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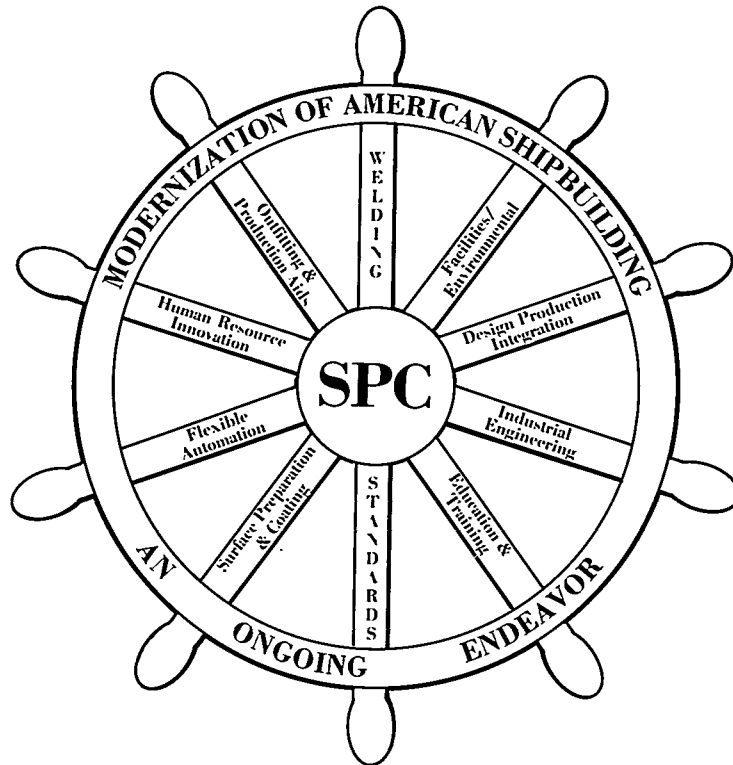
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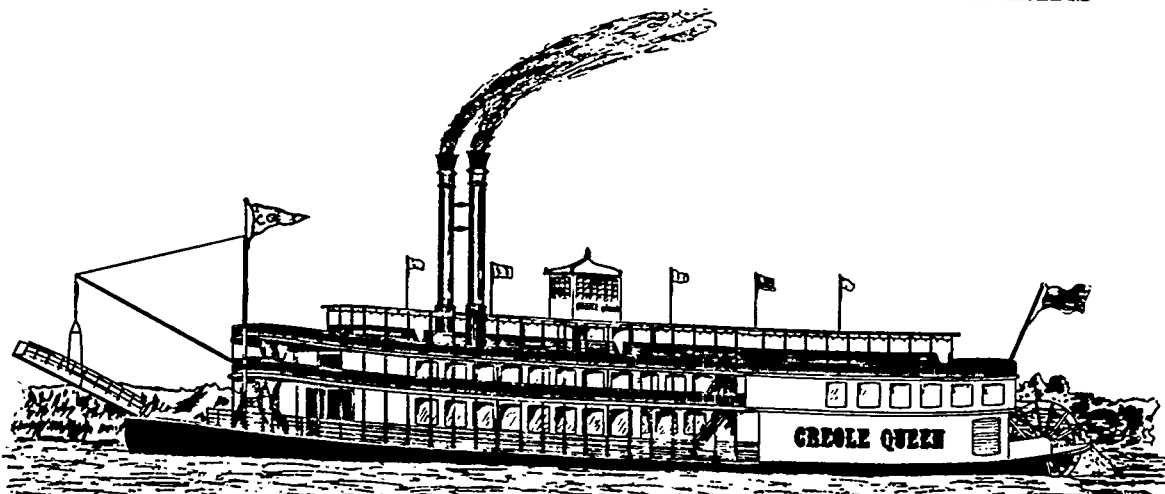
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Streamlining in a Competitive Environment

No. 10

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ABSTRACT

The push for streamlining the acquisition process has been complicated by other legislation such as the Competition in Contracting Act. Acquisition strategy decisions are often influenced by the real and perceived incompatibility between legislative actions. There are courses of action that can be taken to satisfy both sets of requirements and keep risks to a reasonable level.

The acquisition of a weapons system is one of the most complex management endeavors in today's society. Legislation and policy guidance frequently seem to invoke conflicting, or at least incompatible, requirements on both the Government program manager and the prime contractor. Requirements for competition, the Competition in Contracting Act (CICA), the push for streamlining, and the need for standardization and component breakout frequently seem to be at odds with one another. The problem is severe in the Navy shipbuilding community due to comparatively low production runs, complexity, and long production periods. Combine these requirements with the fact that once the shipbuilding contract is enacted the Contractor, not the Navy, is directly involved in the selection and purchase of the thousands of items of equipment that are used on board ship, and a true challenge results.

The CICA was enacted in 1984 as a means to reduce the cost of weapons system acquisitions. While much of it deals with Government procedural policies and practices, it has created uncertainty in the minds of many people as to exactly what is required with regard to competition. Summarized,

CICA requires that Government contracts ensure that full and open competition takes place and the effectiveness of that competition be measured by market place response. The Federal Acquisition Regulations (FAR) also stresses the need to develop acquisition documentation with consideration for full and open competition. Legal decisions in the Federal court system have stated that the Government is obligated to encourage competition even if it increases net cost to the Government.

Much of the uncertainty focuses around satisfying the words "full and open competition" and not realizing the significance of the "market place response" factor of CICA. Many people believe that the only way to ensure full and open competition is to have a very detailed set of specification requirements that any responsible source can read, interpret and use to prepare a competitive bid. Requirements of the FAR tend to support this viewpoint. The FAR states that specifications shall be designed to promote full and open competition and that market research should be conducted to ensure that competition will not be restricted. This frequently turns the competition into a sealed bid cost competition which does not always result in the best overall value being achieved. The Government competes to obtain the best value, not just the lowest cost, and CICA was intended to clarify the point that competitive negotiation is a method of procurement no less acceptable than an award using formal advertising or sealed bids.

There are many different aspects to competition. It is imperative that the objective of the competition be defined. A detailed specification cannot be written to obtain new ideas, to sample the commercial market place, or implement emerging technology. Competition for these elements can be more flexible and open than for a well-defined commodity. As long as every

contender has an equitable opportunity to present his case without prejudice, full and open competition has been achieved. The source selection process for a competition such as this is much more challenging and, obviously, cost is less of a deciding factor than technical superiority.

The Navy has had an enormous amount of recent success with competition. Shipbuilding proposals in a fixed price environment frequently come in under the Navy's cost estimate, although future claims may lead to some of those gains being given back. In Fiscal Year 1986, the Navy competed over 73 percent of its contracts at a cost of over \$2 billion. Aside from aircraft carriers, and currently the Trident submarine, all Navy shipbuilding contracts are competed. Due at least in part to CICA, the Navy has set up second sources to create production competition; the CG 47 Class and the LCACs bear testament to this. This is true of non-shipbuilding Navy contracts as well, such as the Standard Missile; the Phoenix Missile; and the Tomahawk cruise missile which was split between General Dynamics and McDonnell Douglas providing for a cost reduction of 25 percent per unit. In cases where large capital investment is required, the Navy has had to provide production guarantees to entice the second source into the bidding. Legal interpretations of the CICA by the Federal court system have determined that the Government is obligated to take actions to promote competition. This has led to second sourcing of many weapon systems.

The President's Commission on Defense Management has some critical thoughts on the CICA. They believe that CICA has led to an overabundance of detailed requirements that reduces most competitions to a straight initial cost comparison, with the assumption by many that the Government must buy from the lowest bidder. The Commission believes that more commercial style competition which factors in past performance of both product and vendors, extra performance features, availability, and price needs to take place. The fear of violating the provisions of CICA has often led to increased work and risk in specification development to ensure that a quality product will be obtained, no matter what the past performance of the offerors has been. Typically, commercial companies will have a list of qualified suppliers whose performance has been sufficiently high that they are willing to waive some inspection requirements. The "full and open competition" clause of CICA does not prohibit the establishment of qualification criteria

nor the evaluation of life cycle cost as opposed to initial acquisition cost. The full benefits of CICA will not be realized until the focus is placed on the quality rather than the quantity of competition.

Streamlining has been defined as any action that can be taken to reduce the cost or time to field a weapons system. The streamlining initiative also grew out of a desire to reduce the cost of weapon system acquisitions. Streamlining is a broad concept involving all facets of the acquisition process, emphasizing the critical review of all requirements and elimination of unnecessary ones, and the tailoring of the remaining requirements to satisfy needs, not wants. That is the streamlining requirement; often the perception is different - "the only streamlined specification is a two page specification, shipbuilding is different, our traditional specifications and drawing packages in detail are necessary for good competitive bidding, cut the package in half...etc." The litany goes on and on. Rather than these quantitative approaches (either increase or decrease) the focus needs to be on quality of information.

There hasn't been a Standardization in Acquisition Act as yet, but the benefits of standardization are fairly obvious. Standardization brings longer production runs and attendant reductions in cost and increases in the availability of spare parts. The entire mass production concepts of industry are based on producing large numbers of standard components and integrating them into finished products. Since the Navy buys comparatively few units, which have to last a long time, obtaining the full benefits of standardization is a major challenge. Military specifications were established to insure a high standard of quality and reliability and it was worth a premium price. Quality and reliability is as great a requirement as ever; however, significant strides in manufacturing processes and industrial consumer demand for equivalent standards have been made. While the military specification is meant to insure a standard of quality, it often freezes development of an item, and thus keeps a commercially unacceptable product in the marketplace. Further development or improvement in the product is no longer possible because it would not be in conformance with the specification. Military specifications usage should be reduced when they are not needed, and steps should be taken to improve their utility and currency when they are.

The Navy's program to use commercial type specifications or industry standards such as those promulgated by ANSI or ASTM whenever possible in lieu of military specifications is commendable and should be given top priority. The greatest way to achieve standardization is by maximum use of products from the commercial marketplace. DoD cannot duplicate the economies of scale possible in products serving a mass market, nor perpetuate the most efficient producers. Government Furnished Equipment needs to be addressed viz-a-viz true savings and standardization impact.

To a shipbuilder, Government Furnished Equipment (GFE) is hardware that he must design for and install based on technical documentation that may or may not be available when it is needed. Often the equipment is beyond the control of the Government's ship building program manager. There are very real reasons espoused for GFE such as interclass standardization, economy of scale, and implementation of emergent technologies; its acquisition process is every bit as challenging as that of the ship it operates on.

Periodically, the United States Navy invests in new classes of ships. This may be to take advantage of emerging technology, to satisfy new operational requirements and meet new threats, or to replace older ship classes going out of service. The development of a new class of ships is one area where streamlining techniques and innovative procurement strategies can be employed. One major thrust of streamlining is to take advantage of knowledge gained by industry from years of production. By carefully focusing Government requirements on needed performance in critical areas, industry will still have the flexibility to provide varying innovative solutions while still functioning in a competitive environment.

There has been an increase in the number of ship acquisitions where a Circular of Requirements (COR) is being used in lieu of the full specification and drawing package. The T-AGOR Class is a good example of this approach. The COR is broad enough to allow different hull forms such as SWATH, or a monohull or a converted monohull, as long as mission performance requirements can be met. T-AGOR proposals that satisfied the COR were submitted and evaluated and a contract was issued. A similar technique was used by the United States Coast Guard to obtain their Island Class patrol boats. In this program one of the major requirements was that the boats be a proven design, in current operation. Designs were not limited to

American craft. A foreign design was selected, and American shipyards were required to obtain a license to the design and tailor it to suit the shipyard's procedures. Competitive bidding to a common baseline took place against the tailored, proven design. Cost was still the major determining factor between offerors. Strict warranty provisions written into the contract have ensured overall product quality. In both of these cases the Government had little control over the tailoring of the contract design package.

The COR approach is also being used for two step acquisition approaches where the Government has the opportunity to filter out the number of designs to be evaluated and to provide inputs. This approach was used on the MSH program and is planned for the new PXM program. While the MSH program has been cancelled for a number of reasons, the Government Accounting Office commented favorably on its streamlined acquisition policy. The PXM program plans include NAVSEA ship design standards as an integral part of the COR. The consideration of offshore designs for MHC and PXM, albeit with construction in the United States, provides the Navy with the opportunity to use foreign, international and NATO standards for ship design.

The key element in handling a streamlined acquisition such as this is the source selection process. This acquisition technique leads to different approaches being employed to satisfy the same problem. Weighing factors for improved technical and logistic performance must be developed in advance of the RFPs so they can become part of the multiple design equations to be solved. In the case of the PXM which has a cost ceiling, the true goal of the source selection is to obtain the best overall ship for the money to be invested.

The Navy's traditional specification and drawing package for shipbuilding provides a good framework for competitive bidding but requires streamlining. Overall ship configuration and machinery selection requirements are covered in sufficient detail to ensure that all responsible parties have a fair opportunity to bid. Specific ways to incorporate some of the streamlining initiatives into NAVSEA's specification and drawing packages were discussed in our last paper.¹ This package is updated during the detail design and construction phase of the acquisition cycle to reflect the current configuration of the ship and to act as a baseline for procuring the additional ships of the class.

The Navy does not introduce new classes of ships very frequently. Procurement of a number of similar ships allows the cost of detail design to be amortized over a greater number of hulls and allows the benefits of equipment and system standardization to be realized. Since the acquisition package for the follow ships of a class has been reviewed and refined, the specification and drawing package, supported by the lead yard technical documentation, is tailored for competitive bidding in a production environment. Streamlining efforts here are mostly focused on the elimination of lead ship data and testing requirements that are not necessary for the production version of the ship. This amortization of detail design over a number of hulls has led to the development of the "modified repeat" classes of ships. The CG-47 class is a "modified repeat" of the DD-963 class and the LHD from the LHA. While there was great similarity in hull form and the machinery plant, there were significant differences in the combat systems area. Still, time was greatly saved during the design phase and greater machinery standardization was realized. This approach permitted the new requirements, CG-47 and LHD, to be satisfied in a much quicker fashion than starting from scratch.

A more current example is the LSD 41 (CV) design. The ship closely parallels its parent, LSD-41, except for the decreased size of the well deck to allow greater cargo cube capacity.

Streamlining techniques used for this design were based on past practices with a new wrinkle. The LSD-41 Class has been built by two different shipbuilders. One shipbuilder was selected as the contract design agent for the variant and the other was paid to review and comment on the design so that lessons learned from both shipbuilders could be incorporated into the design. The contract design package for competitive bidding will be common to a large degree with one that has already been used to build eight ships. Saving time is also a major goal of the streamlining initiative and detail design time will be reduced since so much of the ship is identical to the current version of the class and the real ship can be used as a baseline for designing and evaluating the changes.

Ship conversions and modernizations have long been a prime

¹C.H. Piersall, Jr.
and C. Sinche, "Streamlining of Navy Procurement Specifications", Ship Production Symposium, 1986

area for the use of CORs and work packages. In most cases major engineering design and systems integration is not required and there is a live ship to prepare a detailed package against. The T-AKR program used a streamlined COR approach that was reviewed by six different shipyards and comments were integrated by the Navy. The competitive package was successfully prosecuted and the six ships were delivered early and under budget. The conversion of the T-ACS crane ships was handled by the development of a commercial style work package which itemized in detail the work to be performed in converting each ship. Again the streamlining benefits were in the area of time savings - work was able to commence almost immediately upon the ships' arrival in the yard.

While ships are the largest single item procured by NAVSEA, the equipments and systems contained in those ships that have to be repaired and replaced during a ship's life are a major cost element. The selection and competitive acquisition of most shipboard equipment is the responsibility of the shipbuilder. While the Navy invokes the top level performance requirements, the shipbuilder satisfies those requirements with hardware. The fixed price environment of most shipbuilding contracts today makes competition for price benefits of paramount importance to the shipbuilder. Because price is such an overriding factor in this environment the Navy frequently believes it must rely on detailed military specifications to ensure product quality. This is the exact situation the Packard Commission was talking about when it addressed the negative impacts of CICA.

The Navy has a list of qualified suppliers for some of its equipments in its Qualified Products List program. This program, however, is limited to equipments that have testing periods in excess of thirty days, require uncommon quality inspection equipment, or are directly related to personnel survival or emergency life saving. This is an expensive program for the Navy to administer due to the cost of testing required, but quality products are ensured. This program does not, however, cover the majority of the vast amount of contractor furnished equipment on board.

One major requirement invoked on a shipbuilder for component acquisition deals with NAVSEA's Standard Components List. This document is a compilation of commercial components or equipments which are installed in at least one ship of the fleet. It is provided as an aid in the selection of components, but the Government does not warranty that any of the equipments listed

provide satisfactory performance; some of them may actually be classed as "bad actors." It might be better to develop a preferred sources list to accompany each new ship class acquisition package. As long as there are multiple vendors for each piece of major equipment, and alternate sources are not forbidden, a preferred sources list could streamline the acquisition, aid in interclass standardization, and correspond to the intent and letter of the CICA.

The truth is standardization is not achieved just because something is made GFE. There is more often than not, a "better" modification to the hardware which then renders it inconsistent and incompatible with the documentation.

Large quantity buys by the Contractor offers the greater opportunity for standardization in that there is no incentive for the contractor to procure different for subsequent ships than for the original. Where a different builder is constructing follow ships, the major equipments and systems from the lead ship can be specified by the Government to be purchased for all ships of the class under procurement. Only a strong resistance to change modifications insures standardization, regardless of the procuring activity.

Since the Government competes the initial contract for system design and development competition becomes a non-issue until a stable production baseline is reached when second sourcing becomes practicable. The use of a streamlined acquisition package in the early phases of selecting a solution for an operational need is virtually mandatory.

SUMMARY

The emphasis on acquisition streamlining is fairly recent even if some of the techniques predate the initiatives. As in all new endeavors lessons are learned and techniques refined. From our perspective there are a few significant lessons that have already become apparent.

1. Requirements for future production baselines must be defined up front at the start of the acquisition process.

2. The source selection criteria and process need to be defined up front and agreed to by the major players in the acquisition hierarchy.

3. Streamlined does not automatically mean shorter documents or fewer references. It means starting with a zero base and specifying only that which is essential to performance and supportability.

4. The overall focus must stay

on the bottom line; cost to produce and operate and time to field.

Competition has long been a way of life in the shipbuilding industry, both for shipbuilders and major equipment vendors, whereas the thrust for streamlining has been more recent. The current environment, with the Navy providing virtually the entire shipbuilding market, makes competition all the more intense. It is an environment creating big winners and big losers. A long term shipbuilding program such as the CG-47, DDG-51, SSN-688 or LSD-41 and its variants guarantees a stable base for a shipyard to grow on, and to maintain strong engineering base plan for the future. There is a strong parallel in the effects on the producers of major equipments that get selected as the class or Navy standard. They also achieve a steady backlog of work to enable them to invest in becoming more efficient. The Navy also gains as a result of increased standardization between ships of a class and the corresponding decrease in logistic efforts.

What happens to the losers, however? They are frozen out from the long term work associated with major shipbuilding programs, and the competition for repair and conversion work of the ship classes with fewer ships becomes even more intense. Without the relative guarantee of a stable workload, investment in productivity increases becomes riskier, if not impossible. This situation puts the industrial mobilization base of the United States in a vulnerable position.

There are some possible remedies to the situation. Team or consortium bidding and shared production has become commonplace in the aircraft industry as a way to mitigate the all or nothing situation in competitive bidding. A similar approach could be used in shipbuilding. Two or more yards bidding as a team for a long term Navy program could well produce tangible time and cost savings. A more universally usable detail design package could be developed and equipment ordering and scheduling could be distributed and coordinated, thus minimizing the requirements for personnel surges and relocations. At one time a Gulf Coast shipyard built the bow and stern sections for Great Lakes ore carriers and sailed them to the lakes where they were mated with large midbody sections produced at another shipyard. This may be an extreme case of shared production, but having one yard integrate the main parts of the combat system on all ships of a class while splitting HM&E

production could be a realistic scenario.

To achieve standardization and preserve the industrial base for quick mobilization, the Navy needs to continue to develop additional standard equipment. For the Navy to obtain the maximum benefits from competition, larger production runs and improved spare parts availability will be required. The standard equipment must be compatible with industry based standards - in effect, a militarized version of a commercial product or purely commercial when possible. To obtain the maximum benefits from the streamlining initiatives, the Government must remain flexible and innovative in the acquisition process to satisfy specific needs and not become locked into methodology without necessity. Incorporating all of the policy guidance is a major challenge, but if consideration is given to when the various guidance elements are applied during the acquisition process, it is possible to reap significant benefits.

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