

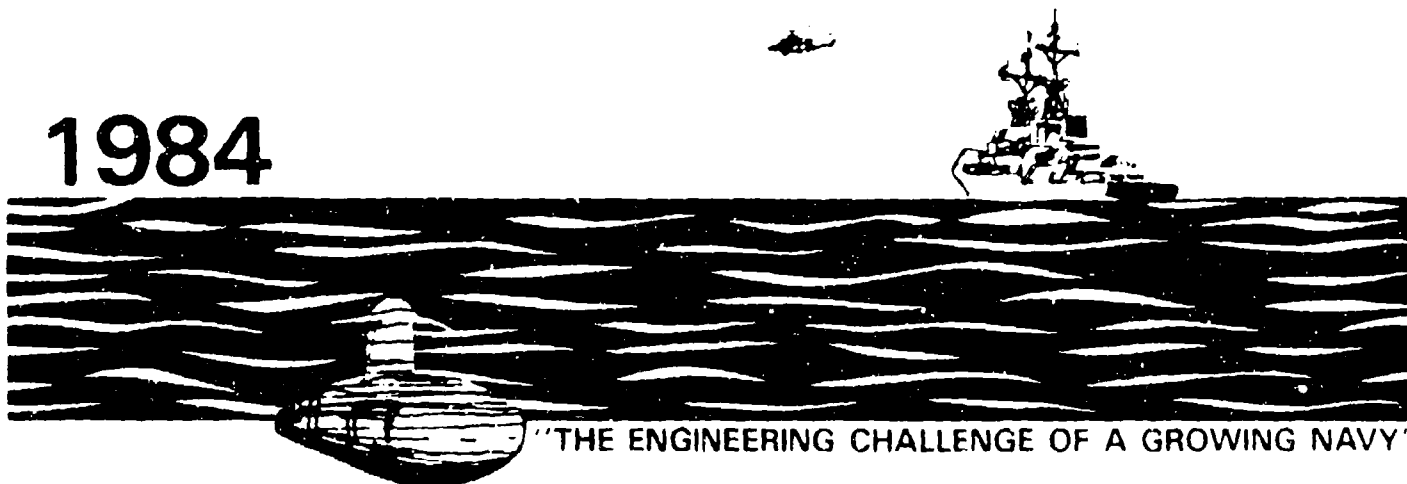
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THE NATIONAL SHIPBUILDING STANDARDS PROGRAM—

~~WHAT IT MEANS TO NAVSEA ENGINEERS~~

*IT EFFECT ON THE NAVY ENGINEER*

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THE NATIONAL SHIPBUILDING STANDARDS PROGRAM  
ITS EFFECT ON THE NAVY ENGINEER



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## ABSTRACT

The background and development of the National Shipbuilding Standards Program is described, together with a discussion of the potential benefits and objective of this program. The current status of shipbuilding standards development work is reviewed including a description of roles played by each of the major participating organizations. ASTM Committee F-25 on Shipbuilding is highlighted, including its organization, functions and procedures in the development of consensus standards for the shipbuilding industry. Special emphasis is placed on the working relationship between ASTM Committee F-25 and the U.S. Navy. Recent initiatives to convert outdated Navy standard drawings and specifications into National shipbuilding standards are described in detail, including the support provided by cognizant Navy engineers.

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## 1.0 THE NEED FOR U.S. NATIONAL SHIPBUILDING STANDARDS

At the end of World War II, the United States had the largest shipbuilding capability in the world, undamaged by warfare and capable of producing standardized ships at a rate in some yards approaching one ship per day. The shipbuilding facilities in Japan, Germany, and the rest of Europe were heavily damaged or essentially destroyed. The other shipbuilding nations were forced to rebuild. Japan and Germany rebuilt from the ground up, largely with U.S. aid conditioned upon accountability for efficiency and effectiveness in the reconstituted industry. The Scandinavian countries rebuilt along similar lines, with the eventual result that the U.S. shipbuilding industry faced the world and domestic markets, except for a few notable exceptions, with World War II vintage and older shipyard facilities arrayed against the Japanese and European yards new-built to the most modern concepts.

Aggressive development of modular construction, pre-outfitted modules, automation of cutting, welding, material handling, and other cost saving construction techniques, coupled with standardized components and large measures of government assistance or participation and lower wage scales quickly resulted in much lower costs to produce ships in the Japanese and European yards. Concurrent with the development of more efficient construction our foreign competitors have developed shipbuilding standards, exemplified by the Japanese Industry Standards (JIS), which have been adopted by the shipbuilders and their supporting industries. The resulting availability and application of standardized components and processes greatly simplifies design and reduces the lead time to design, construct and outfit a ship.

While the U.S. production of standardized Liberty, Victory and other classes of ships during World War II set records unprecedented in previous times, no system of U.S. commercial standards was developed that could be applied to development of custom designs or new standardized designs. With the exception of the Navy's Military Specifications and Standards, necessarily stringent and expensive to apply because of critical military requirements, no general system of shipbuilding standards was available to U.S. shipbuilders.

In consequence of the above and other complex influences, the present shipbuilding market is dominated by the Oriental shipbuilding nations:

- #1 Japan
- #2 Korea
- #3 China

The U.S. at present has no significant Ocean-going merchant ship construction program, and ships for U.S. operators are being procured overseas.

## 2.0 EVENTS LEADING TO ESTABLISHMENT OF THE U.S. NATIONAL SHIPBUILDING STANDARDS PROGRAM

Recognizing the necessity for revitalization of the U.S. Merchant Marine, the Congress passed the Merchant Marine Act in 1970. In compliance with that Act, the Maritime Administration (MARAD) established the National Shipbuilding Research Program to develop technical and procedural improvements to reduce the cost and time required for building ships in U.S. shipyards. The Ship Producibility Research Program was established in 1973 to identify and foster

the development of ways to improve ship producibility in support of the goals of the Shipbuilding Research Program. A conference attended by members of the shipbuilding industry and interested government agencies at Castine, Maine, in 1976 identified shipbuilding standards as a vital element in improving ship producibility. Out of this meeting the National Shipbuilding Standards Program evolved, Figure 2-1. The SNAME Panel SP-6 Specifications and Standards was activated in 1977 to initiate and foster standardization efforts in the shipbuilding industry. Panel SP-6 undertook the identification and development of requirements for specific standards that would advance production techniques in areas leading to higher efficiency, accuracy and speed in ship construction. However, because SNAME is not a standards writing organization, participation by an established organization in the field was required to carry the efforts initiated by Panel SP-6 to completion as coordinated, accepted and published standards. The American Society for Testing and Materials (ASTM) was approached and at a meeting of industry, government and ASTM representatives in January 1978 agreed that an ASTM Committee on Shipbuilding Standards should be formed. The organization meeting for ASTM Committee F-25 Shipbuilding Standards was attended by 175 representatives of the shipbuilding industry in Philadelphia in June 1978. This meeting resulted in the establishment of the Committee and initial staffing of its technical and administrative subcommittees.

### 3.0 ROLES OF THE MAJOR PARTICIPANTS

#### 3.1 MARAD & NAVY

The Maritime Administration has sponsored and funded the Ship Producibility Research Program since its establishment in 1973. SNAME Panel SP-6 projects funded under this program have provided initial drafts for development of standards by ASTM Committee F-25. The continuity provided by Ship Producibility Research Program personnel who have also served as members and leaders of Panel SP-6 and other related Panels, and who have served as Secretary of Committee F-25 has been a significant factor in the growth and success of the Shipbuilding Standards Program thus far. In 1983 the U.S. Navy shared the funding of the Ship Producibility Program, and is committed to continuing support. Both MARAD and Navy personnel are active in SNAME and ASTM Committees and panels participating in the Shipbuilding Standards Program, Figure 3-1.

#### 3.2 SNAME

The Society of Naval Architects and Marine Engineers has provided much of the initiative to get the Shipbuilding Standards program started and to keep it growing. Through the Ship Production Committee, SNAME was the catalyst to bring together MARAD, Navy, Coast Guard, shipbuilders, vendors and design agents into an interactive industry wide program. Efforts of the Ship Production Committee have led to the Shipbuilding Standards Program and many other efforts aimed at revitalizing the shipbuilding industry through improvements in the procedures and information available. The programs initiated under the Ship Production Committee have been supported throughout SNAME. Through technical review of proposed standards drafts by the Technical and Research Panels under the Technical and Research Steering Committee, and participation of members at the Section level, under the guidance of the Sections Committee, in review and selection of existing specifications and standards for

processing into ASTM standards, SNAME membership is participating on a very broad front. Panel SP-6 serves to focus this effort and contributes directly by producing proposed draft standards which form the basis for ASTM-F-25 action to publish approved standards, Figure 3-2.

### 3.3 ANSI

The American National Standards Institute is the clearing house for American National Standards. ANSI fills the role of coordinator in the adoption of national standards, helping to reduce overlap and duplication in the development of standards, identifying areas where standards development is needed, adopting recognized and accepted standards, and serving as the official U.S. representative in international standardization activities, such as participation in the International Standards Organization (ISO).

### 3.4 ASME, IEEE, SAE

In the development of a system of shipbuilding standards, many areas are encountered in which a well defined and adequate system of specifications and standards already exists. It is necessary only to correlate those standards with the shipbuilding standards, incorporating them by reference or inclusion of standard or the required excerpts under agreement with the other standards writing organization. Only those requirements peculiarly necessary to make the standard applicable to shipbuilding applications need be added. Examples of such areas include SAE standards for threads, ASME pressure vessel codes, and IEEE standards for wires and cables.

### 3.5 ASTM

The American Society for Testing and Materials has undertaken, through the establishment of Committee F-25 Shipbuilding Standards, the task of developing, submitting to the review and approval of the industry and publishing, the National Shipbuilding Standards.

### 4.0 WHY ASTM?

In most foreign countries competitive in the shipbuilding market, there is close cooperation between the government and industry if not direct intervention by the government in the development of the national system of standards. Standards can be written, published and strongly endorsed or enforced by the government. Under the U.S. system of laws and free enterprise system there is no government agency with a mandate either to develop or to enforce shipbuilding standards, and any private agency which publishes standards which gain ascendancy in an industry is liable under the Anti-trust laws to assure that such standards are developed and applied in an impartial manner. The rigorous process of assuring legal acceptability and freedom from organizational liability is outside the scope of the Society of Naval Architects and Marine Engineers, so in the establishment of the National Shipbuilding Standards program, an established standards writing organization was sought to fill that role. The ASTM process for development and publication of voluntary industry consensus standards, Figure 4-1 has been developed over a long period of years and when tested in the courts has been found to be sound and legally supportable. Industry acceptability is achieved by assuring that all members of the industry who desire to participate in the development of

the standard have an opportunity to do so, and that all panels and committees are balanced in membership between producers of the item being standardized and users of the item. All subcommittees of ASTM F-25 are required to maintain a balanced membership and to submit every standard being developed to a series of ballots with rigidly prescribed approval percentages required for progress to the next ballot or to adoption by the Society. A single negative vote at any stage in the balloting sends the proposed standard back to the technical subcommittee for resolution of the negative vote. Final adoption requires balloting and approval throughout ASTM, with no unreleased negative votes. All members of all technical committees and subcommittees involved in the generation of consensus standards are volunteer from industry or government. A Headquarters staff of less than 100 administer all the programs of ASTM, the largest industry consensus standards organization in the United States with about 30,000 members.

#### 5.0 ORGANIZATION OF ASTM COMMITTEE F-25

The F-25 Committee organization is shown in Fig 5-1. The Technical Subcommittees, F 25.1 through F 25.13, are each responsible for the development of standards in the areas indicated by the committee title. Changes in areas of responsibility and consolidations since the establishment of F-25 have resulted in some unused numbers. Each technical subcommittee establishes task groups for the initial development of specific standards, combining and dissolving task groups as necessary to suit the current effort. The Executive Subcommittee, F-25.90 acts as the governing body for day to day operations subject to approval by the Main Committee in full session. Subcommittees F25.80, F25.91 and F25.94 are administrative subcommittees. F25.80 is responsible for participation in the International Standards Organization and coordination between ASTM F-25 and the ISO. Subcommittee F25.91, the Long Range Planning Subcommittee is responsible for the development and maintenance of the long range plan for development of shipbuilding standards in ASTM. Subcommittee F25.94 is responsible for administration of the Navy Documents Conversion Program.

#### 6.0 ACCOMPLISHMENTS TO DATE

The organization of Committee F-25 within the Shipbuilding Standards Program, combining the efforts of many diverse organizations and interests in the maritime field, was a significant step toward improvement of the documentation available for shipbuilding in the United States. As the stature and visibility of the program have grown, support for it has been pledged by MARAD, the Navy, the Coast Guard, SNAME, ASTM and the shipyards, equipment manufacturers and the engineering community. Funding has been provided by MARAD and the Navy at a level sufficient for the beginning effort, and manpower for the committees, panels and task groups has been provided through participation by all sections of the industry at an increasing level. Committee F-25 has grown from about 180 to 233 members in the past two years, and the number of personnel supporting the program has grown dramatically in the professional societies, government agencies, and shipyards and design agents. Technical support for development of draft standards is widespread and growing.

A long range plan has been developed under funding by the Ship Producti-



bility Research Program, and has been adopted as a basis for continual development by the Long Range Planning Subcommittee, F25.91.

The development and approval of an ASTM standard through the rigorous Voluntary Consensus approval process, Figure 4-1, is necessarily time consuming. Organization and staffing of the Committee and Subcommittees has taken time, but is now well established and "shaken down". Twenty-one standards have been adopted and published. One hundred additional standards are in the development/approval circuit, and several thousand additional standards are under review and consideration for preparation or conversion and adoption. Committee F-25 is producing standards at a faster rate than any other ASTM Committee, and the pace continues to accelerate.

The acceleration of the committee's effort is expected to increase this year with the establishment of Sub-committee F25.80 to act as an interface with the International Standards Organization, which will make information and standards developed internationally more readily available to the U.S. program. Also, a special task group has been established to acquire and review foreign national shipbuilding standards to identify those which could form a basis for developing an ASTM standard. The Navy Documents Conversion Subcommittee was established to assist in the identification and reformatting of U.S. Navy Military Specifications, Standards, and other documents that can be converted to commercial ASTM Standards for use both by industry and the Navy.

#### 7.0 WHERE DOES ASTM COMMITTEE F-25 STAND TODAY?

The scope of Committee F-25 is to develop standard specifications, test methods, definitions and practices for design, construction and repair of marine vessels. An objective of the committee is to prepare a body of shipbuilding standards for use throughout the industry. The broad representation on the committee of all sectors of the marine industry ensures that its actions, as governed by ASTM regulations, will support the industry as a whole. The 233 members of this committee represent participating organizations that include shipbuilders, manufacturers, design agents, the U. S. Navy, the U.S. Coast Guard, the Maritime Administration (MARAD), and the American Bureau of Shipping (ABS), as well as ship owners and operators.

The ASTM voluntary consensus standards development process does take time, since all opinions expressed must be considered prior to final approval of a standard. The limited number of 21 standards published to date by committee F-25 demonstrates that the normal time required for development of a standard is about two years or more, depending on the complexity of the standard. Most of the ASTM standards published by committee F-25 have been from the outfitting and piping subcommittees, with 9 and 8 standards respectively. The remaining 4 published standards have come from the coatings, deck machinery and general requirements subcommittees. All technical subcommittees have active projects underway in development of additional standards. About 100 standard development projects are in various stages of development, with about 1/3 in the outfitting subcommittee, 1/3 in the piping subcommittee and the remainder distributed in the other subcommittees.

The selection of standards development projects has been the result of proposed draft standards received from SNAME Panel SP-6, other recommendations brought forth by F-25 committee members, and a conscientious effort to be responsive to the most urgent needs of the marine industry. The shipbuilding standards long range plan developed under the Ship Producibility Research Program is being used as a guide in selecting standards development projects for the future. This long range plan is in a continuing process of refinement by the F-25 long range planning subcommittee in order to make it more specific in application to the work of the technical subcommittees and, at the same time, more responsive to feedback received from government and industry, with emphasis on meeting the most urgent high priority high payoff requirements. Projects are selected that are manageable and "doable" within a reasonable time, taking into consideration the resources anticipated to be available. The more complex standards development projects will be deferred until resources are available to carry them out in a reasonable time. The value of the long range plan depends heavily on the cooperation of government and industry in identifying their most urgent high priority requirements for standards development where a high payoff is anticipated. This information is basic to the refinement of long range planning and for establishing priorities of standards development within the technical subcommittees.

## 8.0 INDUSTRY AWARENESS

One of the objectives of ASTM committee F-25 is to foster increased awareness of the activities and benefits of the National Shipbuilding Standards Program. For example, the program has been represented at the first two International Maritime Expositions held in New York in conjunction with the 90th and 91st annual meetings of SNAME, and at the 1983 "ASNE DAY" convention in Washington. Recent informative presentations have been given at meetings of the technical societies and at the Marine Engineering Symposium held in January in Arlington, Virginia. Emphasis has been placed on the importance of standardization to the marine industry and of the need for strong participation in the voluntary activities of ASTM committee F-25 from all segments of the industry. Several articles and notices have appeared in the major maritime journals containing information relative to standardization activities, planned meetings and specific tasks. With increased awareness, it is anticipated that participation and support for the standardization program will increase, so that its benefits may be realized more quickly.

It should be widely recognized that shipbuilding standards provide us with a capability to achieve substantial savings in the cost and time required for ship design, construction and maintenance. The potential benefits of standardization apply at all levels of the industry, whether addressing the ship as a whole or the many systems, subsystems, equipment and components that make up the ship. This is particularly evident as we move further into the application of modern technology in the maritime industry, with increased use of computer-aided design and construction methods. Standard design features and standard products allow us to develop the full potential of new design and construction methods to improve productivity and decrease costs throughout the maritime industry.

Also, it is emphasized that it is not only important to develop a wide range of shipbuilding standards, but it is equally important to specify and use these standards. Otherwise, the potential benefits will not be realized.

For the good of the maritime industry as a whole we should support the application and use of shipbuilding standards throughout all phases of ship design and construction.

## 9.0 RECENT INITIATIVES

ASTM committee F-25 has taken several steps recently in an effort to accelerate the development of shipbuilding standards, and to make the best possible use of all available information that is relevant to the development of these standards. The most significant effort that is now underway is the Navy Document Conversion Program. This is a cooperative program, with the full support and participation of the Navy and the Society of Naval Architects and Marine Engineers (SNAME), together with ASTM Committee F-25 on shipbuilding.

Simply stated, the concept of the Navy Document Conversion Program is to select Navy documents that are suitable candidates for conversion to become industry consensus standards, review them to determine improvements that could be made to reduce shipbuilding cost and/or time, reformat them into ASTM format and proceed with the voluntary consensus process to obtain approval as ASTM standards for use by government and industry. When the resulting ASTM standards are accepted by the Navy, the original Navy documents may be canceled.

While serving as SNAME president, Mr. John Nachtsheim included the following points relative to the conversion of Navy documents into industry standards during his annual address to the Society in November 1983:

- a. The Navy has many outdated specifications that are vital to an expanded Navy shipbuilding program.
- b. SNAME has an opportunity and the expertise in its members to support ASTM committee F-25 in the development of industry consensus standards.
- c. All members of SNAME are requested to support this effort.

Subsequently, an ASTM Navy Document Conversion Program subcommittee (F-25.94) was formed to work with SNAME and U. S. Navy (NAVSFA) representatives to establish procedures for this program. This resulted in an approach wherein the Navy would provide proposed candidate Navy documents for review. SNAME members would provide a technical review of the candidate Navy documents. Then ASTM F-25 would reformat the document into ASTM format, resolve any issues, carry it through the voluntary consensus approval process and publish the resulting ASTM standard. Upon acceptance of the new ASTM standard by the Navy, the original Navy document would be canceled. Figure 9-1 shows this approach diagrammatically.

The F-25 Navy Document Conversion Program subcommittee, F-25.94, is made up of about 20 ASTM members representing shipbuilding, manufacturers, design agents, the U. S. Navy, the U. S. Coast Guard, MARAD and a ship owner/operator. The scope of responsibility of this subcommittee has been established: to act as the overall administrative coordinator in the cooperative effort between the Navy, SNAME, and ASTM, aimed at reviewing and converting candidate

Navy documents to ASTM standards. Technical review of these documents remains the responsibility of the cognizant F-25 technical subcommittees. The Director of the Navy Specifications and Standards Sub-Group acts as the U. S. Navy point of contact and submits the candidate Navy documents for review. The chairman of SNAME Panel SP-6 acts as the coordinator for the SNAME review of the candidate Navy documents. A detailed flow chart has been prepared which describes the flow path of the candidate Navy document through the SNAME review and subsequent ASTM reformat and consensus approval process.

So far, 77 Navy documents have been submitted, screened and accepted for review, including 65 military specifications and 12 standard drawings. 43 documents are in the SNAME review process and 24 have progressed to the reformat process. Seven documents which are not within the scope of ASTM committee F-25 have been referred to other standards groups having cognizance. None of the documents have reached the consensus approval ballot process as yet. Many other Navy documents are in the pipeline in and are expected to be submitted at a rate of about 15 to 20 documents every six or eight weeks. An effort is underway to improve the selection process of candidate Navy documents to place greater emphasis on the selection of documents that meet high priority objectives of government and industry and also have a strong payoff potential, through high dollar savings in each use or through frequent use in high volume repeated applications.

It is emphasized that new ASTM standards produced through the Navy Document Conversion Program should be of value to both industry and government.

Constructive participation by all concerned should ensure that vital requirements contained in original Navy documents are retained. However, conscientious efforts should result in improved quality standards that are up-to-date, more efficient and more cost effective. Special military requirements such as packaging or special quality control requirements may be covered as supplementary requirements to be invoked for military procurements only. ASTM requirements for periodic review will ensure that the ASTM standards will be kept up-to-date. The key to success in this program is participation by knowledgeable, well qualified representatives of the activities involved in use of the documents under review.

Another recent initiative of ASTM committee F-25 has been the formation of a Task Group for review of Foreign National Shipbuilding Standards for possible use in development of U. S. shipbuilding standards. The objectives of this task group are as follows:

- a. to identify foreign national shipbuilding standards that should be reviewed.
- b. to acquire lists of foreign national shipbuilding standards that are available.
- c. to examine selected samples and acquire copies of representative samples.
- d. to recommend a prioritized list of specific foreign national standards as candidates for conversion to ASTM standards for to

be used in some other way in the development of ASTM standards).

- e. to recommend procedures for the review and conversion (or other use) of the prioritized standards.
- f. to determine any legal impediments to the use of foreign national standards.

The task group has made excellent progress in identifying foreign national standards, acquiring lists of standards that are available and acquiring samples. Efforts are now underway to develop recommendations for possible use of these foreign standards in the development of our own ASTM shipbuilding standards.

An additional step taken recently to look beyond our own shores was the establishment of ASTM subcommittee F-25.80 on International Shipbuilding Standards. This subcommittee is responsible for the coordination of development, maintenance and adaption of International Shipbuilding Standards for use in support of our own National Shipbuilding Standards Program. This subcommittee will serve also as the principal interface with the U. S. Technical Advisory Group (ISO/TC-8) to the International Standards Organization (ISO). Liaison has been established with the American National Standards Institute (ANSI) to arrange for participation in future ISO meetings concerning shipbuilding standards where information may be obtained that could be useful in developing ASTM standards. Also, this participation may enable ASTM members to influence the development of International Shipbuilding Standards to the benefit of the United States Maritime Industry.

ASTM committee F-25 is continuing to search out for other steps that could be taken to accelerate the development of shipbuilding standards and improve their value to both government and industry. This includes the examination of potential sources of increased support that could be brought to bear on the subject, financial or otherwise, while remaining consistent with the framework of the ASTM voluntary consensus standards development process. Any comments or recommendations on this subject would be welcomed by ASTM committee F-25.

#### 10.0 SUMMARY OF ASTM COMMITTEE F-25 AREAS OF EMPHASIS

Table 1 provides a summary of ASTM committee F-25 areas of emphasis as described in the preceding paragraphs. Actions in these areas are all aimed at the overall objective of establishing a body of shipbuilding standards for use throughout the marine industry in the design, construction and maintenance of ships. These standards will be reviewed and updated periodically to ensure that they are maintained current and useful to all segments of the industry.

TABLE 1

ASTM COMMITTEE F-25 AREAS OF EMPHASIS

1. CONTINUE DEVELOPMENT OF SHIPBUILDING STANDARDS TO MEET HIGH PRIORITY REQUIREMENTS OF THE MARITIME INDUSTRY.
2. OBTAIN MORE FEEDBACK FROM INDUSTRY AND GOVERNMENT IN ORDER TO REFINE PRIORITY REQUIREMENTS AND IDENTIFY MOST URGENT NEEDS FOR STANDARDS DEVELOPMENT.
3. COMPLETE DEVELOPMENT OF LONG RANGE PLAN OF ACTION RESPONSIVE TO PRIORITY REQUIREMENTS.
4. CONTINUE EFFORTS TO FOSTER GREATER AWARENESS OF THE BENEFITS OF STANDARDIZATION AND ENCOURAGE ACCEPTANCE AND IMPLEMENTATION OF ASTM F-25 STANDARDS.
5. OBTAIN INCREASED PARTICIPATION FROM INDUSTRY AND GOVERNMENT TO:
  - a. ESTABLISH A BROADPP BASE OF PARTICIPATION
  - and b. STRENGTHEN PARTICIPATION FROM EACH ACTIVITY
6. CONTINUE WITH THE NAVY DOCUMENT CONVERSION PROGRAM AND EXPEDITE WHERE POSSIBLE TO MEET HIGH PRIORITY REQUIREMENTS.
7. DEVELOP PROCEDURES TO ACHIEVE MORE EFFECTIVE USE OF THE GOOD FEATURES OF FOREIGN STANDARDS IN DEVELOPING OUR OWN SHIPBUILDING STANDARDS.
8. CONTINUE EFFORTS TO ACHIEVE PARTICIPATION IN THE INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO).
9. IDENTIFY AND IMPLEMENT ADDITIONAL STEPS TO ACCELERATE THE DEVELOPMENT OF SHIPBUILDING STANDARDS.

It is not intended to "reinvent the wheel" and develop new standards where existing commercial standards are satisfactory. Where called for it is planned to cite existing commercial standards by reference, after review and determination that they are suitable for the required marine application. The full body of National Shipbuilding Standards will be made up of ASTM F-25 shipbuilding standards plus other referenced standards listed as suitable for application to the marine industry.

#### 11.0 GOVERNMENT SUPPORT OF ASTM COMMITTEE F-25

The Federal Government is a strong supporter in the development and use of voluntary standards. The office of Management and Budget (OMB) Circular A-119 dated October 26, 1982, signed by David Stockman, addresses Federal participation in the development and use of voluntary standards. This circular includes positive statements of policy that the government is to rely on voluntary standards and to participate in Voluntary Standards Bodies. It also includes the following policy guidelines:

- a. Voluntary standards should be adopted and used in the interests of greater economy and efficiency.
- b. Voluntary standards should be given preference over nonmandatory government standards unless use of such voluntary standards would adversely affect performance or cost, reduce competition or have other significant disadvantages.
- c. Participation in Voluntary Standards Bodies and Standards Developing Groups should be actively encouraged and promoted.
- d. Participation should be aimed at contributing to the development of voluntary standards that will eliminate the necessity for development or maintenance of separate government standards.

The U.S. Coast Guard has a long history in the development, acceptance and utilization of industry standards. Many industry consensus standards are incorporated by reference in Coast Guard Regulations. In July 1982 Admiral J. S. Gracey, Commandant of the Coast Guard, stated ". . . the Coast Guard has participated in the work of the ASTM F-25 Committee on Shipbuilding since 1978 and we will continue to do so. We are currently reviewing several of the standards developed by that committee with the intention of adopting those standards relating to marine safety in our regulations. A regulatory project to incorporate piping system standards is already underway."

The Maritime Administration's continued support of the National Shipbuilding Standards Program has been assured by a letter from Admiral Harold E. Shear, the Maritime Administrator, dated June 23, 1982 wherein he committed his organization to ensuring that all MARAD programs and policies take full advantage of the standards developed by the program, and that MARAD would continue to provide support for this program. In a letter dated September 17, 1983 Admiral Shear stated, "With regard to development of shipbuilding standards, this is an area that is long overdue. . . . While the production of National Shipbuilding Standards using the (ASTM) process has a long way to go, it is gathering momentum. Everyone must address this area with more vigor.

The ASTM consensus standards process and government and industry support of this process through SNAME, assures of having highly useful standards. However, we must jointly continue to support these efforts as strongly as possible."

The U. S. Navy has supported the National Shipbuilding Standards Program from its inception. Continued Navy support and participation was affirmed recently by Vice Admiral E. B. Fowler, Commander of the Naval Sea Systems command. He placed emphasis on standards that would be productive to the Navy, especially where an industry document has a good chance of superceding a Navy specification or drawing, or preventing the need to develop a new Navy document.

Direct participation by Government representatives in the National Shipbuilding Standards Program is an essential ingredient to ensure success. Navy, Coast Guard and MARAD direct participation in this program has been strong from the start, both through SNAME panel SP-6 and directly as a part of ASTM Committee F-25. Government representatives serve on each of the technical subcommittees and two of those subcommittees are chaired by U.S. Navy representatives. Also, the recently formed subcommittee F-25.80 on International Standards is chaired by a U. S. Naval officer. In addition to this direct participation by individuals, each government agency has provided in-depth support to the individual participants from within the parent agency's functional organization. Typically, this support from within the parent organization is provided to assist in the resolution of technical issues that arise during the development of a standard. It provides an opportunity to obtain a broader base of participation and ensure that standards, when approved, will meet the requirements of the Government agency. Constructive comments, and the cooperation of all concerned speed up the approval process to the benefit of both government and industry.

Once an ASTM standard is approved, it is important for the Government agencies to accept and implement the standard by calling for its use where applicable in government regulations, design and construction contracts, shipbuilding specifications, procurement documents, repair contracts, letters of direction, etc. This is an area where some improvement in Government support would be helpful. Of the 21 ASTM shipbuilding standards approved so far, only a few have been specified for use in government procurements. Only through acceptance and use will the benefits of shipbuilding standards be realized.

After experience in use of ASTM standards, any comments or recommendations for change will be considered for incorporation in revisions made periodically to keep the standards up-to-date.

## 12. HOW THE INDIVIDUAL NAVY ENGINEER CAN HELP

The individual Navy engineer can provide valuable assistance in support of the National Shipbuilding Standards Program. The following are examples of



actions that would be very helpful.

- a. Join ASTM Committee F-25 and participate directly in standards development and/or provide support through some other professional organization such as SNAME.
- b. Provide recommendations for areas or specific cases of most urgent need for the development of shipbuilding standards, with emphasis on high payoff cases.
- c. Assist ASTM members in their efforts to develop shipbuilding standards, e.g. Provide prompt responses to help resolve technical issues when requested, with constructive recommendations.
- d. Accept and specify use of ASTM F-25 standards that have been published.
- e. Provide feedback at ASTM Committee F-25 with any recommendations for improvement.
- f. Tell others about ASTM Committee F-25 and the National Shipbuilding Standards Program and encourage their participation.

### 13.0 CONCLUSION

The National Shipbuilding Standards Program holds great potential value for the U. S. Maritime Industry. This program has been reviewed in this paper and participating organizations have been identified. ASTM Committee F-25 on shipbuilding has been described and its activities have been discussed. The importance of Government support has been emphasized. All individuals who are working in the Maritime Field, both Government and Industry, are encouraged to lend their support to the National Shipbuilding Standards Program.

# NATIONAL SHIPBUILDING STANDARDS PROGRAM

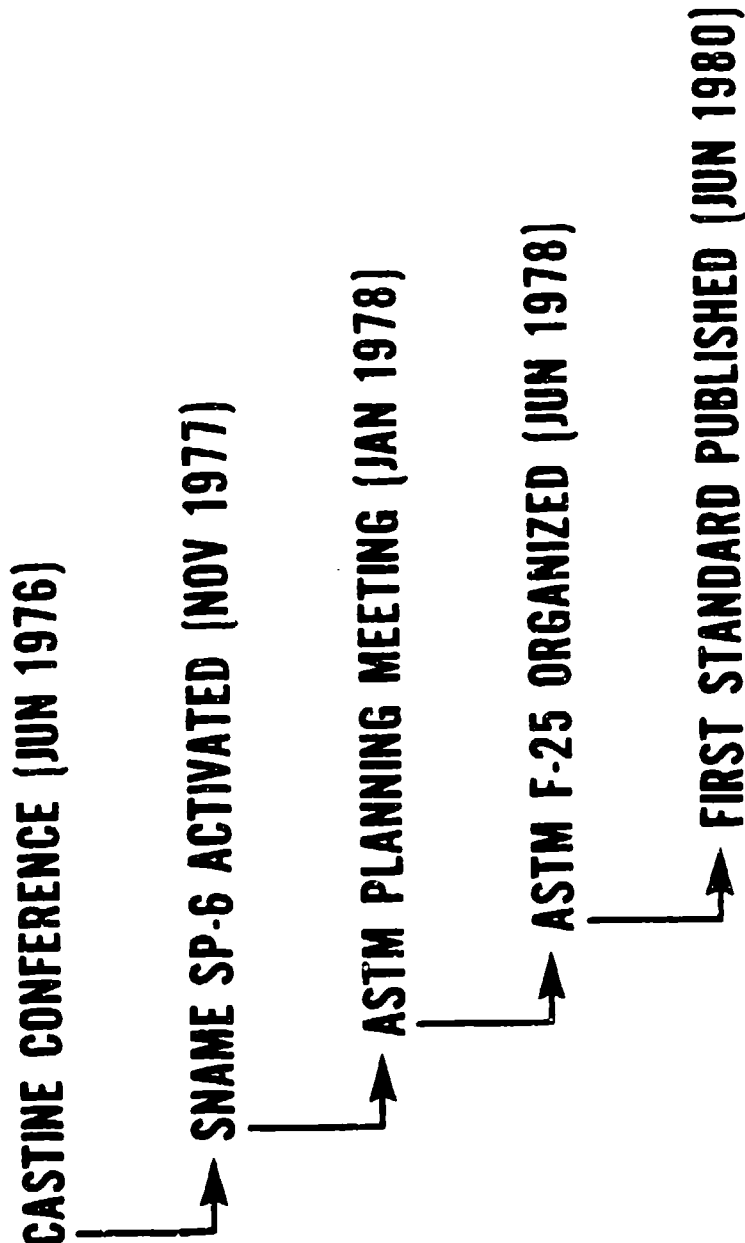
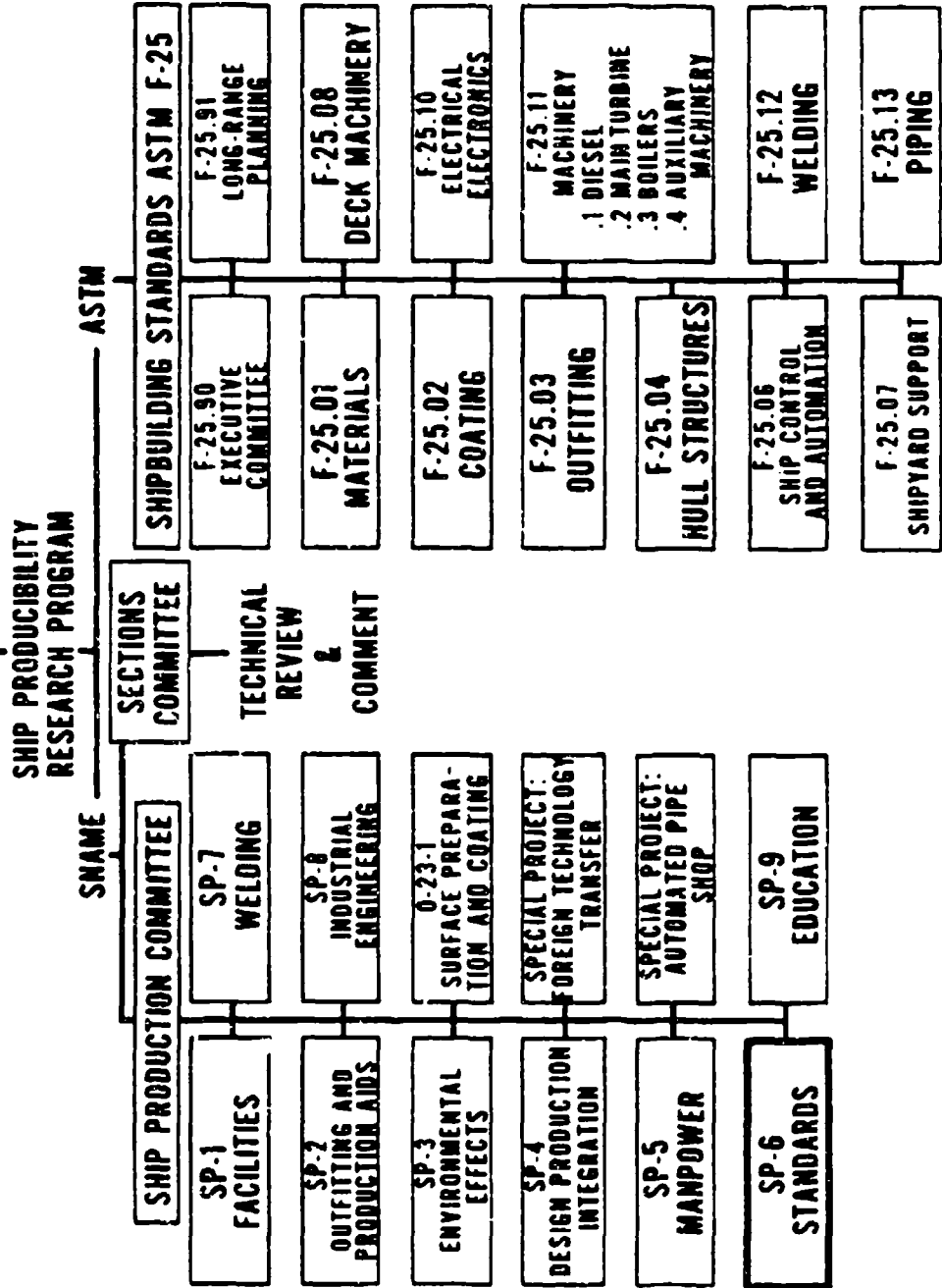


Figure 2-1

**SHIPBUILDING STANDARDS PROGRAM**

**MARAD/NAVY**

**INDUSTRY ORGANIZATION**



**SHIP PRODUCIBILITY  
RESEARCH PROGRAM**

**SHIPBUILDING STANDARDS**

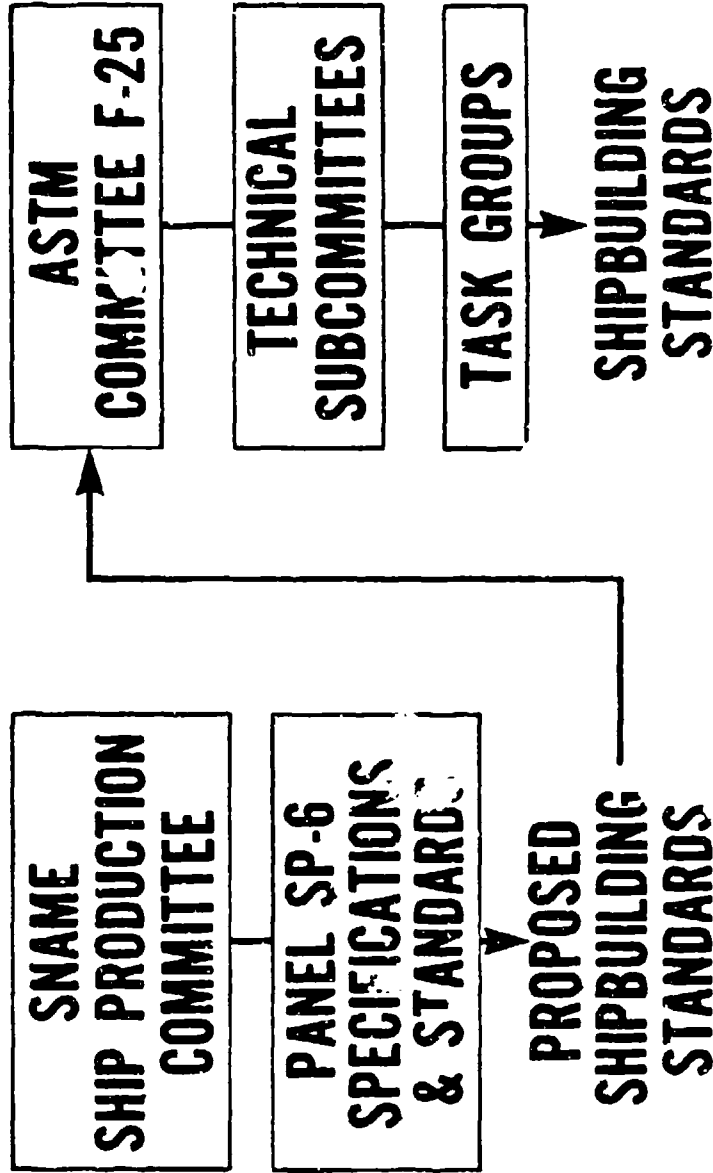
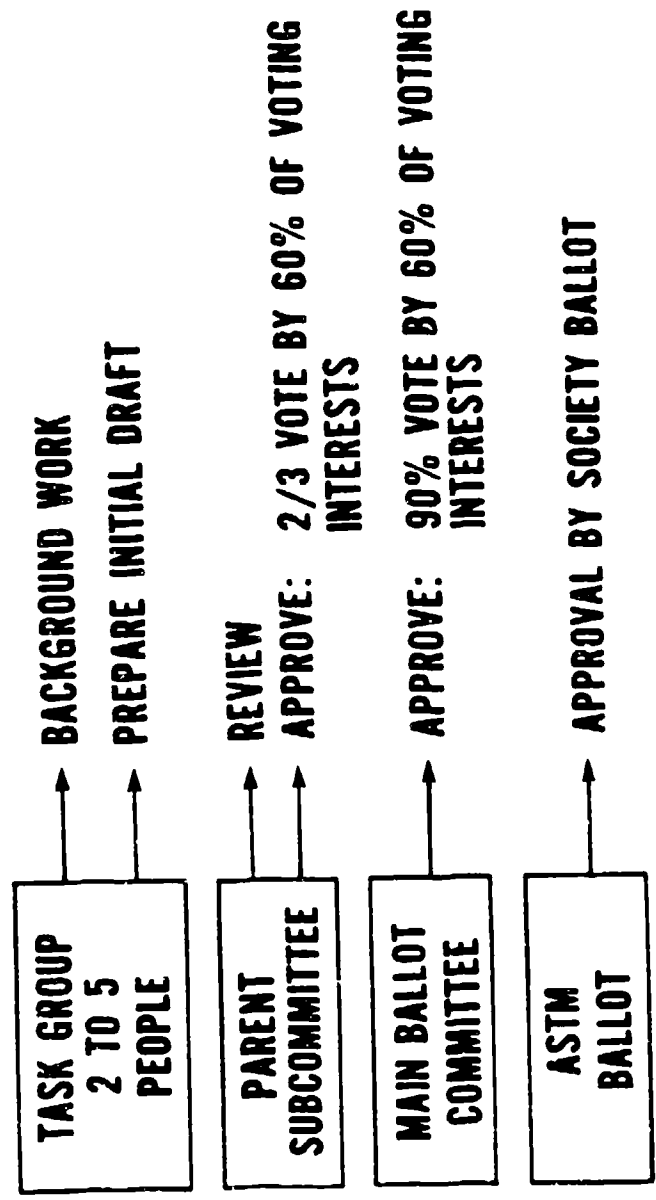


Figure 3-2

# ASTM STANDARD

## APPROVAL CIRCUIT



**A SINGLE NEGATIVE BALLOT AT ANY STAGE RETURNS THE PROPOSED STANDARD TO THE TECHNICAL SUBCOMMITTEE FOR RESOLUTION.**

Figure 4-1

# COMMITTEE F-25 ORGANIZATION

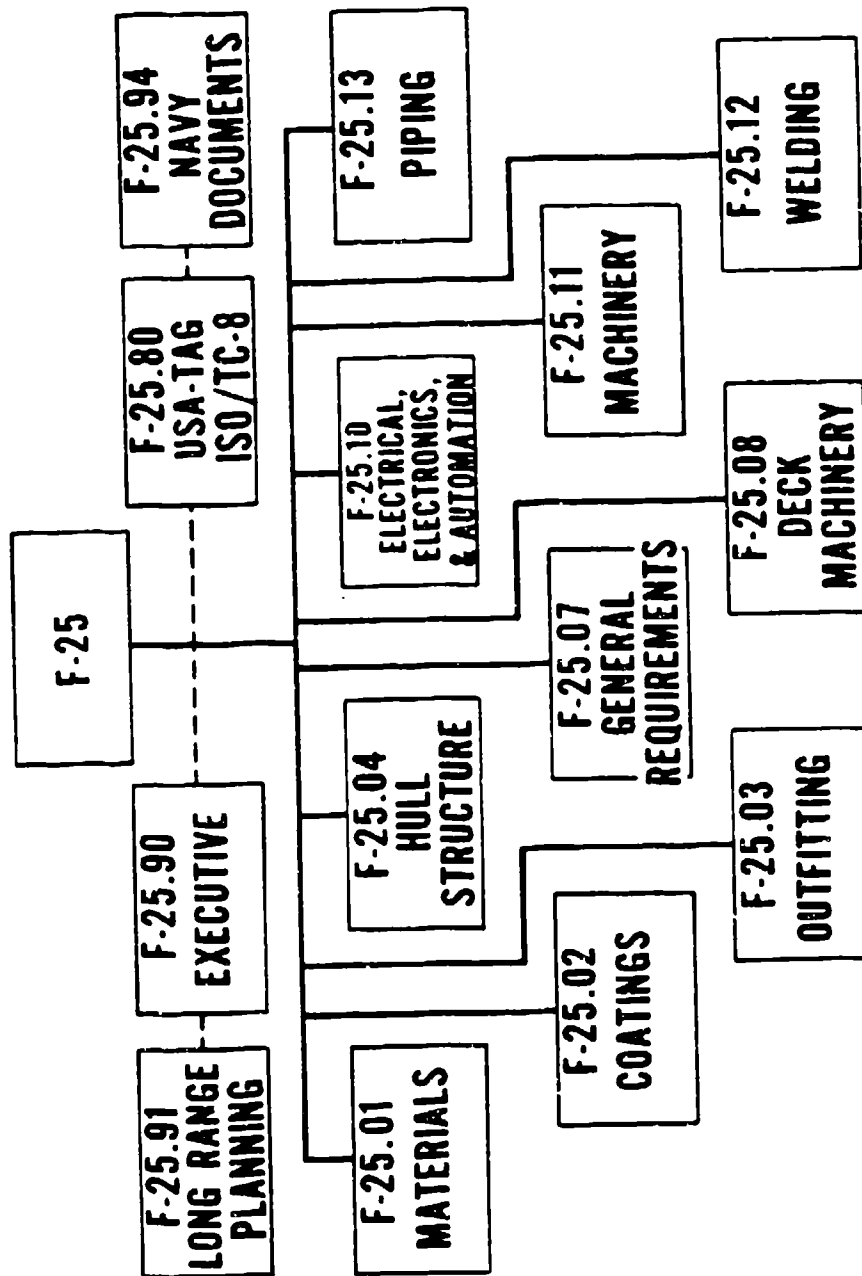


Figure 5-1

# NAVY DOCUMENT CONVERSION PROGRAM

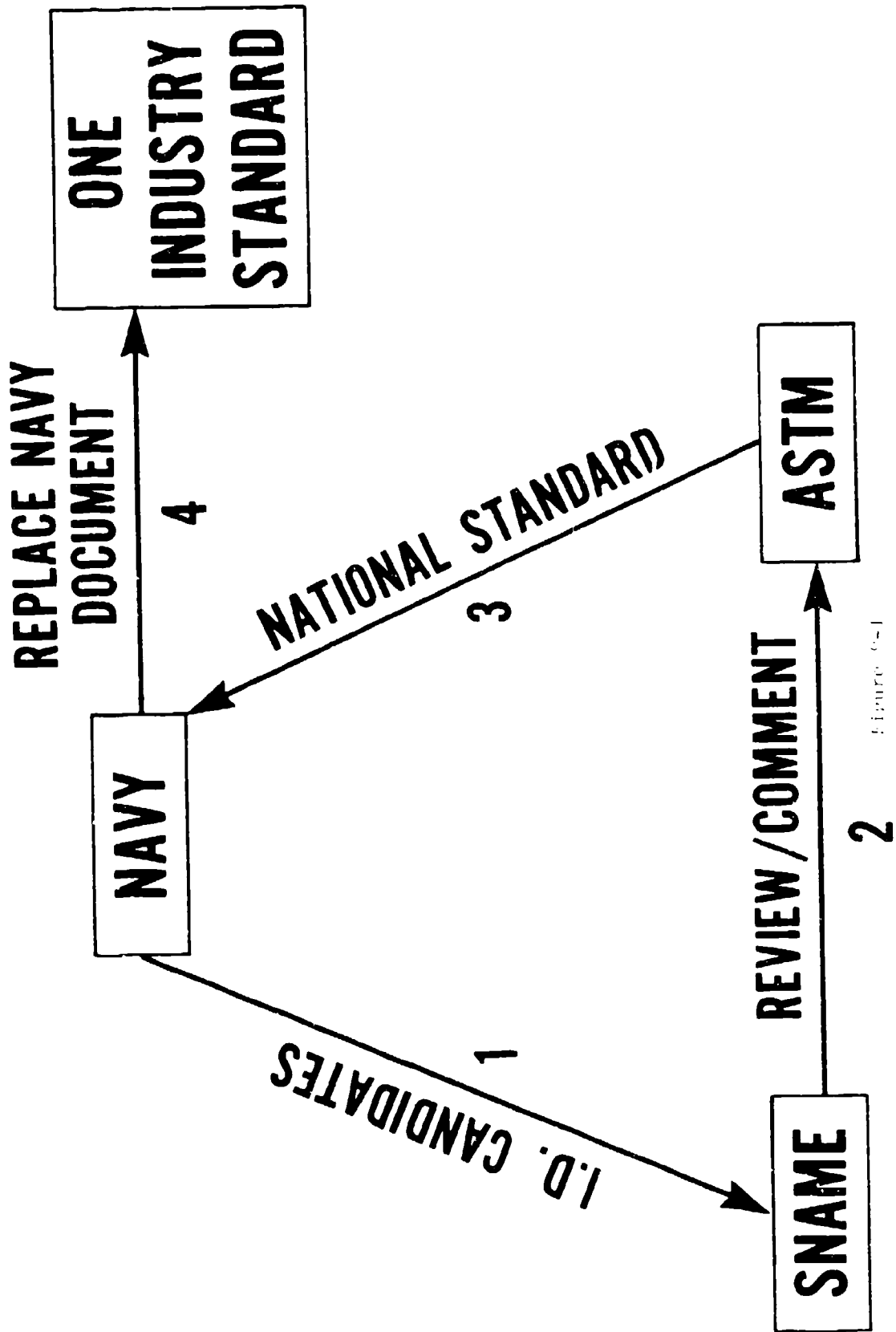


Figure 6-1