgets, it may be impossible for any of us to afford defense modernization unless we do it multi-nationally. Since this seems to be a growing trend, we at DSMC have increased our emphasis in this important area and currently now have three multi-national courses offered several times each year. A multi-national working group has formed and is under the Acquisition Management Functional Board. This working group

has gone a long way in answering field demands for courses, and has identified courses deemed required for multi-nation jobs; i.e., "assignment-specific" courses.

Needless to say it was a great week, and we at DSMC thoroughly enjoyed hosting the 7th IDEA Seminar. If you want additional information on this seminar or a copy of the proceedings, please contact our School of Program Management Division at (703) 805-3316.

Well, there is no let-up in sight for the College. This week we host the 12th Annual Program Managers Symposium sponsored by the DSMC Alumni Association. We anticipate good attendance and look forward to seeing many of you. Our theme this year is "Implementing Acquisition Reform." Our keynote speaker is Honorable Steven Kelman, Administrator for Federal Procurement Policy. Other guest speakers include Ms. Colleen Preston, DUSD(AR); Mr. Derek Vander Schaaf, Department of Defense Deputy Inspector General; Mr. Frank Conahan, General Accounting Office; Service Acquisition Executives; and congressional staffers. It promises to be an outstanding symposium.

Following this event, we will host Dr. Kaminski and 423 leaders in acquisition including leaders from the Office of the Secretary of Defense (OSD); Service Acquisition Executives; Program Executive Officers; Program Managers; and many others. This is an OSD "all-hands" meeting whose theme is "Institutionalizing IPTs — DoD's Commitment to Change." I am sure you will hear much more about this since this is the way we will be doing business. We will write more about this in upcoming issues of *Program Manager* magazine.

As usual, I have far too much to say and not enough room to say it. It's been busy here and we like it that way — as long as it is helping the acquisition workforce do its job better. Thanks again. Until the next time...

— Brig. Gen. Claude M. Bolton, Jr., USAF
Commandant