

EXTRA

LITTON WINS DD-963 CONTRACT

NEWS & OPINION

 LITTON INDUSTRIES
DATA SYSTEMS DIVISION

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DSD To Design And Build Entire Electronic Suit

Award of the DD-963 contract will result in a huge design, production, integration, and test effort for DSD, according to George Breitweiser, DSD Vice President of Ships Electronic Systems. The development phase of the system will last until 1973, with production deliveries through 1978, even if no more ships are added to the program.

DSD will be responsible for the entire electronics subsystem, which in Navy jargon is called the electronic suit. As described by Herb Halperin, DSD Program Director for the program, this subsystem consists of:

- Radar and sonar surveillance systems,
- A comprehensive navigation system which even uses inputs from satellites,
- A complete ship's communications system, and
- A computer-based command and de-



Jim Mellor

George Breitweiser

cision subsystem functionally similar to those we build for our tactical data systems.

The huge software job will be greatly accelerated by DSD's establishing a Command and Control Shore Station (CCSS) here within a year. The CCSS will contain all equipment in the electronic suit plus dynamic simulation equipment. Thus, all

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The U.S. Navy has awarded Litton Industries a \$2.1 billion contract to produce a fleet of advanced multimission destroyers, President Jim Mellor announced over the P.A. system today. Since DSD will be responsible for the entire electronic subsystem, its portion of the initial contract alone will be almost \$500 million.

Every feature of the Navy's new DD-963 class destroyers is "mission oriented." The ships, built to engage in antisubmarine warfare, anti-air warfare, surface-to-surface warfare and electronic warfare, will be the backbone of the Navy's destroyer fleet during the 1970's and beyond.

The destroyers will be armed with the most advanced weapon systems. To carry out its primary mission of anti-submarine warfare, each DD-963 will be equipped to fire torpedoes and antisubmarine rockets. The ships will also have facilities to handle multimission helicopters which significantly increase their ASW effectiveness.

As a result of Litton's design, the destroyers will be the most automated combat ships in the fleet. For example, the ship's control console enables one man on the bridge to control steering and speed. A sophisticated underwater surveillance and communication system will detect, track, and classify targets.

A unique combat information center was designed by DSD. For the first time in the U.S. Navy an ASW destroyer has been designed from the keel up with an integrated combat system. All of the information and displays required to utilize the ship's full weapon system capability will be provided in a single location, the Combat Information Center.



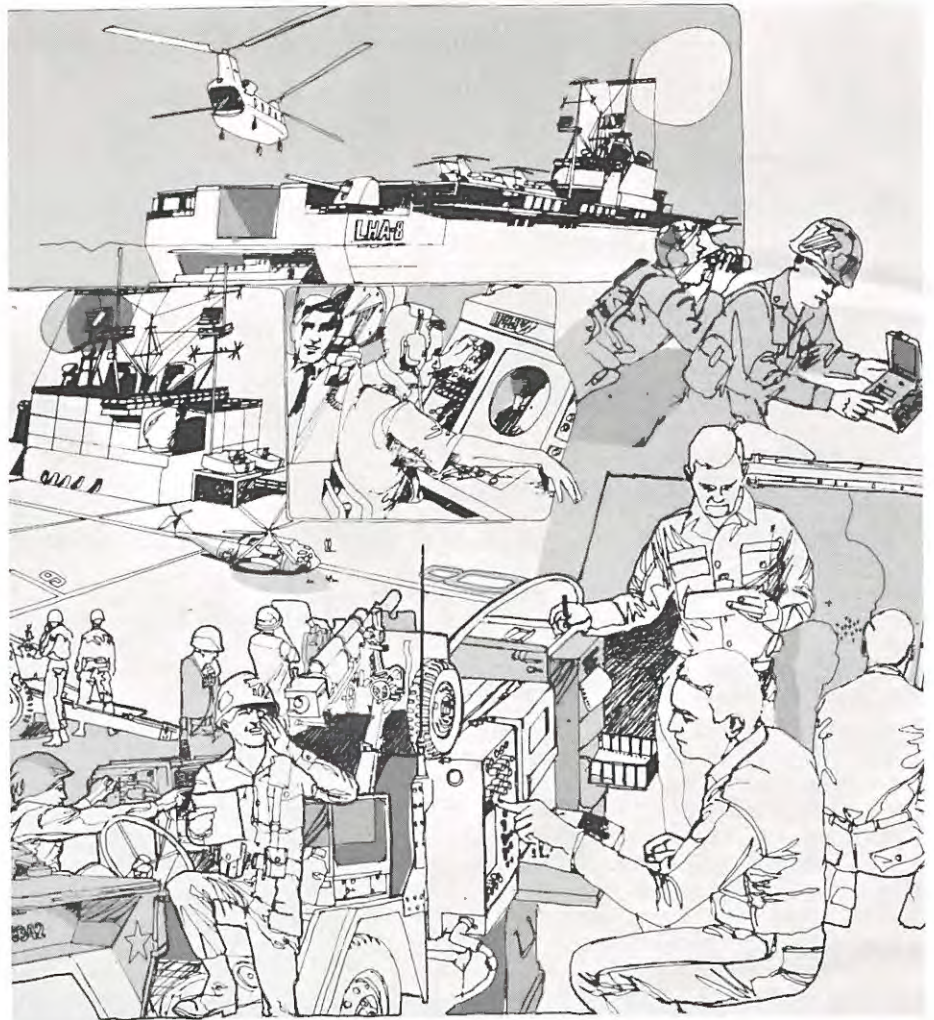
The award of the DD-963 contract adds yet another chapter to DSD's almost unbelievable success story in Contract Definition (CD) programs. Since the Total Procurement Package concept was instituted in the mid-60's by the Department of Defense, DSD has been involved in five consecutive winning CD programs. Four of these were for procurements in excess of \$100,000,000 each.

The Contract Definition Phase is essentially a competitive development program in which two or more contractor teams are funded to translate mission and system requirements into detailed system and equipment design. At the end of the CD, each contractor's design, in the form of equipment specifications and a mammoth proposal, is evaluated. On the basis of this design, the proposed price, and various management plans, a single contractor is selected to perform the subsequent production and support phases.

DSD's first experience with CDs was the unfortunate 407-L, which we lost to our competitors in Fullerton. From that bitter loss, however, DSD learned some important lessons.

From this point on, DSD has been virtually unbeatable in CD procurements. Starting with the Fast Deployment Logistics Ship (FDLS), which has not yet been funded, DSD went on an unbroken string of successes—TACFIRE, DTAS, LHA, and now DD-963. The secret? While it is quite complex in detail, DSD's success formula has been essentially to define in detail the jobs to be done, handpick a top team based on these job requirements, and then institute rigid management controls to keep the team on the track. It's worked pretty well.

CD Success Story Continues



The Sportsmen's Lodge was the site for a party to celebrate the winning of the DD-963 contract. More than 100 DSD'ers attended the gathering which honored the CD team that worked so hard and long. In the past, the success of many large programs has been associated with a "star performer." Our DD-963 Program Office has been unusual in the sense that Litton's success is attributable to a superlative team performance rather than to a single individual.

As DSD President Jim Mellor put it, "Our Contract Definition Phase effort, which marks the first time a contractor has performed a total systems engineering job on a combat ship, was an outstanding team performance. On an effort of this size, it is impossible for me to single out here *all* the fine performances for individual recognition. To all of you who contributed those long and arduous hours to develop the winning design, I join with all DSD employees in congratulations on a job well done."

DD-963 CD Team Celebrates



DD-963 Award Aids Foreign Marketing

The DD-963 contract award may well have far-reaching effects on DSD's expanding overseas marketing program, according to Tom O'Donnell, Vice President of Marketing. He expects the award to have a favorable effect not only on DSD's proposals for a number of ship's electronic systems, but also on sales of all DSD systems and equipment overseas.

"One of our big initial problems in penetrating the foreign market," O'Donnell said, "was to make the name of Litton in general and DSD in particular as well-regarded as the giants of foreign electronics, IBM, Plessey, Elliot, Phillips-HSA, and Univac."

DSD has been pursuing a number of big systems programs overseas. Recently, we submitted a huge proposal to the Swiss for a TACFIRE-type system called SAFARI. DSD's posture overseas was greatly enhanced by the TACFIRE program, and we recently sent a team to Europe for a multination briefing on that system.

TACFIRE Briefings Big Success

Curious as to the success of those briefings, we asked George Romano, Vice President of Advanced Programs, and a member of the briefing team. In reply, he showed us a yard-long TWX of comments from the various European nations briefed. Comments like "enthusiastically received," "highly impressed," "positive interest," "very receptive," and "advantages over competing systems" ran throughout the TWX.

"Those briefings," said Romano, "were of incalculable value to us overseas. We now are starting to be known as a leader in military defense systems. Coupled with the inroads we've made with the foreign sales of BTE, the TACFIRE program, and this tour's exposure of it, have created a situation where foreign nations are beginning to look to DSD for innovative and cost-effective command and control systems."



Pat Quinn . . .
Director of International Marketing

"The DD-963 program award will greatly reinforce this enhancement of DSD's reputation," added Pat Quinn, Director of International Marketing. "You have no idea of the wide publicity a contract of this size gets overseas. They're just not used to billion dollar programs."

The DD-963 award will have an even greater immediate impact upon DSD's marketing efforts in the specific area of ship's electronic systems. DSD has proposals outstanding with Australia and Brazil, and has had preliminary talks with Japan and a number of European countries.

Australian Ship Program

We hadn't heard about these proposals so we asked Pat Quinn about them. "We have proposed a Combat Information Center to the Australians in conjunction with Litton Systems Limited of Canada," Pat said. "Initially there will be four DDL light destroyers involved, and with retrofits of existing vessels and additional destroyers, this could well grow to 12 over the next decade."

The destroyers will be built in Australian yards, and all aspects, including

the electronics, will involve heavy participation by Australian industry. "If we get the contract, and we should know next spring," Pat said, "we'll have a number of people over in Australia working with their industrial companies. A team from the Royal Australian Navy will visit both DSD and LSL this August to discuss these aspects of the program as well as technical details."

What effect will the DD-963 award have on the Australian destroyer program? "Well," Pat replied, "certainly it solidifies our position as the leader in the ship's electronic systems business. Further, we hope it will influence the Australian Navy to expand DSD's participation beyond the Combat Information Center to encompass the entire electronic suit. Certainly, the vote of confidence given by the U.S. Navy by its award of the DD-963 electronic suit to DSD can only help us in this regard."

Six Destroyers for Brazil

Many of the same factors are involved in the destroyer procurement underway in Brazil. Six Bronstein-class light destroyers will be built, probably in Europe, and DSD has submitted two proposals for the Combat Information Centers for these vessels.

"The DD-963 award was very timely for maximum effect on this procurement," said Quinn. "The funds have been assigned and the go-ahead will probably be early next year. Again, we hope that the DD-963 award will demonstrate to the Brazilian Navy that we, alone among all the world's electronic contractors, have the capability to handle the entire electronic suit. That's one of the prime important points on DD-963. We are the first contractor ever to perform a total systems engineering job on a combat ship. We think the advantage of this, rather than a piecemeal approach, will be obvious to them."

Japanese Buildup Program

Pat went on to tell us about Japan's long-range planning for modernizing its combat fleet. Already scheduled to start in 1972 is Japan's Fourth Defense Buildup Program. A large part of this program will be the development of a number of new combat ships. DSD, already known in Japan as a result of its BTE sales there, will be pursuing the sophisticated electronic suits planned for these vessels. Since the Fourth Defense Buildup Programs will about double the Japanese defense budget, this is a significant amount of business, and the DD-963 program will greatly aid us in our efforts to capture a sizable portion of this market.

DD-963 Design Even Includes Pollution Control

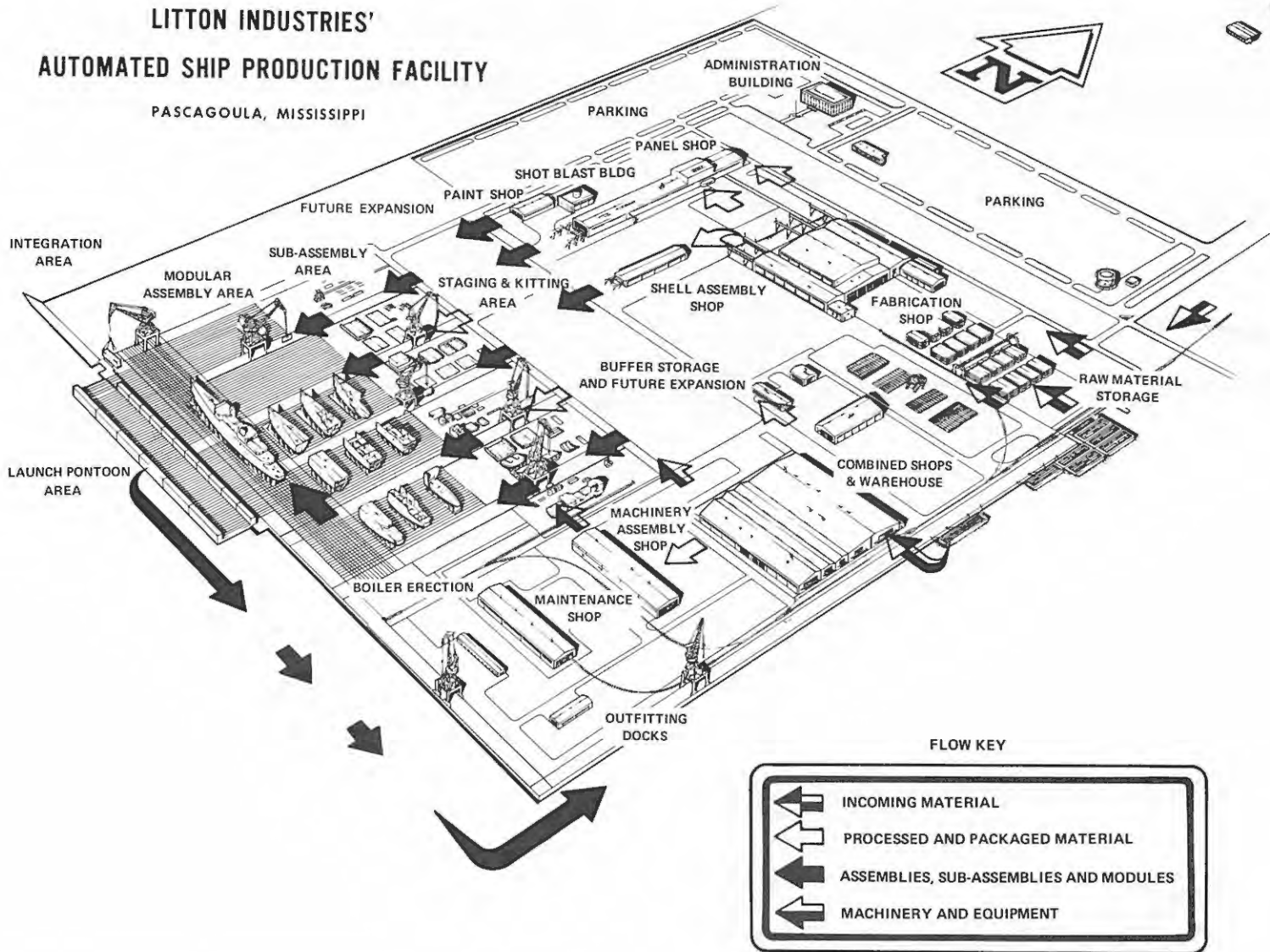
Litton's design effort on the DD-963 program was so comprehensive that it even incorporated systems that will reduce water and air pollution. An electro-mechanical shipboard sewage treatment system will process waste by separating and incinerating solids and chemically treating liquids. This active system is a marked advance over existing passive methods that collect waste in tanks for

offloading into barges in port.

The destroyers will reduce oil pollution by collecting waste lubricants and oil in shipboard storage tanks and discharging it in port onto a barge or a shore facility. The unique design features of the gas turbine engines operating on Navy distillate fuel will also reduce the soot in the smokestacks and black smoke emitted into the atmosphere while in operation.

LITTON INDUSTRIES' AUTOMATED SHIP PRODUCTION FACILITY

PASCAGOULA, MISSISSIPPI



Litton Industries' Automated Ship Production Facility

Following the flow key arrows, this is how Litton Industries' automated ship production facility works: steel plates and shapes are received by barge, rail or truck and offloaded into the raw material storage area by 20-ton overhead magnet crane (←). Plates and shapes are then transferred by an integrated materials handling system (continuing ←) to the large fabrication shop for processing. From here, fabricated steel is delivered (top ←) to the panel and shell assembly shops for assembly into basic 56' by 56' flat and curved panels and then transferred to the shot blast and paint shops for cleaning and painting.

These panels are then transferred through the staging and kitting area (long ←) to the subassembly area where they are physically combined with nonstructural outfitting kits (electrical, piping, machinery, boilers, etc.) being delivered from the combined shops, machinery shop and boiler erection

area (← and ←). By use of 200-ton capacity cranes, these sub-assembly sections move through successive work stations (←) into the modular assembly area where they are joined together and further outfitted to form the complete section or module of the ship. These modules, weighing 1,500 to 2,100 tons, are moved by a special wheel-on-rail transfer system to the ship integration area and mated to form the complete ship.

In launching, movable wingwalls allow the ship, now 92% complete, to be transferred via the transfer system onto the launch pontoon. After replacing the wingwalls, the launch pontoon is moved into the ship channel and submerged. The ship, now floating, is towed from the pontoon (←) to the outfitting docks for testing and sea-readiness preparatory to sea-trials and delivery.

Litton Shipyard Gamble Pays Off

With the receipt of the DD-963 contract, a long-range investment made by Litton Industries four years ago, amid raised eyebrows among certain members of the investment community, has turned out to be gilt-edged. The \$130 million automated shipyard now nearing completion is now booked to near-capacity through 1980.

In 1966, Litton took a long look at the state of American shipbuilding. We ranked 13th in shipbuilding; Japan, the Soviet Union, and Sweden added 10 new ships for every one of ours. The reason? America's shipyards had not kept up with advancing technology, and hence were so archaic that they could not be cost-competitive.

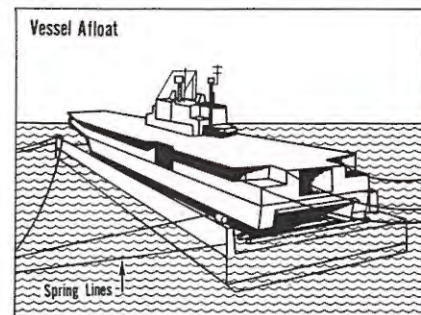
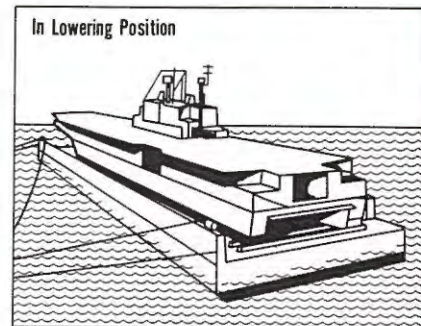
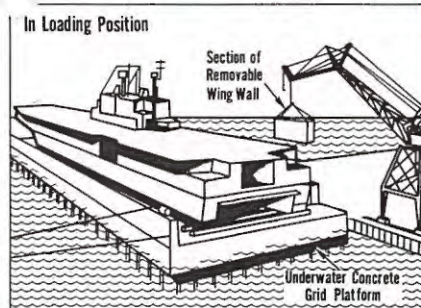
Litton began its project with a global evaluation of shipbuilding technology. Marine experts toured Kawasaki and Nippon Kokkai in Japan, Arundal in Sweden, and modern yards in the Netherlands and Germany.

Today, the shipyard in Pascagoula comprises the best and most modern elements in processing and material handling equipment that exists. It was recently described as an "absolutely magnificent

yard" by no less an authority than Secretary of the Navy Chafee testifying before a Congressional subcommittee. Chafee went on to say, "I would venture to say that there is no yard in the world that will be more modern than the Pascagoula yard."

Most of the equipment in the yard is not radically new, but it does contain the best equipment available worldwide which suits Litton's purpose. One exception is the novel pontoon launch system. Designed and built at a cost of \$10 million, it is unlike anything in the world. Not only does the system permit launching of a variety of ship sizes with less danger of damage, but it can launch ships up to 1000 feet long with about one-fifth the number of manhours required by conventional side launching.

The payoff has been gratifying. Even prior to the DD-963 contract, the yard had a backlog of \$1.3 billion, including LHA, four commercial container ships for Farrell Lines, three commercial container ships for American President lines, and a number of others. Additional inquiries are pouring in. Litton's gamble has paid off handsomely.



... DSD To Design And Build Entire Electronic Suit

(Continued from Page 1)

software can be debugged using the actual ship's equipment, yet with easy access to



Leo Timmermeyer . . . developed pallet design

DSD's data processing center.

System test and installation, normally one of the most difficult jobs in a shipboard electronic system, will be greatly simplified by DSD's unique palletized approach. Rather than install, integrate, and test electronic subsystems in the cramped ship's compartments at the yard in Pascagoula, DSD will perform these functions here.

The pallets are actually ship substructures with equipment mounting provisions and integral cable troughs. Therefore, we will mount equipment modules on the pallets, lay the cables in their final positions in the troughs, and check out the system here in our system test facility. As a result, our system test engineers can get at all equipment during checkout and will have all their test equipment readily available. After system testing is complete, we simply ship the loaded pallets to the yard. There, they will be welded in place on the ship and interconnected.

DD-963 Fact Sheet

Designer

Litton Industries' Ingalls West Division, El Segundo, Calif.

Builder

Litton Industries' Ingalls West Division, Pascagoula, Miss.

Ship's Missions

1. ASW particularly for strike forces
2. Gunfire support—amphibious assault and land warfare
3. Escort to military and merchant convoys
4. Surveillance and trailing
5. Blockade
6. Search and rescue

Characteristics

Length: 559 feet 11 in.
 Beam: 54 feet
 Speed: In excess of 30 knots
 Displacement: 7,000 tons (fully loaded)
 Crew: 270 officers and enlisted men
 Propulsion: 4 gas turbine engines

DD-963 Staffing Effort Underway

One organization that can't pause to celebrate the DD-963 win is DSD's Professional Recruiting Department. They simply don't have time. As Vice President Ken Walsh said, "We have to add 107 senior people immediately to get the program off the ground."

That's certainly a tall order, but there'll be no rest when this initial step is accomplished. About 220 new professional employees will be needed by the end of six months, and a whopping 450 within a year. The paperwork alone for this many placements is staggering, so we interviewed Lyle Langston of Professional Recruiting.

N&O Lyle, how in the world are you going to do it?

Langston We've got a lot of arrows in our sling. We faced the same problem when TACFIRE and E-2B hit almost simultaneously and we were able to meet that challenge without a noticeable effect on the progress of either program.

N&O What are some of these arrows?

Langston First and foremost, we've been preparing for the possibility of landing DD for some time. We have on file over 3500 active resumes of professional people, organized by technical/administrative discipline. With our control card system, we can pull all our, say, reliability engineering resumes in a matter of minutes.

N&O Who defines the requirements?

Langston Well, of course, the definitive requirement is in the form of Personnel Requisitions, but on a program like DD, we just can't wait for this much paperwork before we get started. Therefore, we've been working with the holding team in the DD-963 Program Office to define requirements in advance. Based on their manloading curves and the DD-963 Work Breakdown Structure, we've had a pretty accurate picture of how many of what type of people are needed, and when.

N&O Are your resumes active and up to date?

Langston We wondered the same thing, so we sent out a batch of questionnaires to applicants

whose resumes were in our files. In these questionnaires, we asked (1) were they still interested, and (2) was there any change in the administrative data on their resumes and/or applications.

What was the result?

N&O

Langston

We expected a positive response with business conditions as they are, but nothing like this. Almost 95% of the returns to date have indicated that they are still interested. Some of them replied by telephone, too. One PhD was particularly insistent. When he called a month ago seeking appointments, I told him that



we didn't have the DD contract. He wouldn't believe me, "Maybe you guys don't know it, but I've got friends in Washington, and I know it's yours." I hope he's not too mad at me.

N&O

Then you can fill all the positions from applications and resumes on file?

Langston

Oh heavens no. That just gives us a good running start. We prepared a heavy newspaper advertising campaign in advance which will hit this week. That should bring a good response, and then of course there are our contacts in the personnel community.

N&O

Personnel community? How does that work?

Langston

Over the years, we've developed a cooperative working relationship with the personnel departments of most of the electronics and aerospace companies in the State.

It's one of the main ways we minimize the impact of layoffs. No company wants its laid-off employees out of work, so we in the various personnel departments let one another know when employees have been laid off. It's also a big help in a big crash staffing effort like this. That sounds like a monumental job. How can you ever call all these companies?

N&O

Langston

The answer to that, of course, is that we can't. We just use our experience and knowledge of what's going on in the industry to make a few selected calls. By the end of June, though, we'll have an automated system with 150-200 California companies participating.

N&O

How will that work?

Langston

Very well, we hope. The concept is to have each company send the discipline and certain administrative data on each laid-off employee to a central data bank. Then, if the XYZ company has laid off five scientific programmers and we need, say, three, we can make immediate contact.

N&O

Do you expect the DD announcement to inundate you as the B-1 announcement did to North American? I understand 1500 applicants showed up in person.

Langston

I'm not sure, but we do expect a lot. We're streamlining our operation so we can take the maximum number of applications each day and get them into the hands of the Directors and Managers in Engineering immediately. Jack Harding has agreed that on-the-spot review of these applications will be top priority for his people.

N&O

Thank you for spending this time with us, Lyle. I know you can ill afford it.

Langston

No, I feel it's quite important to let all DSD employees know the job we've got to do. If they can help as they have in the past by bringing us applicants, it will make our job immeasurably easier and also greatly benefit DSD.

Navy Responds To Soviet Challenge

DD-963 Program Key Element

"We must meet the need or let the Soviets take over the seas," so said Chairman L. Mendel Rivers of the House Armed Services Committee. The Navy's new ten-year \$35 billion shipbuilding program is designed specifically to meet the Russian challenge by upgrading the U.S. Fleet with modern warships such as the DD-963 class destroyers.

Russian Warship Program

For the past several years, the Russians have been involved in a crash combat warship-building program aimed at wresting leadership of the seas from the U.S. Among the many different types of ships the Soviets are building are cruise missile ships (cruisers and destroyers), nuclear missile and attack submarines, amphibious ships, and carriers that can handle V/STOL fighter-bombers. As Secretary of Defense Melvin Laird said last August, "The Soviet Navy has more ships deployed away from the Soviet Union than ever before."

Some U.S. Navy strategists predict that as many as 10 Soviet Naval Task Forces may be deployed around the world in the mid 1970's. The visit last July of a Russian naval squadron of new warships to Cuba and the Gulf of Mexico is evidence that the challenge extends to the edge of U.S. territorial waters. As the Commander in Chief of the Soviet Navy recently boasted, "The flag of the Soviet Navy now proudly flies over the oceans of the world. Sooner or later, the United States will have to understand that it no longer has mastery of the seas."

Navy Modernizing Fleet

The U.S. Navy does not propose to let this happen, but it has a big job to do. Although the U.S. definitely holds the lead today in the backbone of naval power—aircraft carriers—and in naval know-how, much of the rest of the fleet is of World War II vintage. Recently, a number of U.S. warships were deactivated because of their high operating costs.

The problem in modernizing the fleet, of course, is the high costs involved. As a result, the Navy has planned a smaller fleet of high-capability ships. Admiral Chester Moorer, formerly Chief of Naval

Operations, has stated the Navy must have a balanced fleet of 850 capable ships.

Multi-mission Design

Thus, the design of the DD-963 combines multimission capability with low operating costs. Over \$500,000 per year savings in operating costs will be achieved through the high degree of automation and the resultant 20 percent reduction in crew size. According to Rear Admiral Thomas R. Weschler, who is responsible for the design and production of the DD-963, the greatest innovations are the automatic control from the bridge, higher speed, greater habitability for the crew, quietness, and economy of operation and construction.

The DD-963's gas turbine engines, which are marine versions of the LM-2500 jet aircraft engine, will enable the U.S. Navy to catch up with the Russian fleets, which have been using fast, gas turbine engines in their warships for years. The DD-963 turbine engines are currently being tested aboard the cargo ship USS Callaghan.

While the fleet operating costs will be greatly reduced by using a smaller fleet of automated, highly capable warships, the capital costs of converting the fleet will still be high. Because of inflationary factors and the increased quantity and complexity of the weapon systems aboard, the cost of today's warship is more than double that of the warships authorized some years ago.

Cost Control Measures

Perhaps the chief way the Navy has cut costs here is by awarding total procurement packages to single contractors for the design and construction of the ships under only general directions from the Navy. This is a radical departure from the Navy's policy over the last century, since it controlled the detailed design of each ship and its weapon systems, contracting with a number of different companies for design and construction of subsystems.

By awarding Litton a total procurement contract for 30 DD-963 destroyers, the Navy was able to achieve significant economies. Not only was Litton able to design the most cost-effective system

matched to its capabilities, but it was able to achieve major savings through mass production. Through standardization of parts and machine tools, large orders of steel and machinery, and the cost advantages of the "learning curve," Litton is able to lower costs in much the same way the U.S. aircraft industry has been able to compete with cheaper labor markets in foreign countries.

Other Ships Underway

The shipbuilding program for this fiscal year was set at \$2,983,200,000 by the Defense Department Weapons Authorization Act. Besides the DD-963, the Navy is underway on two nuclear-powered aircraft carriers, the NIMITZ and the NIMITZ II. The authorization bill also provides funds for another large, nuclear-powered missile destroyer, the DXGN. With the additional DLGN destroyers also authorized, these will round out the all-nuclear carrier task forces the Navy needs.

The 1970 shipbuilding program also provides funds for two LHA general-purpose amphibious launch ships in accordance with its planned two-per-year schedule. These ships, which can land a Marine Battalion Landing team by helicopter, landing craft, or both, encompass the roles of an LPH amphibious assault transport dock, an LPD dock landing ship, and an LKA amphibious cargo ship. The nine LHA's planned will replace at least 21 of these specialized amphibious ships.

The bill also authorized the building of three SSN-688 high speed attack submarines, as well as long-lead-time items for five more. These boats, with their 40 knot speeds and their new, deep-diving Mark 48 Torpedo, are the U.S. response to the new Soviet submarines.

Thus, the response to the Russian challenge is underway. The nation must be convinced, however, of the need to spend the \$3 billion Secretary of the Navy Chafee says is needed for the next ten years to complete the program of replacing our aging ships. As Congressman Rivers puts it, "If you want a Navy, pay for it. Otherwise lay it up and let the Soviet Union take over the oceans."

Many Data Systems Programs Vital To Win

A contract like DD-963 cannot be won by a contractor without closely related experience and capabilities in the principal technical and program areas. Not only is this background essential to a mission-oriented design, but there are distinct advantages to DOD and overseas buyers in the hardware, software, and systems commonality possible from the leader in the field.

Thus, DSD's position of leadership in command and control systems was a very positive element in the DD-963 effort. Although there is little equipment commonality with such systems as ATDS and MTDS, the years of work on organization and implementation of command and control systems such as these were directly applicable to the DD-963 command and control system design effort, particularly in its air defense and data exchange missions.

DSD's system design for DD-963's prime mission, antisubmarine warfare, drew heavily upon a number of the Division's important, but lesser known, development programs in this field. In addition to the ASW analytical and systems design work Jim Cox's Advanced Navy Program office has been doing for a number of years, DSD is nearing completion of the Dolphin Program. Dolphin, according to Program Manager Vic Walker, is the first use of a tactical computer (the L-3050) for submarine or antisubmarine warfare.

Perhaps even more valuable to the DD-963 system design effort was DSD's extensive work on the CCS-280 program. CCS-280, which has met with such great success since its delivery to Canada, will be used on a light destroyer to perform many of the exact same missions as DD-963. The lessons DSD learned in developing an integrated electronic system for this destroyer were invaluable to the DD-963 design team during the Contract Definition Phase.

The LHA program, of course, was

extremely useful to the DD-963 program. According to George Chapin, Director of LHA Programs, its electronic suit is quite comparable to that of the DD-963 and much of the design experience could be directly transfused into DD-963. Herb Halperin, Program Director of DD-963, estimates that there is 40% commonality between the two systems.

Since both LHA and DD-963 use the same central computer, much of the LHA software can be used with relatively minor modifications for DD-963. A number of practical program economics were possible, and therefore contributed to the competitive price and schedule proposed for DD-963. For example, the LHA computer will be shared with the DD-963 program for the next year until the first DD-963 computer can be delivered. Thus, development of the software can commence immediately with the end-item computer here on-site.

The existence of this computer permits delivery of other electronic suit equipment prior to the delivery of the first DD-963 computer. As a result, interfaces can be checked out well in advance of that normally possible. This should greatly ease the pressure on System Test later in the development program.

One of the major factors in the DD-963 win was the low life cycle costs, so important in evaluating the true total cost of a system to the government. DSD's leadership in this field, estimated by some military personnel to be as much as two years, has resulted from intensive division work by life cycle cost experts like Irv Korn on programs such as BTE and TACFIRE.

In a very real sense, the DD-963 win resulted from the work of many DSD personnel in addition to those on the Contract Definition team. In upcoming years, the work accomplished on DD-963 will be just as valuable to the winning of procurements of the future.



*Vic Walker . . .
. . . Dolphin Program Manager*



*Dr. George Chapin . . .
. . . Director, LHA Programs*



*Irv Korn . . .
. . . Director, Systems Effectiveness*

Data Systems Division
Litton Industries Inc.
Box 7601
Van Nuys, Cal. 91406

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