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SYMPOSIUM ON  
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Washington, D. C.

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"PROVISIONING OF  
HULL  
MECHANICAL  
AND  
ELECTRICAL  
COMPONENTS"

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ENCL. (1) TO NAVSHIPS LTR CER 2052-T1

How important is PTD (Provisioning Technical Documentation)? How important are blueprints in the contraction of Naval ships?

The logistic support of equipments can only be as good as the PTD.

Let us assume that the XYZ shipyard has a new ship construction contract. The detailed specifications require maximum standardization and interchangeability of components and parts between components. The specs are definitized in plain, simple language that all hull, electrical and mechanical components shall be provisioned in accordance with the procedure and submittal schedule of MIL-P-15137.

Prior to the contract award XYZ's facilities, engineering and production resources were surveyed and were found to be a highly qualified firm of excellent reputation. Their procedures, quality assurance techniques and middle management supervision are all superior.

XYZ buys standardized components, repair parts and documentation together in a package in accordance with approved ship production drawings in a prescribed sequence that assured delivery of the OBRPs (Onboard Repair Parts) with the component. His vendors easily meet the scheduled submittal dates for PTD which XYZ qualified engineering personnel have promptly examined for adequacy of range of essential repair parts.

(The vendors are discounting the invoice by 2% if paid before the 10th.) After recording action for progress reporting, XYZ now forwards each correspondence package via SUPSHIPS (Supervisor of Shipbuilding) to the ICP (Inventory Control Point).

At the ICP the package is reviewed with no difficulty in establishing technical, proprietary and functional identity of the components with

those already installed in the Fleet. The ICP merely checks adequacy of FSNs (Federal Stock Numbers) and returns an authenticated form known as NAVSHIPS 4786/4786A to the manufacturer, XYZ and SUPSHIPS. Also a piece of paper known as an APL (Allowance Parts List) is provided which is filed and cataloged for ready reference.

This APL indicates at the top of the form all the important identifying particulars of the component, in the body a top-down breakdown of all installed and wearable parts are spelled out, each with its own exclusive (or common) manufacturer's part number, quantity of parts per unit, FSN, etc., plus a built-in component and part maintenance philosophy.

The APL has thus become a logistics and engineering tool which is used in establishing OBRPs, Tender Loads, Overhauls and Maintenance criteria - not to mention procurement intelligence for supply system backup.

Because of the scope and clarity of the contract specifications, XYZ's competence, integrity and resources, SUPSHIPS expertise in educating the XYZ in Navy's changing techniques and methodology, ready acceptance by industry of standardization, prompt and accurate progress reporting, the ship's Supply Officer is happy, the Commanding Officer is confident of support when needed, and the supply system will replenish OBRPs as soon as they are consumed.

#### STOP THE PRESSES!

Did I hear someone say that is Utopia? The Alice in Wonderland story just related is what we all wish was true; unfortunately we need to look at provisioning in the light of the real, live world.

The tools to make such a delightful provisioning story come true in a large measure are available, but people need to be educated in their availability and use. At each Naval Shipbuilding Activity (SUSSHIPS and Shipyard) the following indicated tools are available for use by private contractors:

a. Index of specification to master APL. (This will be replaced by Lead APL.)

b. Index of master APL to follower (all applicable) APLs.

c. Bank of 220,000 individual APLs.

To show how these tools work lets take the requirement of providing an electric brake in accordance with equipment specification MIL-E-16392B. A look at the index of MILSPECS to Master APL (paragraph a, above) shows the master to be 800040029 (the Lead is 80-001). Then a look at the Master to Follower Index and we find a listing of twenty individual APLs applicable to the Master, each with limited characteristics, and the number of units presently installed in the Fleet by hull and total population.

The individual APLs (figure I) can then be reviewed to determine which unit can best meet the requirements. The APL will give all data necessary to issue a purchase order.

Whenever the purchased equipment already has an APL only certification of identity is required to be made on the NAVSHIPS 4786 form (figure II) and no other PTD is required.

If an existing APL component does not meet the requirement or a component is purchased without regard to its past Navy application then in addition to NAVSHIPS form 4786, the 4786A form (figure III) needs

to be submitted with all required data. The ICP will return the form marking up in column 22A the approved onboard allowance to be initially provided the ship within 45 days.

This, in a thumbnail, gives a general look into provisioning. Lets take a look at the overall definitions and constraints. Are the ship's specifications and contract specifications unmistakably clear in intent? Does the purchasing activity have practical quality assurance procedures that govern effective management of technical documentation? When the answer to these two questions is anything other than yes, the adequacy of documentation (if received at all) is immediately suspect. Vague and ambiguous specifications generate paper documentation of the same caliber. The production workers are building a ship and there is another keel ready to go on the same building ways. Paper has to move.

We need write the next set of specifications so everybody will understand them completely.

What about analysis and control posture? Does the purchasing activity make use of experienced engineering talent to examine technical documentation for scope of coverage and adequacy of detail? Are reliable records kept of progress, expediting effort and compliance to schedule? Is the Navy paying for a product of several segments - the hardware, technical documentation maintainability in a prescribed time frame? Are we getting delivery of the complete product? The answers need to be yes.

OBRP support, as provided for by MIL-P-15137 (SHIPS) for equipments and components installed aboard vessels of our Navy by private/commercial shipyards during the course of short-term yard availabilities for reactivations and regularly scheduled overhauls leaves much to be desired.

A big problem in new construction ships is created when provisioning is not invoked. MIL-P-15137C is the provisioning military specification and has/is not always invoked both for GFM (Government Furnished Material) and CFM (Contractor Furnished Material). Provisioning is the initial step in ensuring that follow-on supply support will be taken.

Certain shipbuilders have, for several years, provided manufacturers with a one-page appendix to purchase orders which includes only what was considered necessary as concise instructions for their preparation of PTD. To those new suppliers and to others that were determined to be unfamiliar with provisioning procedures and NAVSHIPS forms 4786 and 4786A, a sample of the forms, filled out for hypothetical equipment and associated components, were attached. These were to be used as a guide and for future reference. This has worked very well in most instances.

If new electrical and mechanical equipments and components, installed aboard active Naval vessels, undergoing overhauls, are to be provisioned per MIL-P-15137C, then this should be accomplished with uniformity. Suppliers tell us that only certain shipbuilders required them to prepare provisioning documents for new equipments they furnish for Naval vessels under overhaul. Many of the suppliers are, for the most part, sadly unfamiliar with PTD, which leads one to assume that perhaps there is a lack of consistency in provisioning requirements for overhauls and short term availabilities among the shipyards. One even wonders if ships may be returning to sea short the repair parts for maintenance and overhaul of newly-installed equipments. Certainly, without the submission of PTD, SPCC is deprived of knowledge of new equipments requiring parts support,

equipment population increases and data for cataloging equipments and repair parts for future procurements.

In a good many segments of industry there exists surprising ignorance of the provisioning theory, procedures and practices required by MIL-P-15137C. This condition seems particularly prevalent among jobbers, distributors, dealers, manufacturers' agents and representatives, and small business in general. The situation would seem to demand remedial action of some kind. Perhaps something in the form of renewed education and indoctrination carried to industrial suppliers of the Navy throughout the country by one or more skilled field service teams. I believe this was done a long time back but was discontinued after the Korean conflict. Such an approach could reap the desired results and at the same time rekindle old friendships and update understanding between industrial suppliers and Navy end users.

The primary control instrument in obtaining PTD is the agreement between buyer and seller. This is the purchase order, or contract, and it originates in a written request initiated either in engineering or production, depending on local conditions. The language and format of the purchase order determines the adequacy of provisioning documentation. You will see in the very center of the provisioning chart (Figure IV) that emphasis is given to pre-provisioning clarification. The cumulative experience of the defense establishment recognizes the importance of provisioning conferences on complex equipment as an adjunct to the purchase order. Where expedience or cost differential has dictated procurement of a component having wearable parts without stipulating the provisioning documentation requirements, the only alternative open is

reverse engineering. That is, drawing development from the disassembled component. The cost to accomplish satisfactory drawings by this method is excessive and the legal implications are numerous.

The inequities and abuses in the management of provisioning documentation results in duplication of data previously acquired which encourage false economy.

A feedback of reconstituted data is made to industry by SPCC in the form of the APL for each of his equipments that have been provisioned. In addition, distribution is made to 68 APL reference banks at Naval Shipbuilding Activities accessible to purchasing activities and industry. The increased interest in standardization by shipbuilders is reflected in use of APLs as a proven buying guide. There is nothing scientific about this. Shipbuilders are learning that it makes sense to save their administrative dollars and procurement time by buying components that duplicate those already in the Fleet. The APL authenticates prior procurement.

Equipment installed in hulls for which provisioning documentation was not furnished frequently cannot be supported by the supply system, is often out of production and is a sea-borne white elephant that the economics of supply cannot afford to feed.

Receipt of the provisioning data: As much as 20% of the component/equipment is not received until the final months of the construction period, which does not provide sufficient time to accomplish all the actions that will provide repair parts from the supply system on commissioning. Approximately 70 to 75% of hull, mechanical and electrical equipments in new construction ships are covered by existing APLs.



It is important to remember that PTD is not required if:

- The component under procurement is identical to an existing APL component,
- Purchase of an approved range of OBRPs can be part of the order for the component,
- FSNs are already assigned,
- Supply system stock has already been established.

Expeditious, Economical and Efficient.

Gentlemen, in closing I would remind myself, and you, that in the Navy we have our problems in communicating with one another when, frankly, we invent much of the language. Our minds must remain open to the fact that we have the maintenance of the ships to consider. Being understood in maintainability requirements is paramount to this end.

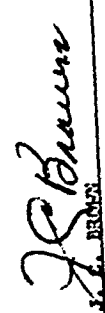
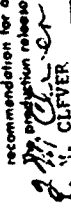
# ALLOWANCE PARTS LIST (APL)

EQUIPMENT/COMPONENT NOMENCLATURE/CHARACTERISTICS		MANUAL	TECHNICAL DOCUMENT NUMBER	IDENTIFICATION NO.	DATE	PAGE
BRAKE - ELEC SHOE 58FT/LBS (MAX) 12V DC		63-6B-3541	7UN	800990012	03-1-69	1

CHARACTERISTICS	ITEM NAME	STOCK NO.	ON BOARD ALLOWANCE TABLE			
			1	2	3	4
* MFR-ABC CO BUSHIPS PLAN - MFR DMC-6B-3541 MFR ID-6B-3541 TYPE OPER-MECH-SHOE TY SPR APPLIED SOL REL MAX TORQUE - 58' # VOLTS - 12DC PATTERN - 124 EQUIP SPECS MIL-B-16392B						
90KC	SPRING	1H2030-956-2028	1	1	1	4
362511-01	GASKET	362511-01	1	1	1	3
4832	COIL-SOL	1H0000HD16507	1	1	1	1
1J43	LINING-FRIC	1H2030-956-2029	2	2	2	4
6B-3541	BRAKE-ELEC	6B-3541	1	1	1	6
1921	RIVETS	1H2030-956-2030	16	20	20	80
ALTERNATE NO/NOMENCLATURE	CROSS REFERENCE	STOCK NUMBER				
1H0000HD39833		1H2030-956-2028				
1H0000HD39834		1H2030-956-2029				

REFERENCE SYMBOL NO.	ITEM NAME	STOCK NO.	ON BOARD ALLOWANCE TABLE			
			1	2	3	4
SHIP TYPE & HULL NO.			IDENTIFICATION NO.			
			800990012			
PAGE			DATE			
			03-1-69			
			PAGE			
			1			

# BUREAU OF SHIPS MECHANICAL/ELECTRICAL EQUIPMENT

BLOCK A		BLOCK B		BLOCK C		
PRODUCTION LIST		PURCHASING INFORMATION		CERTIFICATION		
BLOCK D		BLOCK E		BLOCK F		
LIST OF COMPONENTS IN SYSTEM		PROVISIONING LIST		PRODUCTION LIST - RECOMMENDATION AND APPROVAL		
<b>1. NAME OF COMPANY</b> ELECTRIC BRAKE <b>2. MANUFACTURED BY</b> ARC COMPANY <b>3. CHARACTERISTIC DATA</b> Mfr. ID:-6R-3561 Type:-Mech Shoe Spring Applied Volt:-12V DC Torque:-58 WT/LRS (MAX) Equip Spec:-MIL-B-16392B		<b>PURCHASING ACTIVITY</b> XYZ Shipyard Utonia, Virginia  <b>PURCHASE ORDER NO. OR CONTRACT NUMBER</b> N0bs 65932  <b>SHIP APPLICABILITY (NAVY HULL NOS)</b> NCS 510-518		<b>NO. OF SHIPS</b> 9  <b>NO. OF COMP. PER SHIP</b> 1		The component described in BLOCK A, purchased on the Purchase Orders or Contracts listed in BLOCK B, is identical in every respect to the component purchased on:  <b>NAME OF PURCHASING ACTIVITY</b>  <b>PURCHASE ORDER OR CONTRACT NO</b>  <b>FOR NAVY HULL NOS</b>
<b>4. COMPONENT IDENTIFICATION NO</b> 800990012 <b>5. TECHNICAL MANUAL NO.</b> NAVSHIPS		<b>1. All required drawings and/or descriptive data has been received and Federal Sheet Numbers or Non-Stock Item (NSI) have been assigned in BLOCK 14 to each item on the attached NAVSHIPS 4786A.</b>  <div style="text-align: center;">                           J. S. BROWN                          SUPERVISOR                          CDR, SC, USN                          TITLE                          1 March 1969                          DATE                          SPOC                     </div>		<b>1. BLOCKS 18 and 19 of the attached NAVSHIPS 4786A represent the manufacturer's recommendation for on board (maintenance) and overhaul repair parts respectively. The production release date for the equipment under this order is</b> <div style="text-align: center;">                           J. G. BROWN                          SUPERVISOR                          CDR, SC, USN                          TITLE                          1 March 1969                          DATE                          SPOC                     </div>		<b>PROV ENG'G</b> ARC Company 28 January 1969 SIGNATURE NAME OF COMPANY DATE
<b>6. MAIN COMPONENT</b> Module Elevator <b>ASSOCIATED COMPONENTS</b>		<b>FIG. II</b>		<b>2. BLOCK 22-27 of the attached NAVSHIPS 4786A has been completed and is approved for use in the maintenance of repair parts.</b>		



