NAVAL FACILITIES ENGINEERING SERVICE CENTER
Port Hueneme, California 93043-4370

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TM-2338-AMP

2000 AMPHIBIOUS SYSTEMS WORKING GROUP MEETING

SUMMARY REPORT

by

Erin Walters

September 2000

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The 2000 Amphibious Systems Research and Development Working Group Meeting was held March 29 and 30, 2000, at the Naval Construction Battalion Center, Port Hueneme, California. The purpose of the meeting was to provide one forum for users, sponsors, researchers, and engineers to discuss 2000 accomplishments, current issues, the future project development, and programmatic issues in an efficient manner.

Some of the major topics discussed at this meeting were the Naval Facilities Engineering Command (NAVFAC) Program, Far Term Strategic Sealift, Advanced Bulk Liquid Transfer System, TA-67 Homeport Allowance, D-Day Mobile Fuel, Joint Modular Lighter System (JMLS) Intuitive Control, Intelligent Spreader Bar, Spreader Bar Tagline, Personnel Transfer, Advanced Lighterage Simulator, Ramp/Platform Interface, Small Unit Logistics, Seabasing, AMBP, Pile Splicer, Naval Mobile Construction Battalion (NMCB) Efforts, and others.

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Far Term Strategic Sealift, Advanced Bulk Liquid Transfer System, TA-67 Homeport Allowance, D-Day Mobile Fuel, Joint Modular Lighter System (JMLS) Intuitive Control, Intelligent Spreader Bar, Spreader Bar Tagline, Personnel Transfer, Advanced Lighterage Simulator, Ramp/Platform Interface, Small Unit Logistics, Seabasing, AMBP, Pile Splicer

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EXECUTIVE SUMMARY

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7th Transportation Group
CNO N42
ERDCWES
EWTGPAC
I MEF G-4
MCWL
NAVSEA
NBG-ONE
NFESC
NSWCCD
PHIBCB-ONE
PHIBCB-TWO
SLC
SWDG

Some of the major topics discussed at this meeting were the Naval Facilities Engineering Command (NAVFAC) Program, Far Term Strategic Sealift, Advanced Bulk Liquid Transfer System, TA-67 Homeport Allowance, D-Day Mobile Fuel, Joint Modular Lighter System (JMLS) Intuitive Control, Intelligent Spreader Bar, Spreader Bar Tagline, Personnel Transfer, Advanced Lighterage Simulator, Ramp/Platform Interface, Small Unit Logistics, Seabasing, AMBP, Pile Splicer, Naval Mobile Construction Battalion (NMCB) Efforts, and others.

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INTRODUCTION

The 2000 Amphibious Systems Research and Development Working Group Meeting was held March 29 and 30, 2000, at the Naval Construction Battalion Center, Port Hueneme, California. The purpose of the meeting was to provide one forum for users, sponsors, researchers, and engineers to discuss 2000 accomplishments, current issues, the future project development, and programmatic issues in an efficient manner. Personnel from the following Commands participated in the 2000 Meeting:

7th Transportation Group
Chief of Naval Operations (CNO) N42
Engineering Research and Development Center Waterways Engineering Station (ERDCWES)
Expeditionary Warfare Training Group Pacific (EWTGPAC)
1st Marine Expeditionary Force (I MEF) G-4
Marine Corps Warfighter Lab (MCWL)
Naval Sea Systems Command (NAVSEA)
Naval Beach Group One (NBG-ONE)
Naval Facilities Engineering Service Center (NFESC)
Naval Surface Warfare Center Carderock Division (NSWCCD)
Amphibious Construction Battalion One (PHIBCB-ONE)
Amphibious Construction Battalion Two (PHIBCB-TWO)
Seabee Logistics Center (SLC)
Surface Warfare Development Group (SWDG)

Some of the major topics of discussion at this meeting were the NAVFAC Program, Far Term Strategic Sealift, Advanced Bulk Liquid Transfer System, TA-67 Homeport Allowance, D-Day Mobile Fuel, JMLS Intuitive Control, Intelligent Spreader Bar, Spreader Bar Tagline, Personnel Transfer, Advanced Lighterage Simulator, Ramp/Platform Interface, Small Unit Logistics, Seabasing, AMBP, Pile Splicer, NMCB Efforts, and others.

Topics of discussion were presented by subject matter experts who also answered questions from their audiences. Each brief is summarized and contained herein. The list of attendees, the agenda, and copies of each slide presented can be found in Appendices A, B, and C.

WELCOME ADDRESS

Presented by: CAPT Robert Westberg, CO, NFESC

Synopsis of Presentation. CAPT Westberg welcomed the attendees and thanked them for their participation.

INTRODUCTORY ADDRESS

Presented by: Mr. Woody Bretz, NFESC

Synopsis of Presentation. Mr. Bretz presented the introductory address and stated the purpose of the meeting. The purpose of the meeting was to provide one forum for users, sponsors, researchers, and engineers to discuss 2000 accomplishments, current issues, the future project development, and programmatic issues in an efficient manner. Previous meetings proved very useful in the exchange of ideas and information.

FLEET PERSPECTIVE

Topic: PHIBCB-ONE

Presented by: CAPT Ken Butrym, PHIBCB-ONE

Synopsis of Presentation. CAPT Butrym focused on the broader issues and expectations of future systems and philosophy. He spoke on several topics that are discussed below.

JLOTS (Joint Logistics Over-the-Shore). This is the bulk of what PHIBCB-ONE deals with today. CAPT Butrym is disappointed at the lack of attention to JLOTS and the lack of effort on improving JLOTS capability.

D-DAY FUEL. Right now, there is no way to provide fuel to the Marine Corps during the early days of an operation. The current system, the Amphibious Assault Bulk Fuel System (AABFS), is a good system when used with the Landing Ship Transport (LST) to provide D-Day fuel, but there are only two LSTs remaining for use. The Amphibious Bulk Liquid Transfer System (ABLTS) is replacing the AABFS. ABLTS has been designed and is being tested. We need more funding to get better at using this system.

OPDS (Offshore Petroleum Discharge System). This is a good system once it is installed, but it is a hard one to install. Some issues brought up were:

- Getting the system into the water is a problem.
- It has a 4-mile limitation. In certain places, 4 miles isn't far enough away.
- The hose doesn't lay flat, so the 4 miles is usually about 3.5 miles.
- It is a labor intensive system that requires divers to install.

ELCAS (Elevated Causeway). ELCAS (Navy Lightered - NL) is a dangerous operation. The system requires the ELCAS installation team to be in the water for a long time. In rough weather the men get beat up, they have a hard time driving pile, and have a hard time getting the ELCAS in and out of the water.

ELCAS (Modular - M) system never requires the installation team to work from the water. The work is done from the beach out. But, you have to get the parts and materials on the beach, which is an issue. Not only is ELCAS (M) a safer system, but it also gives access to larger ships because it can be built further out. CAPT Butrym likes the ELCAS (M) system a lot and wants to see more of them out there. Future focus should be on making it faster to install, longer access, and take it more places than right now.

PAINTING/COATINGS. Maintenance is a major issue for the Battalions. They don't have the money or resources to keep the current systems up. They need systems that don't corrode in water and don't have barnacles grow on them.

CAPT Butrym talked about the need for knowing the limits of the systems in use. Right now, there are two different requirements: peacetime and wartime. Peacetime requirements leave no room for damage, or finding out what the system can really handle.

Topic: PHIBCB-TWO

Presented by: CDR David Stewart, PHIBCB-TWO

Synopsis of Presentation. CDR Stewart presented a few ideas for future systems. In the environment, height and depth information is essential. Unless the Underwater Construction Team (UCT) or Seals get the bathymetric information, the Battalion have nothing to work with. The bathymetric information should be obtained now, during peacetime, on areas of possible operation. CDR Stewart believes an issue of unavailability is the capability of rapid penetration on the sea floor. UCTs usually get the bathymetry and soil conditions, but when they can't, the Seabees build the systems anyway.

TABLE OF ALLOWANCE. One of the unique features of the PHIBCB's is that they are part of the beach group and don't have the regiment like the NMCB's to handle table of allowance business. How can the beach group get a handle on the PHIBCB table of allowance, their readiness condition, and how can we automate the system? CDR Stewart spoke of current methods out there that other groups use, like bar-coding, hand-held readers, and a system that informs the user how to pack the most efficiently. The beach group trains for operations that take them in many different parts of the world and they need to pack accordingly.

CDR Stewart talked about corrosion preventing coatings, lighter flak jackets, and different tent material. The current tent material doesn't seal at the seams when it gets wet and has poor ventilation. He thought 20-foot ISO modular containers would benefit the Groups. They just open up and are ready. They can be customized to have items like air and power panels. Also, the phones are old, the galley trailers use old gas burners and

are dangerous, and the reverse osmosis for water purification is a "maintenance dog." The cranes used for construction have to be drug through the sand during offloading, creating more work for the run-down dozers and damaging the cranes.

ELCAS. ELCAS needs a single source document that has all of the information. The fenders on the ELCAS are designed to be lifted out with a 175-ton crane, but in an operating environment, this is not possible, so the fenders are demolished during the harsh weather. The fenders need a lifting mechanism or ratchet system. Also, they have a PMS for the ELCAS lay-up but not for operations.

LIGHTERAGE SYSTEM. It has no capability to latch equipment down. Also, it would be nice to have a Zodiac retrieval system onboard. And, training of the Reserves is a problem because of lack of access to hands-on experience.

Topic: 7th Transportation Group

Presented by: MAJ Wayne Stultz, 7th Transportation Group

Synopsis of Presentation. MAJ Stultz gave an information brief about the 7th Transportation Group and what they have done and what they will be doing. MAJ Stultz showed how the Army gets to a mission (mostly by sea) and the Army's organization. He discussed the LSV capabilities and the use of Landing Craft Utility (LCU), the Army's "workhorse." Also, in June, they are planning a JLOTS at Fort Story and another in August, at Camp Pendleton, California.

Topic: EWTGPAC

Presented by: CDR Glenn White, EWTGPAC

Synopsis of Presentation. CDR White, the Director of Navy Training, provides training on JLOTS, mainly to Reserves. He brought up some issues involved with training. The Landing Craft Air Cushion (LCAC) is a $35 million, full motion training simulator available but is rarely used. Also, keeping the program current and providing trainers is a difficult task. CDR White says people need to get out of the mentality of wanting to drive the real thing; the simulators are just as good for training.

Some of the issues the simulations help solve are:

- Command and control
- Who talks to who
- Why and how come things are done a certain way

The most difficult part of the simulation is the planning. CDR White gave several areas that would help the planning and make for a more productive exercise:

- Plan several months ahead
- Try to get the exercise sponsored by the Joint Chief of Staff (JCS) so it gets on their schedule and talked about at world-wide conferences
- Host nation participation

PROGRAMMATIC ISSUES

Topic: NAVFAC Program

Presented by: CAPT James Barrett, NAVFAC Seabees

Synopsis of Presentation. CAPT Barrett talked about Systems Command (SYSCOM) responsibilities, relationships and funding. He showed Program Objective Memorandum (POM)-02 DPG guidance and approach.

Issues CAPT Barrett brought forward were:

OUB (_____ Utility Boat)

- The new OUB will be used to deploy the OPDS. This will allow preloaded tankers that will bring people to the site.
- There is an OPDS interface problem. The team couldn't park the tanker close enough to the shore so they combined the OPDS and AABFS. This worked and they have data for the process.

RRDF (Roll-on/Roll-off Discharge Facility)

- The anchor works well, but is hard to retrieve.
- RRDF needs a quick release

AABFS

- Under cross current the hose popped out so they capped it.
- The ABLTS swivel works well.

ELCAS

- This is really a funding issue. There needs to be more money to bring the system up to speed.

Topic: Far Term Strategic Sealift

Presented by: Mr. Art Rausch and Mr. Marty Fink, NSWC

Synopsis of Presentation. The goal of the Strategic Sealift Program is to investigate and develop promising concepts and technologies to improve capabilities and reduce costs. Some of the current tasks include improvement of the riderblock tagline system, stereovision, the spreaderbar tagline system, the intelligent spreader bar, ship motion/control systems, and the advanced shipboard crane pendulation control system. In addition, current tasks also include the composite causeway and the advanced lighter simulator/trainer.

Topic: Advanced Bulk Liquid Transfer System

Presented by: Mr. Mike Smith, SLC

Synopsis of Presentation. The presentation began with a brief description of the Amphibious Bulk Liquid Transfer System (ABLTS), the fuel subsystem, potable water subsystem, and bow assembly. System features were presented and discussed. Results of the prototype contractor demonstration, held in 1999, compared deployment and retrieval times of ABLTS to the Amphibious Assault Bulk Fuel System (AABFS) and Amphibious Assault Bulk Water System (AABWS). Changes that will be incorporated into the production units, based on contractor demonstration results, were introduced to the workshop for discussion. The production unit contract status was briefly presented followed by tentative production unit delivery dates PHIBCB-ONE, PHIBCB-TWO, Blount Island Command, and Expeditionary Warfare Training Group Pacific (EWTGPAC). Finally, the overall inventory objective for the ABLTS program was shown to the group.

Each ABLTS consists of a fuel subsystem, a potable water subsystem, and a bow assembly. Unique features of ABLTS include: a layflat hose for efficient packing on the reel, a bow assembly to trap the hose and improve safety, a powered hose guide to evenly wind hose on the spool, deployment and retrieval of hose from/to tandemly positioned hose reels, a hydraulically driven spool, a lighting system for night operations, a fully enclosed machinery compartment, and the system is air transportable in C-5 and C-17 aircraft. The ABLTS was field proven by installing 10,000 feet of 4-inch potable water and 10,000 feet of 6-inch fuel hose (3,000 feet at night) during a contractor's demonstration at the Naval Amphibious Base, Coronado during the week of 9 August 1999. The contractor's demonstration showed that the ABLTS will drastically improve amphibious hose deployment and retrieval times compared to the AABFS/AABWS. Design changes to the ABLTS, as a result of contractor's demonstration, include:

- Changing hose reel material from carbon steel to stainless steel
- Increased hose jacket thickness and hardness
- Changing the powered hose guide from a fixed position above the framework to a swing-down type
- Adding a second auxiliary winch

The production unit contract was awarded in February 2000, but is under protest, and could be delayed for up to 3 months. Under the current delivery schedule, each PHIBCB will receive one complete ABLTS in November 2000. However, because of the protest, ABLTS may not be delivered to the PHIBCBs until March 2001. The ABLTS program inventory objective is to deliver 51 hose reels: 42 to Blount Island Command; 3 to each PHIBCB; and 3 to EWTGPAC.

Topic: TA-67 Homeport Allowance

Presented by: Mr. Jerry Stephens, SLC

Synopsis of Presentation. TA-67 is a combination of wartime/homeport. Mr. Stephens explained the reasons for the consolidation and the status. Also, he went over future expectations.

CURRENT PROGRAMS

Topic: D-Day Mobile Fuel Distribution

Presented by: Mr. Buck Thomas, NFESC

Synopsis of Presentation. D-Day Mobile Fuel Distribution (DMFD) is an Office of Naval Research sponsored program. The objective of the program is to develop the capability to provide ship-to-shore delivery of bulk fuel during the initial stages of an amphibious assault. The program resource sponsor is OPNAV N85. Three individual fuel delivery concepts are under development.

The 15,000-gallon D-Day Mobile Fuel Distribution System (15k DMFD) is designed to maximize the LCAC platforms ability to carry fuel ashore during the initial days of an amphibious operation. The 15k DMFD consists of four 3,750-gallon fabric tanks, resulting in a load of approximately 105,000 pounds for the LCAC.

The 3,000-gallon D-Day Mobile Fuel Distribution System (3k DMFD) is designed to be a mobile system. The 3k DMFD system consists of two collapsible bladders secured to a 1077 flatrack. The assembled and filled system (12 ton) is readily moved by the LVS MK48/18A1. Three complete systems and an LVS MK 48/18A1 can be transported by LCAC simultaneously to deliver 9,000 gallons of product. The resulting cargo load seen by the LCAC is approximately 60 tons.

The 400-gallon D-Day Mobile Fuel Distribution System (400 DMFD) is designed to be a mobile system. The 400 DMFD system consists of a series of knockdown tanks that can be handled individually or in multiples on a dedicated transport pallet. When installed on the transport pallet, the tanks are manifolded together so that they can be filled and discharged through a single fitting. The system also includes a pump module and filter/separator module that can interface with the transport pallet in place of tanks. Individual containers can be handled by a 4,000-pound rough terrain (RT) forklift, a 5-ton truck, or helicopter, while the assembled and filled system is readily moved by the LVS MK18A1.

Topic: Joint Modular Lighter System (JMLS) (including Intuitive Control)

Presented by: Mr. Pat Kane, NFESC (per Mr. Cliff Lederer)

Synopsis of Presentation. In response to a Commander in Chief (CINC) requirement for capability to conduct Joint Logistics Over-the-Shore (JLOTS) operations in sea state 3 conditions, an Advanced Concept Technology Demonstration (ACTD) was initiated to adapt current technology to provide a sea state 3 lighterage capability. JMLS is a modular system consisting of various module types that can be assembled to form the five basic platforms: warping tug, causeway ferry, floating causeway, roll-on/roll-off (RO/RO) discharge facility, and air cushion vehicle landing platform.

In March 1998, NAVFAC, as Program Manager, awarded three Phase I contracts for JMLS concept development. After a down-select process, a Phase II contract was awarded in September 1998 to design, fabricate, and demonstrate a JMLS system as proposed by CDI Marine, Portsmouth, Virginia. The significant innovation of CDI Marine's design was the connection system, which utilized a unique ball-lock mechanism that promised to provide the capability to connect in the higher sea states required, without the use of marriage bridles or exposing crew members to hazardous deck-edge activities. JMLS hardware was fabricated at Baltimore Marine Industries, Baltimore, Maryland, under subcontract to CDI Marine, and was delivered to Naval Amphibious Base (NAB) Little Creek in January 2000 for follow-on test and evaluation by the contractor.

Testing to date has been hampered by limited availability of the craft due to propulsion system problems, effectively limiting opportunities to test in the desired sea state 3 conditions. Some of the required modifications are underway to improve reliability, and additional testing will be performed to verify the results of those modifications.

Tests of the connector system in waves up to 5 feet indicate promise for the design. As expected with any major development effort, certain design deficiencies only came to light during full-scale testing. Difficulties in fully engaging the connector balls have already resulted in minor modifications that seem to have resolved the problem. Weld cracks, at the point where the connectors are attached to the module, are still being evaluated to determine the cause. Areas being evaluated include the larger than expected motions from the loose connections, quality assurance, structural design assumptions, or a combination of these issues.

Following the contractor's demonstration and delivery of the equipment to the Government, U.S. Joint Forces Command, as Operational Manager for JMLS, will conduct a Military Utility Assessment (MUA). Based on a successful MUA, additional hardware will be built and a full Operation Evaluation (OPEVAL) will be scheduled for the following year.

Topic: Joystick Intuitive Control for JMLS

Presented by: Mr. Steve Maggipinto, NFESC

Synopsis of Presentation. Mr. Maggipinto educated the attendees on a joystick that helps maneuver JMLS connection operations, even in higher sea states. He gave the status of the program and recommendations for JMLS Phases III and IV. The joystick optimizes the thruster control, reduces training time, is usable on any craft, and requires minimal maintenance. Also discussed was SPS planning station with auto-track. This system can be run on a laptop, use local charts, and add depth information for 3D display.

Topic: Intelligent Spreader Bar

Presented by: Mr. Art Rausch, NSWCCD (per Ms. Kelly Cooper)

Synopsis of Presentation. Mr. Rausch presented a spreader bar system with 6 degrees of freedom for rapid connection to and replacement of containers in sea state 3. The fabrication is complete and testing is pending. He gave a list of future tasks and when they should be completed. Also, he talked about a stereovision for the crane operation. This entails placing cameras on the boom-tip, mid-boom, and rail increasing productivity and safety.

Topic: Spreader Bar Tagline

Presented by: Mr. Jeff Green, NSWCCD

Synopsis of Presentation. This project involves sea state 3 JLOTS and container transfer operations. Mr. Green presented the project history, an overview, and remaining work. The system should effectively reduce cargo pendulation. Operational and safety concerns must still be addressed.

Topic: Personnel Transfer

Presented by: Mr. Jeff Green, NSWCCD

Synopsis of Presentation. This studied the problems and issues of at-sea personnel transfer. Mr. Green discussed the project overview, problems and obstacles, solutions being investigated, and work to be done.

Topic: Advanced Lighterage Simulator

Presented by: Mr. Mike Christie, NSWCCD

Synopsis of Presentation. The Advanced Lighter Simulator and trainer is part of a research and development effort being performed by the Naval Surface Warfare Center. The goals of the project are to:

1. Build a mechanical-electro simulator for causeway-based lighterage craft operating in up through sea state three conditions
2. Investigate simulation technology
3. Develop an engineering tool for the evaluation of existing and future lighter craft
4. Fabricate a side-loadable warping tug (SLWT) simulator that can be used to train SLWT operators.

To effect these goals a core set of simulation tools have been developed and include the use of commercial physics-based simulation product called VSHIP®, an instructor/operator station used to set up and control the simulation, a Coxswain cab mock-up mounted on a six degree of movement motion base, and a pilot station which can also be mounted on a motion base. This core set of tools enables the Navy to model and simulate any small lighter craft with a modest additional investment.

An indoor SLWT training facility, using the Advanced Lighter Simulator core technologies, is under construction at PHIBCB-TWO in Little Creek, Virginia. This facility will enable warping tug operators to receive initial and refresher training year round. The trainer facility is a win-win situation for the Navy. PHIBCB-TWO personnel can augment their formal and on-the-water training with simulations of conditions (high winds, poor visibility, strong current, multiple causeway sections, varying loads, etc.) not easily duplicated in the real world. The NSWC research team receives invaluable feedback from the PHIBCB-TWO personnel, which will be used to improve the simulation and study the effectiveness of simulation-based training.

Status: SLWT Coxswain station and instructor/operator station has been developed and is being used by PHIBCB-TWO personnel; pilot station tracking software and hardware integration is under development; draft trainer user and maintenance documents have been developed and delivered to PHIBCB-TWO trainers; and a training program is being planned.

Potential Future Efforts: Joint Modular Lighter System modeling and simulation points of contact for the Advanced lighter Simulation include: Art Rausch, Head Mobile Support Systems Program Team, NSWC Carderock, phone no. 301-227-4590; Mike Christie Advanced Lighter Simulator, Project Coordinator, phone no. 301-227-5977; and Chief Jeff Hall, PHIBCB-TWO SLWT Training Coordinator, phone no. 757-462-2682.

Topic: Ramp/Platform Interface

Presented by: Mr. Art Rausch, NSWCCD

Synopsis of Presentation. The plan is to develop a sea state 3 interface capability between ramps of existing RO/RO ships and future causeway platforms. Mr. Rausch explained the payoffs and the progress of the program.

Topic: Small Unit Logistics

Presented by: Mr. Rob Johnston, NFESC

Synopsis of Presentation. The purpose of Small Unit Logistics (SUL) ACTD is to develop an interoperable tactical logistics command and control system that uses existing and emerging technologies to improve combat service support effectiveness and efficiency. MAGTF tactical logistics C2 today consists of:

- Multiple Logistics Automated Information Systems. Current systems are generally stove-piped, stand-alone logistics systems
- Incomplete tactical picture
- Difficult to turn data into information supportive of tactical decision making
- Observe, Orient, Decide, & Act (OODA) loop and COA logistics supportability determination slow and cumbersome
- Lack automated method for achieving Joint Vision 2010 focused logistics/OMFTS based logistics requirements
- Inefficiencies throughout system/processes

SUL's goal is near term functionality. Key functionality at the Milestone III Demo include:

- Critical event alerts
- Force readiness visibility
- Commander's assessment tool
- Rapid request tracking
- Common log picture
- COA development for discrete events
- Delivery optimization tool
- Requirements determination

Mid- to deep-term functionality is to incorporate joint systems, self-learning tools, DSS growth, and refinement. The impact of the SUL C2 system will be:

Quantitative: Near real time, reduction in OODA loop cycle time, enhanced logistics response time (e.g., repair and product order cycle time, etc.), the right sizing of the logistics footprint, and an open architecture (scalable, user friendly, web based, DII/COE compliant).
Qualitative: The staff can focus on decision making versus data gathering, and will be able to efficiently support and sustain 21st Century littoral maneuvers.

Topic: Seabasing

Presented by: Mr. Nick Olah, NFESC (per Dan McCambridge)

Synopsis of Presentation. The needs of OMFTS require versatility not presently available in the ships of the Amphibious Task Force (ATF), the Combat Logistics Force (CLF), and the Maritime Pre-positioned Force (MPF). Key capabilities now lacking in Naval shipping are the functions of commercial warehousing (automation, accessibility, selective offload, tailored load packaging, asset tracking/visibility, warehouse management) needed to support operations from a base at sea. NFESC is supporting development of an ONR sponsored adaptive command and control model, SEAWAY designed for the planning and execution of JLOTS/maritime logistics operations under tactical conditions.

SEAWAY's major decision making domains are referred to as agents -- intelligent modules that operate as expert systems to analyze, evaluate, and project data and events. The most critical data feed element to SEAWAY is the precision location, shipboard asset visibility. Precision asset visibility through interference is an emerging, but rapidly moving technology with a near term, high-risk profile.

SEAWAY will provide the tactical logistics commander with decision-making information developed from real time data feeds, instead of volumes of data that must be processed and digested to develop usable information. Real time shipboard asset visibility will provide an accurate real time inventory and location of all tracked items, freeing valuable human resources normally required to track and maintain an inventory that is out of date and highly inaccurate. Transporter data beacons will feed essential data to SEAWAY for tracking and scheduling, as well as receiving information from SEAWAY on the common operational picture. These technologies will significantly advance the capability to manage the logistics operations of a sea-base operation.

Topic: Autonomous Marine Booster Pump (AMBP)

Presented by: Mr. Marty Fickel, NFESC

Synopsis of Presentation. This project objective is to develop a system to support ship-to-shore cargo movement by providing fuel/water from extended distances. Mr. Fickel went over the tasks and requirements. The AMBP features include:

- Increased standoff distances by at least 100%
- The hull will fit into ISO containers
- SLWT could launch and recover
- Automatic control with remote monitoring and override
- Engine coolant heat exchanger uses the product flow

The FY00 completed milestones were also discussed.

Topic: Pile Splicer

Presented by: Mr. Marty Fickel, NFESC

Synopsis of Presentation. NFESC was tasked to develop a rapid pile splicing technology to improve the performance of the Navy's elevated causeway system, ELCAS (M). The ELCAS (M) is supported entirely by steel piles that have an outside diameter of 24 inches with a 0.5-inch thickness. Piles must be driven to a depth to develop the required soil bearing capacity. At locations where soft soils are encountered, a deeper pile depth is required, which may result in the need for more pile splicing. The current splicing practice requires the employment on one to three welders using hand-held welding stick guns to weld around the piles. The procedure takes about 3 hours and usually requires a total of five welding passes on each pile.

The innovative automated pile splicer consists of a magnetic driver unit, a hand-held control switch box, an automated wire welder, and a chain guide ring. The splicer is mounted on a handcart and weighted to about 120 pounds, allowing the splicer to be moved around with ease. The splicer can be adapted to use the existing power generating system for the welding stick gun, and one welder can splice a pile with only three welding passes in less than 40 minutes. This technological development represents significant time savings since pile splicing is on the critical path of the ELCAS (M) installation.

Topic: NMCB Efforts

Presented by: Mr. Pat Kane, NFESC (per Katie Lunsford)

Synopsis of Presentation. "The Amphibious and Expeditionary Department conducts RDT&E, provides program and project leadership, planning and management, and provides expert consulting services in support of the Naval Expeditionary Force (NCF)." Mr. Kane discussed the efforts involved in this support (Class 70 bridging and ABFC review). Several initiatives were introduced, along with potential funding sources.

GLOSSARY

AABFS	Amphibious Assault Bulk Fuel System
AABWS	Amphibious Assault Bulk Water System
ABFC	Advanced Base Functional Component
ABLTS	Amphibious Bulk Liquid Transfer System
ACTD	Advanced Concept Technology Demonstration
ATF	Amphibious Task Force
C2	Command & Control
CINC	Commander in Chief
CLF	Combat Logistics Force
CNO	Chief of Naval Operations
COA	Course of Action
D11/COE	Defense Information Infrastructure/Corps of Engineers
DMFD	D-Day Mobile Fuel Distribution
DPG	Defense Planning Guidance
ELCAS	Elevated Causeway
ELCAS (NL)	Elevated Causeway (Navy Lightered)
ELCAS (M)	Elevated Causeway (Modular)
ERDCWES	Engineering Research and Development Center Waterways Engineering Station
EWTGPAC	Expeditionary Warfare Training Group Pacific
IMEF	1st Marine Expeditionary Force
JCS	Joint Chief of Staff
JLOTS	Joint Logistics Over-The-Shore
JMLS	Joint Modular Lighter System
LCAC	Landing Craft Air Cushion
LCU	Landing Craft Utility
LST	Landing Ship Transport
LSV	Logistics Support Vehicle
MAGTF	Marine Air-Ground Task Force
MCWL	Marine Corps Warfighter Lab
MPF	Maritime Pre-positioned Force
MUA	Military Utility Assessment
NAB	Naval Amphibious Base
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NBG-ONE	Naval Beach Group One
NCF	Naval Expeditionary Force
NFESC	Naval Facilities Engineering Service Center
NMCB	Naval Mobile Construction Battalion
NSWCCD	Naval Surface Warfare Center Carderock Division
OODA	Observe, Orient, Decide and Act
OMFTS	Operational Maneuver from the Sea
ONR	Office of Naval Research
OPDS	Offshore Petroleum Discharge System
OPEVAL	Operation Evaluation

OUB	OPDS Utility Boat
PHIBCB-ONE	Amphibious Construction Battalion One
PHIBCB-TWO	Amphibious Construction Battalion Two
PMS	Portable Meteorological Subsystem
POM	Program Objective Memorandum
RO/RO	Roll-On/Roll-Off
RRDF	Roll-On/Roll-Off Discharge Facility
SLC	Seabee Logistics Center
SLWT	Side-Loadable Warping Tug
SPS	Special PSYOP Study
SUL	Small Unit Logistics
SWDG	Surface Warfare Development Group
SYSCOM	Systems Command
UCT	Underwater Construction Team

Appendix A

2000 Amphibious Systems R&D Working Group Meeting Attendees

Name	Command	Address	Phone and Fax Number	Email Address
Adamcik, Bob LT	SWDG	2200 Amphibious Dr Norfolk, VA 22521	(757) 462-8208 x2722 fax (757) 462-7081	radamcik@hq.cnsl.sdeve.navy.mil
Bartel, Warren	NFESC ESC51	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1215 fax (805) 982-5204	bartelwa@nfesc.navy.mil
Barthelemy, Joe	NFESC ESC31	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1314 fax (805) 982-1458	barthelemyjl@nfesc.navy.mil
Bretz, Woody	NFESC ESC31	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-4766 fax (805) 982-1458	bretzg@nfesc.navy.mil
Burgum, Linda	EWTGPAC (N2)	NAB Coronado San Diego, CA	(619) 437-3726	burgumlc@ewtgpac.navy.mil
Butrym, Ken CAPT	PHIBCB-ONE	2425 Eniwetok Rd NAB Coronado San Diego, CA	(619) 437-2527	butrymk@acb-1.navy.mil
Cannon, Cindy	SLC 043	1000 23rd Ave Port Hueneme, CA	(805) 982-3029	cannonca@slc.navfac.navy.mil
Christie, Mike	NSWC Carderock	9500 MacArthur Blvd West Bethesda, MD 20817	(301) 227-5977 fax (301) 227-5991	christiecm@nswccd.navy..mil
Cornelius, Jerry	SLC, Code 461	1000 23rd Ave Port Hueneme, CA	(805) 982-3045 fax (805) 982-5196	corneliusgk@slc.navfac.navy.mil
Dahlke, Terry	Kongsberg Simrad	7250 Langtry Houston, TX 77040	(713) 934-8885	t.dahlke@kongsberg-simrad.com
Delery, Tom CAPT	NBG-ONE	Tarawa Road Coronado, CA	(619) 437-2392 fax (619) 437-2391	deleryta@cnbg1.navy.mil
Fickel, Martin	NFESC ESC31	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1307 fax (805) 982-1458	fickelmj@nfesc.navy.mil
Fink, Martin	NAVSEA	PMS 325R3	(703) 602-0920 X109	finkmd@navsea.navy.mil
Green, Jeff	NSWCCD	9500 MacArthur Blvd West Bethesda, MD 20817	(301) 227-2960 fax (301) 227-1041	greenjp@nswccd.navy.mil
Harbac, Mo	Marine Corps Warfighting Lab	3255 Meyers Ave Quantico, VA 22134	(703) 784-5161	harbac@mcwl.quantico.usmc.mil
Harrison, Andrew	ERDCWES	3909 Halls Ferry Rd Vicksburg, MS	(601) 634-2185 fax (601) 634-4128	harrisa@wes.army.mil
Johnston, Rob	NFESC ESC32	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1305 fax (805) 982-1458	johnstonr@nfesc.navy.mil
Kane, Patrick	NFESC ESC30PM	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1260 fax (805) 982-1458	kanepr@nfesc.navy.mil
Lister, Scott R. LCDR	PHIBCB-ONE	2524 Eniwetoc Rd San Diego, CA 92155	(619) 437-3383 fax (619) 437-3712	listers@acb-1.navy.mil
Lyons, Anne	NFESC ESC32	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-5761	lyonsal@nfesc.navy.mil
Maggipinto, Steve	NFESC ESC31	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-3033 fax (805) 982-1458	maggipintosj@nfesc.navy.mil
Mui, Danny	SLC	1000 23rd Ave Port Hueneme, CA	(805) 982-5661	muidc@slc.navfac.navy.mil

Name	Command	Address	Phone and Fax Number	Email Address
Olah, Nicholas	NFESC ESC08	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1089 fax (805) 982-1409	olahnj@nfesc.navy.mil
Over, Rick CWO-4	I MEF G-4	P.O. Box 5300 Camp Pendleton, CA 92055	DSN 365-9183 fax 365-9153	overrc@i-mef.usmc.mil
Palo, Paul	NFESC ESC51	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1204	palopa@nfesc.navy.mil
Rausch, Art	NSWC Carderock	9500 MacArthur Blvd West Bethesda, MD 20817	(301) 227-4590 fax (301) 227-1041	rauschab@nswccd.navy.mil
Satterly, Tom LCDR	CNO N42	Crystal Square 2 Suite 1002 Alexandria, VA	(703) 602-1747 fax (703) 602-7232	satterly.tom@hq.navy.mil
Schelle, Curt	MAR Inc.	6110 Executive Blvd Suite 410 Rockville, MD	(301) 230-4595	cschelle@marinc.com
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Stewart, David CDR	PHIBCB-TWO	1815 Seabee Dr Norfolk, VA 23521	(757) 462-7681 fax (757) 462-4122	stewartd@phibcbtwo.navy.mil
Stultz, Wayne	7th Trans Grp	128 Monroe St Fort Eustis, VA 23604	(757) 878-5416 fax (757) 878-4870	stultzw@eustis.army.mil
Tausig, Wayne	NFESC ESC51	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1163 fax (805) 982-5204	tausigw@nfesc.navy.mil
Thomas, C.E. "Buck"	NFESC ESC32	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1590 fax (805) 982-1458	thomasce@nfesc.navy.mil
Ullman, Stuart	NSWC CD	9500 MacArthur Blvd West Bethesda, MD	(301) 227-5975 fax (301) 227-1041	ullmansg@nswccd.navy.mil
Vaughters, Ted	NSWC Carderock	Code 28	(301) 227-4591 fax (301) 227-1041	vaughterstg@nswccd.navy.mil
Walters, Erin	NFESC ESC31	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-5228 fax (805) 982-1458	waltersea@nfesc.navy.mil
Webb, Robert	SLC, Code 461	1000 23rd Ave Port Hueneme, CA	(805) 982-3048	webbrc@slc.navfac.navy.mil
Weber, Bob	EWTGPAC	NAB Coronado CA Bldg. 207	(619) 437-2259 fax (619)437-5441	dhall@electriciti.com
Weber, Max	NSWCDD	Panama City, FL	(850) 235-5445 fax (850) 235-5443	webermd@ncsc.navy.mil
Webster, E.R.	SLC 043ERW	1000 23rd Ave Port Hueneme, CA	(805) 982-1960 fax (805) 982-3395	websterer@slc.navfac.navy.mil
White, Glen CDR	EWTGPAC	NAB Coronado 3423 Guadacanal San Diego, CA	(619) 437-3714 fax (619) 437-5682	whitegt@ewtgpac.navy.mil
Zueck, Robert	NFESC ESC51	1100 23rd Ave Port Hueneme, CA 93043	(805) 982-1210 fax (805) 982-5204	zueckrf@nfesc.navy.mil

Appendix B

2000 Amphibious Systems R&D Working Group Meeting

AGENDA

Wednesday, 29 March

WELCOME AND ADMINISTRATIVE ANNOUNCEMENTS

TIME:	TOPIC:	SPEAKER:
0830 - 0845	Welcome	CAPT Robert Westberg CO, NFESC
0845 - 0900	Administrative Announcements	Mr. Woody Bretz NFESC, ESC31
	FLEET PERSPECTIVE	
0900 - 0945	PHIBCB-ONE	CAPT Ken Butrym PHIBCB-ONE
0945 - 1030	PHIBCB-TWO	CDR David Stewart PHIBCB-TWO
1030 - 1045	**BREAK**	
1045 - 1115	7th Trans Group	MAJ Wayne Stultz 7th Trans
1115 - 1145	EWTGPAC	CDR Glenn White EWTGPAC
1145 - 1300	**Lunch Break**	
	PROGRAMMATIC ISSUES	
1300 - 1330	NAVFAC Program	CAPT James Barrett NAVFAC Seabees
1330 - 1400	Far Term Strategic Sealift	Mr. Marty Fink NSWC – CD
	NSWC Program: Sealift R&D Program	Mr. Art Rausch NSWC – CD

Wednesday, 29 March (continued)

PROGRAMMATIC ISSUES (continued)

TIME:	TOPIC:	SPEAKER:
1400 - 1500	Advanced Bulk Liquid Transfer System	Mr. Mike Smith SLC
1500 - 1515	**BREAK**	
1515 - 1615	TA-67 Homeport Allowance	Mr. Jerry Stephens SLC

CURRENT PROGRAMS

1615 - 1645	D-Day Mobile Fuel	Mr. Buck Thomas NFESC, ESC32
1645 - 1715	JMLS (including Intuitive Control)	Mr. Pat Kane NFESC, ESC30PM
1715	**ADJOURN**	
1900	Dinner/Social @ Sal's Mexican Restaurant	

Thursday, 30 March

CURRENT PROGRAMS (continued)

0745 - 0750	Opening Remarks	Mr. Woody Bretz NFESC, ESC31
0750 – 0805	Joystick Intuitive Control for JMLS	Mr. Steve Maggipinto NFESC, ESC31
0805 – 0825	Intelligent Spreader Bar	Mr. Art Rausch NSWC-CD
0825 - 0845	Spreader Bar Tagline	Mr. Jeff Green NSWC-CD

Thursday, 30 March (continued)

CURRENT PROGRAMS (continued)

TIME:	TOPIC:	SPEAKER:
0845 - 0905	Personnel Transfer	Mr. Jeff Green NSWC-CD
0905 - 0925	Advanced Lighterage Simulator	Mr. Mike Christie NSWC-CD
0925 - 0945	Ramp/Platform Interface	Mr. Art Rausch NSWC-CD
0945 - 1005	Small Unit Logistics	Mr. Rob Johnston NFESC, ESC32
1005 - 1035	**BREAK**	
1035 - 1055	Seabasing	Mr. Nick Olah NFESC, ESC08
1055 - 1115	AMBP	Mr. Marty Fickel NFESC, ESC31
1115 - 1135	Pile Splicer	Mr. Marty Fickel NFESC, ESC31
1135- 1155	NMCB Efforts	Mr. Pat Kane NFESC, ESC30PM
1155- 1215	Closing Comments	Mr. Woody Bretz NFESC, ESC31
1215	**ADJOURN AMPHIBIOUS SYSTEMS R&D WORKING GROUP MEETING**	

Appendix C

PRESENTATION MATERIALS

CONTENTS

- MISSION OVERVIEW
- COMMANDS
- ASSAULT FOLLOW ON ECHELON
- COMMAND STRUCTURE
- LANDING FORCE BEACH PARTY
- JOINT LOGISTICS OVER THE SHORE
- AMPHIB ASSAULT BULK FUEL/WATER SYSTEM

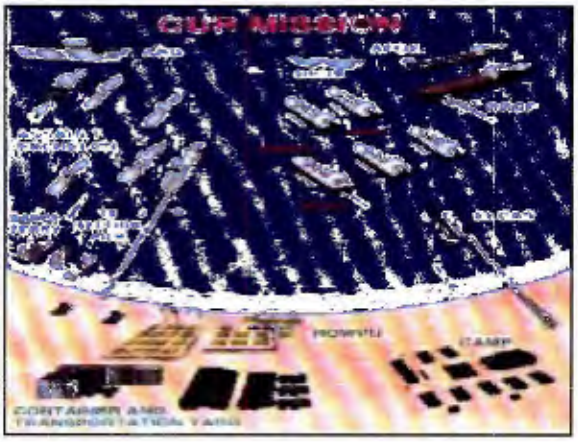
CONTENTS

- OFFSHORE PETROLEUM DISCHARGE SYSTEM
- ROLL ON/ROLL OFF DISCHARGE FACILITY
- MARITIME PREPOSITIONING FORCE

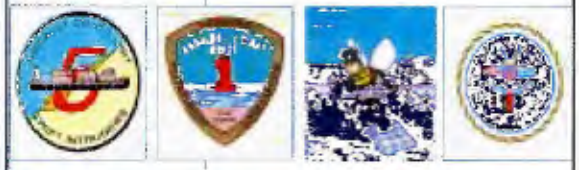
JLOTS

(JOINT LOGISTICS OVER THE SHORE)

- ASSOCIATED WITH AMPHIB OR MPF OPS
- SHIP OFFLOAD
- INSTREAM OR PERSIDE
  - AAIPS/WS
  - CFDS
  - RRDF
  - ELCAS



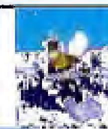
NBG-1 COMMANDS



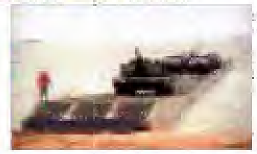
ASSAULT CRAFT UNIT ONE

- OPERATE AND MAINTAIN CONVENTIONAL LANDING CRAFT (LCM-6/LCM-8/LCU)
- SHIP TO SHORE MOVEMENT

AMPHIBIOUS CONSTRUCTION BATTALION ONE

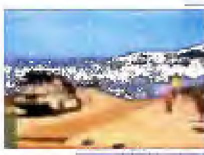


- BARGE FERRY OPERATIONS
- AABFS/WS
- OPDS
- RRDF
- ELCAS
- CAMP SUPPORT
- DEFENSE/FORCE PROTECTION



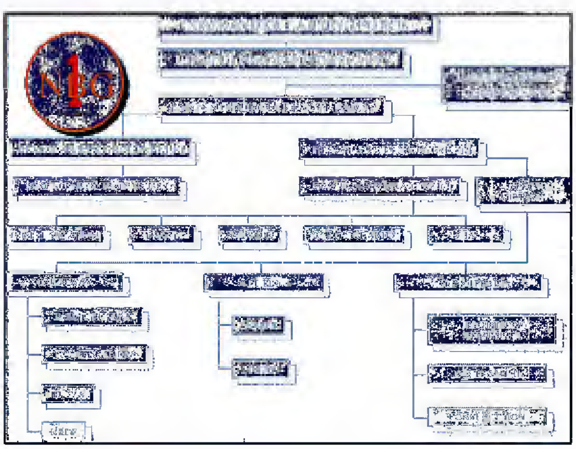
BEACH MASTER UNIT ONE

- BEACH CONTROL FROM THE SURF ZONE TO THE HIGH WATER MARK
- LIGHT SALVAGE



ASSAULT FOLLOW-ON ECHELON (AFOE)

- SUPPORT MEF SIZE AFOE
- AABFS / AMBFS (BULK FUEL/WATER)
- SUPPORT CAMP
- OPDS / RRDF, ELCAS



LANDING FORCE BEACH PARTY

- TASK ORGANIZED
- REPORTS TO LANDING FORCE SUPPORT PARTY (USMC) OR ENGINEER AMPHIBIOUS BRIGADE (USA)

LANDING FORCE BEACH PARTY

BUILD-UP ASHORE PARALLELS THE TACTICAL BUILDUP

RECEIVES LOGISTIC SUPPORT FROM COMMANDER LANDING FORCE

Amphibious Assault Bulk Fuel/Water System

- 5,000 ft of 6" conduit (Fuel)
- 10,000 ft of 4" conduit (Water)
- Deploy from Barge Ferry or LCU
- Install in 8 hours
- 700Kgal/day

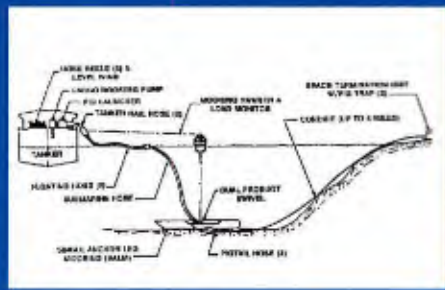
OFFSHORE PETROLEUM DISCHARGE SYSTEM (OPDS)

- EMPLOYS OPDS TANKER WITH SINGLE ANCHOR LEG MOOR (SALM)
- INSTALLED WITH OPDS UTILITY BOATS (OUB's) OR MODIFIED SLWT's

OFFSHORE PETROLEUM DISCHARGE SYSTEM (OPDS)

- 4 MILES FLEXIBLE PIPELINE
- 1.2 MILLION GALLONS PER 20 HR DAY
- INTERFACES WITH ARMY INSHORE PETROLEUM DISTRIBUTION SYSTEM (IPDS)

OPDS System Schematic



ROLL ON / ROLL OFF DISCHARGE FACILITY (RRDF)

- FLOATING PLATFORM MOORED TO SHIP
- CONSISTS OF 7 CAUSEWAY SECTIONS
- ROADWAY BETWEEN SHIP's RAMP AND LIGHTERAGE

ROLL ON / ROLL OFF DISCHARGE FACILITY (RRDF)

- 6 TO 8 HOURS TO ASSEMBLE
- LIMITED TO SEA STATE 2
- MAXIMUM CURRENT OF 4 KTS

ELEVATED CAUSEWAY (ELCAS)

- RAPIDLY INSTALLABLE PIER FACILITY
  - DELIVERED VIA CONTAINER SHIP
  - 7 DAYS INSTALLATION TIME
  - 3,400 FT LENGTH, 24 FT WIDE
- DELIVERY METHODS
  - LIGHTERAGE VIA PIER CRANE
  - SHIP PIERSIDE VIA RAMPS
- TWO NAVY SYSTEMS
  - ELCAS (NL) AT ACB-1
  - ELCAS (MOD) AT ACB-2

ELEVATED CAUSEWAY (ELCAS)

NAVAL SUPPORT ELEMENT

NSE RESPONSIBILITIES

- IN-STREAM / PIERSIDE OFFLOAD
- OFFLOAD PREP PARTY
- LIGHTERAGE SUPPORT
- CAMP SUPPORT

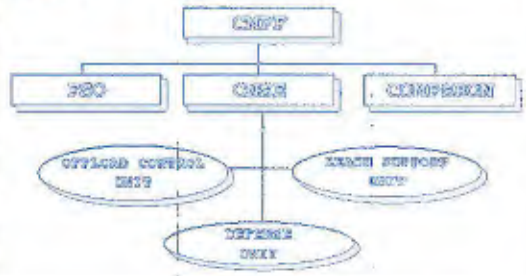
MPF OPERATIONS

- NSE CDR FOR OPS/ TRNG
- MPS MATERIAL MAINT
  - MPSRON SHIP MAINT
  - MMC AT BIC
- REPRESENTATIVE AT MPF CONF

MARITIME PREPOSITIONING SQUADRONS

MPSRON - 1	MPSRON - 2	MPSRON - 3
MED	DIEGO GARCIA	GUAM/SAIPAN
2nd LT [illegible]	MV PFC [illegible]	MV PFC WILLIAMS
	MV 1ST LT [illegible]	MV 1ST LT LOPEZ
	MV PFC ANDERSON	MV 1ST LT [illegible]
	MV 1ST LT [illegible]	MV SGT [illegible]
	MV PVT PHILLIPS	

MPF ORGANIZATION



ISSUES

- Distance/25 Nmiles
  - Speed vs Lift
- Fuel
  - a. D-Day
  - b. Longterm/Long Dist.
- ELCAS(M)
  - Longer/Quicker Install

ISSUES

- Manpower
  - Reduce/Labor Intensive
- Lighter
  - Need to Reduce Required Sorties/Ships to Carry EQP
- Maintenance
  - Need to Reduce Maintenance Requirement while Increasing Reliability

Amphibious Construction Battalions (PHIBCBs)

29 MARCH 2000

CAPT K. P. BUTRYM

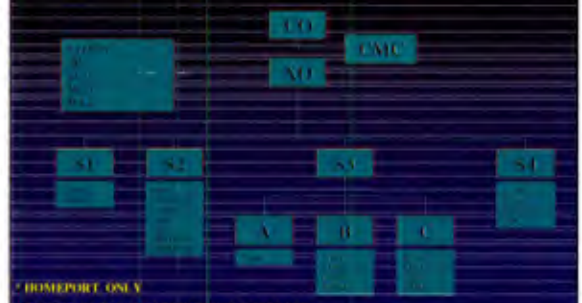
Mission

- Ship-to-shore transportation of combat equipment, ammunition and supplies.
- Installation and operation of ship-to-shore bulk fuel/water systems, and ELCAS
- Beach/shoreside support
- Defense/Force Protection

"...Forward from the surf"

Chain of Command

Organization *



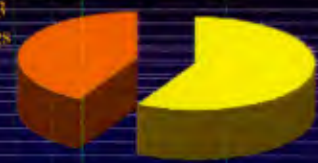
* HOMEPORT ONLY

TASK FORCE ORGANIZED WHEN DEPLOYED

People - PAC/LANT

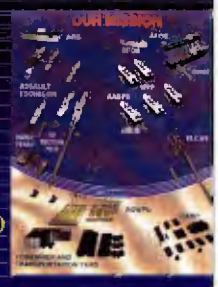
- Active Duty
  - 13/14 Officers
  - 440/330 Enlisted
- Reserve
  - 42/36 Officers
  - 1,004/698 Enlisted
- Total: 1,417/1,078

People - Rating Distribution



Missions

- Assault Echelon (AE)
- Maritime Prepositioning Force (MPF)
- Assault Follow-On Echelon (AFOE)
- Joint Logistics Over the Shore (JLOTS)



AE FUNCTIONS / PLATFORMS

- Command and Control
- Amphibious Assault Bulk Fuel/ Water System (AABFS/WS)
- Beach Salvage Element

Amphibious Assault Bulk Fuel/Water System

- 5,000 ft of 6" conduit (Fuel)
- 10,000 ft of 4" conduit (Water)
- Deploy from Barge Ferry or LCU
- Install in 8 hours
- 700Kgal/day

Maritime Prepositioning Force (MPF)

Joint Logistics Over The Shore (JLOTS)

MPF SQUADRONS

MPF Functions / Platforms

- Command and Control
- Offload Control
- Beach Salvage Element
- Lighterage Repair
- Amphibious Assault Bulk Fuel / Water System
- Causeway Barge Ferries
- Roll-On/Roll-Off Discharge Facility (RRDF)
- 850 Man Camp
- Defense / Force Protection

Barge Ferry System

- Side Loadable Warping Tug (SLWT)
- Causeway Section Powered (CSP)
- Causeway Section Non-Powered (CNSP)

Roll On/Roll Off Discharge Facility (RRDF)

In-Stream Offload of Rolling Stock

Camp Support

- Berthing Tents
- Galley/Scullery
- Laundry
- Showers/Heads
- Transportation
- Beach Salvage
- Water Purification
- Medical/Admin

Defensive Military Operations Force Protection

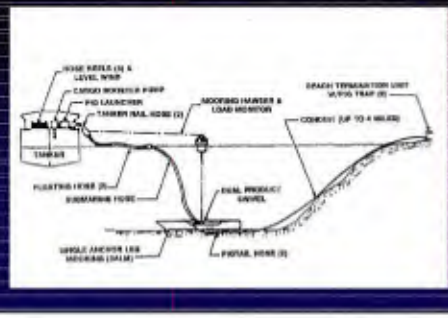
AFOE Functions / Platforms

- ~~Command and Control~~
- ~~Offload Control~~
- ~~Beach Salvage Element~~
- ~~Lighterage Repair~~
- ~~Causeway Barge Ferries~~
- ~~1,200 Man Camp~~
- ~~RRDF~~
- ~~Defense/Force Protection~~
- ~~Offshore Petroleum Discharge System (OPDS)~~
- ~~Elevated Causeway (ELCAS)~~

Offshore Petroleum Discharge System (OPDS)

- ~~Single Product 4 NM~~
- ~~Dual Product 2 NM~~
- ~~1.2 Mgal/day~~
- ~~First Fuel in 48 hrs.~~
- ~~Install in 7 days~~
- ~~Water Depth 35-200 ft.~~
- ~~Service Life 2 yrs.~~

OPDS System Schematic



Elevated Causeway-Modular

- Up to 3000 ft length
- 20 FSW at MLW
- 7 Days to Erect
- UCT Site Survey

Ongoing Challenges

- Lighterage Replacement (JMLS)
- Hosereel Replacement (ABLTS)
- SS3 Crane Systems
- OPDS Improved Mooring System
- MPF Future

Causeway Ferry

- 8 knots
- 450 tons cargo vehicles or containers
- Army and Navy

New - 8 foot height, 40 year life Sea State 3

Old - 5 foot height, 15 year life, Sea State 2 only

Warping Tug

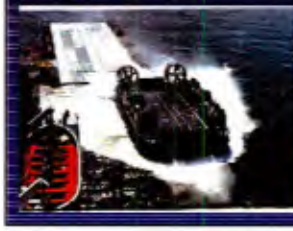
- 8 knots,Sea State 4 capable
- Assemble platforms: Towing, anchoring, and salvage operations
- Army and Navy

New - 8 foot height, 40 year life Sea State 4

Old - 5 foot height, 15 year life, Sea State 2 only

Air Cushion Vehicle Landing Platform

- Offload vehicles onto LCAC from MPF/LMSR
- Navy only

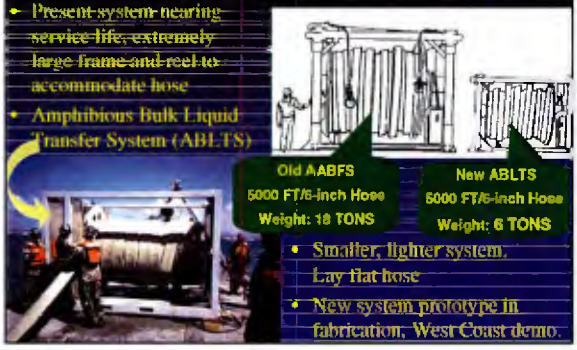


New - 8 foot height, 40 year life sea state 3

Sea State 2 only

Hosereel Replacement

- Present system nearing service life, extremely large frame and reel to accommodate hose
- Amphibious Bulk Liquid Transfer System (ABLTS)



- Smaller, lighter system. Lay flat hose
- New system prototype in fabrication, West Coast demo.

Future Concepts - MPF(F)

- Must look to future concepts now evolving:
  - MPF Future: 2010 and Beyond
  - Operational Maneuver From the Sea (OMFTS)
  - Ship To Objective Maneuver (STOM)
  - Seabased Logistics

Interface with NMCBs

- Maritime Prepositioning Force Enhanced
- Expeditionary Construction Capability
- Defensive Military Operations
- Camp Support

PHIBCBs vs NMCBs

- Chain of Command
- Concept of Operations
- Deployments
- Training
- Reserves
- Rating Composition

Interface with UCTs

- Diving Operations
- Bathymetric Survey
- Beach Salvage
- Salvage Explosives
- Expedient Waterfront Structural Assessment
- Combat Capability

- MPF/JLOTS
- Causeway Ferry
- AABFS/AABWS
- OPDS
- ELCAS-M
- Combat Ops

Amphibious Construction Battalions (PHIBCBs)

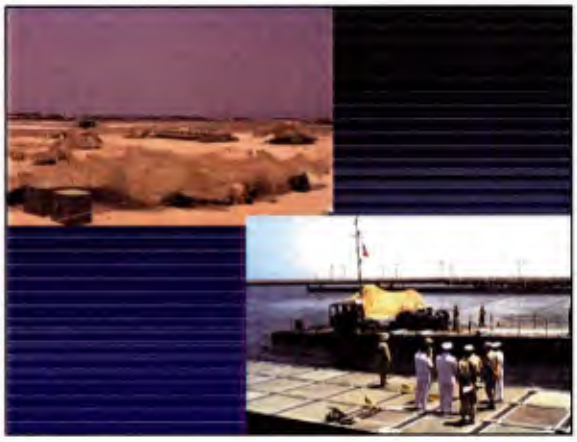
The Final Link in the Sealift Chain

NATIVE FURY '98
(KUWAIT FEB-JUNE 98)

- FEB, deployed OPP to Persian Gulf - Operation Desert Thunder
- MAY, deployed Main Body to Kuwait - Exercise Native Fury '98
- CENTCOM Maritime Prepositioning Force (MPF) Exercise
- Direct Support of I MEF and CPG-3 (CMPF)

NATIVE FURY '98
(cont.)

- Pierside offload and regeneration
- First ever instream offload in Persian Gulf
- Joint USMC/USN Camp for 1000 psnl
- Force Protection (Threatcon Charlie)



FREEDOM BANNER '99
(Pohang, ROK Sep-Nov 98)

- MPF Exercise supporting III MEF and CPG-3 (CMPF)
- Pierside offload and regeneration (289 PEI)
- Instream offload (201 PEI)
- Two expeditionary camps (1000 total psnl)
- CO PHIBCB One Commander, Naval Support Element (8 commands/700 psnl)

FOAL EAGLE '98

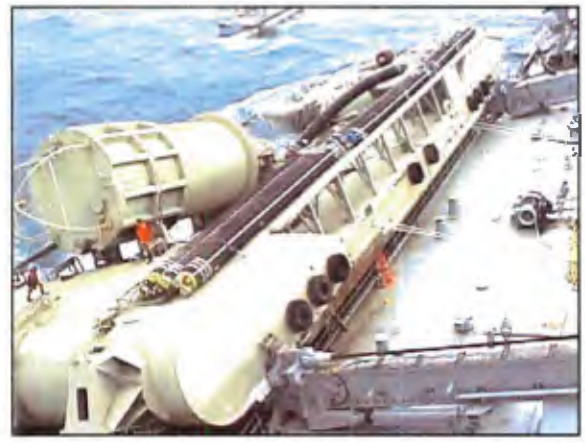
(Pohang & Pusan, ROK Sep-Nov 98)

- Combined/Joint Logistics Over-the-Shore Exercise (USN/USA/ROK)
- Pusan: Coordinated instream offload of 350 PEI with USA (7th TRANS)
- Pohang: Pierside and instream offload
- First ARG/MPF interoperability training

FOAL EAGLE '98

(cont.)

- Pohang: Offshore Petroleum Discharge System (OPDS) installation and ops
  - interface with USA Inland Petroleum Distribution System (IPDS)
  - first fully integrated OPDS/IPDS installation in MTW
  - pumped 3 million gallons from 3 miles offshore and 2 miles inland



Dynamic Mix 98

Amphibious Construction Battalion Two

- ~~Maritime Prepositioning Force support of NATO Exercise Dynamic Mix, Turkey~~
- ~~Direct Support of II MEF (Fwd)~~
- ~~Camp for 1200~~
- ~~3 MPF Ships~~
  - ~~1 Pierside~~
  - ~~1 In Stream~~
  - ~~1 Maritime Prepo~~

Dynamic Mix 98

Amphibious Construction Battalion Two

- Moved 144 Vehicles from Ship to Shore via Barge Ferry
- Offloaded 377 pieces of equip and 56 ISO containers pierside
- USMC live fire exercise with NATO forces
- Included road march of 310 miles round trip

Dynamic Mix 98

Amphibious Construction Battalion Two

- CO ACB-2 was Commander NSE
  - 55 Personnel
  - 5 Subordinate Commands
- Camp for 1,200
- Threatcon Charlie

ISSUES

- **Distance/25 Nmiles**
  - Speed vs Lift
- **Fuel**
  - a. D-Day
  - b. Longterm/Long Dist.
- **ELCAS(M)**
  - Longer/Quicker Install

ISSUES

- **Manpower**
  - Reduce/Labor Intensive
- **Lighter**
  - Need to Reduce Required Sorties/Ships to Carry EQP
- **Maintenance**
  - Need to Reduce Maintenance Requirement while Increasing Reliability

Amphibious Construction Battalions (PHIBCBs)

The Final Link in the Sealift Chain

Hydrographic Database

- Global - start with likely deployment sites
- Bottom contour
- RPT - needed for ELCAS
- Known areas we can not deploy (ELCAS, OPDS)

TOA

- Is TOAMS the answer?
- Automated TOA management system.
  - Barcoding.
  - Ability to obtain information on containers (RFI).
- Design a new coating system for ISOs that is easy to maintain.
- Corrosion resistant materials that can be implemented on our CESE to prevent marine induced corrosion.
- Tactical waterproof personal gear.

Deployable Internet

- Mobile
- Global
- Able to sustain a field/marine environment
- Compatible w/ Field LAN
- Link to satellite

Camp Support

- Temper and DRASH Tents
- MECC / Communications Van
- Laundry
- Wire communications/phones
- Galley trailers with modified burners
- Heat pumps to replace the fuel dependent heating units.
- Reevaluate the way we get water.

ELCAS(M)

- Tracked 175T vs. wheeled.
- Improved vertical lifeline system.
- Piling limitations.
  - What are maximum splices that can be made.
- What is life of system as used for training?
- What are the maximum splices that can be made?
- Acorn ladder "davit."
- Design a ratchet system to lift fender pontoons.
- Require "operational" PMS.

ELCAS(M)

- Hybrid design for top brace stanchions.
- Self-leveling device for the turntable.
- Operational life of kevlar air bags.
- Environmentally friendly solvent for retrograde to strip grease.
- Durability of epoxy space filler in pontoon sections.
- Composite UNIMAT.
- Battle Damage/catastrophic failure repair.
- JMLS interface for flexing into ELCAS modules.

Communications

- TA Replacement for SABERs/ Motorola no longer makes the SABERs.

OPDS

- Mooring line durability and chafing strength.

Lighterage

- Nonpowered NL causeways require tiedown points.
- Improved main engine and WPA hatches.
- Zodiac launch and recovery system.
  - NL and JMLS.
- Integrated electronic commercial navigation system/"state of the art."

Other distinct issues

- Portable simulators/Virtual reality trainers.
- PMS for all NCF equipment.
- Maximum utilization of cutting edge technology.

7th TRANSPORTATION GROUP

Maj. Wayne Stultz
Plans and Exercise
7th Transportation Group

Resolute!

OUTLINE

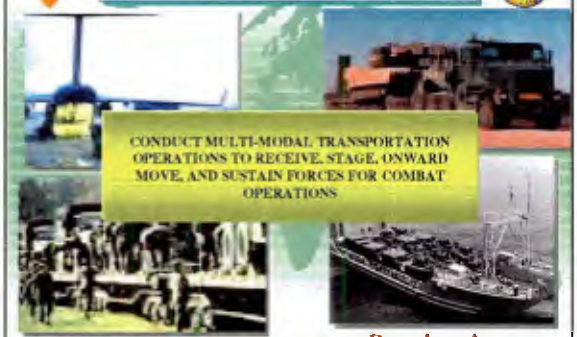
- FORCE PROJECTION STRATEGY
- MISSION
- TASK ORGANIZATION
- EQUIPMENT AND CAPABILITIES
- APS-3/PORT OPENING PACKAGE
- LOTS
- TRAINING/CHALLENGES AND IDEAS
- QUESTIONS

Resolute!

FORCE PROJECTION STRATEGY

"The Army's military strategy relies on a CONUS-based force that uses strategic mobility assets and pre-positioned material to facilitate force projection."

MISSION



CONDUCT MULTI-MODAL TRANSPORTATION OPERATIONS TO RECEIVE, STAGE, ONWARD MOVE, AND SUSTAIN FORCES FOR COMBAT OPERATIONS

Resolute!

PEACE TIME TASK ORGANIZATION

Resolute!

ORGANIZATION

7th Transportation Group (COMPOSITE)

3,800 SOLDIERS — 900 GROUND VEHICLES — 66 WATERCRAFT

Resolute!

6th BN ORGANIZATION

Auth Strength: 1022

PROVIDE COMMAND AND CONTROL OF UNITS ENGAGED IN STRATEGIC DEPLOYMENT, MOTOR TRANSPORT, CARGO TRANSFER, DIRECT AND GENERAL SUPPORT MARINE MAINTENANCE, ARMY DIVE, AND CAUSEWAY OPERATIONS

*ESTABLISHING A RELATIONSHIP WITH 53D MCB

Resolute!

10th BN ORGANIZATION

Auth Strength: 880

PROVIDE COMMON USER WATERCRAFT FOR JOINT AND COMBINED AMPHIBIOUS, LOGISTICS OVER THE SHORE (LOTS) AND INTRA-THEATER LIFT OPERATIONS IN SUPPORT OF THE WARFIGHTING CINC

Resolute!

11th BN ORGANIZATION

Auth Strength: 982

CONDUCT AIR, SEA, RAIL AND HIGHWAY TERMINAL AND MULTI-MODAL TRANSPORTATION OPERATIONS

CONDUCT TACTICAL PETROLEUM PIPELINE AND WATER PURIFICATION OPERATIONS

Resolute!

24th BN ORGANIZATION

Auth Strength: 996

CONDUCT AIR, SEA, RAIL, HIGHWAY TERMINAL AND MULTI-MODAL TRANSPORTATION OPERATIONS

Resolute!

EQUIPMENT AND CAPABILITIES

Resolute!

LSV DETACHMENT

PURPOSE: TO TRANSPORT CONTAINERIZED, BREAK-BULK, AND RO/RO CARGO TO A BEACH OR PORT. ADDITIONALLY PROVIDE INTRA THEATRE MOVEMENTS.

CHARACTERISTICS:
CREW - 32 (8 WO/24 ENL - 24 HR)
FULL LOAD SPEED - 11.5 KNOTS
RANGE - 6,500 NAUTICAL MILES
LENGTH 275.75 FEET
DRAFT - 12 FEET
COST - $302.15 P/H

CARGO CAPACITY:
- 24 M1A1
- 30 M2A2
- 50 X 20' CNTR

LSV

Resolute!

HEAVY BOAT COMPANY

PURPOSE: TO TRANSPORT CONTAINERIZED, BREAK-BULK, AND RO/RO CARGO FROM A SHIP TO A BEACH OR PORT, OR FROM ONE PORT TO ANOTHER PORT.

CHARACTERISTICS:
CREW - 12 (2 WO/10 ENL - 24 HR)
OPERATING SPEED - 10 KNOTS
RANGE - 6500 NAUTICAL MILES
LENGTH - 174 FEET
DRAFT - 9 FEET
COST - $108.48 P/H
CARGO CAPACITY:
- 5 M1A2
- 6 M2A2
- 24 X20' CNTR

LCU - 2000

Resolute!

MEDIUM BOAT COMPANY

PURPOSE: TO TRANSPORT CARGO, TROOPS, AND VEHICLES BETWEEN SHIP AND SHORE. EXCELLENT CRAFT FOR RIVERINE OPS, BARE BEACH JLOTS AND UTILITY WORK IN HARBORS.

CHARACTERISTICS:
CREW - 3 ENL- 12 HR OPS
OPERATING SPEED - 9 KNOTS
RANGE - 270 NAUTICAL MILES
LENGTH - 73 FEET
DRAFT - 5 FEET
COST - $75.74 P/H

CARGO CAPACITY:
60 STONS

LCM - 8

Resolute!

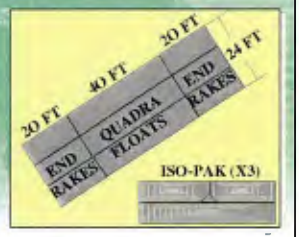
CAUSEWAY COMPANY

PURPOSE: TO PROVIDE THE COMMANDER WITH THE CAPABILITY TO TRANSFER CARGO BETWEEN SHIPS OR FROM SHIP TO SHORE .

CHARACTERISTICS:
PERSONNEL: 4/0/196

CAPABILITIES:
INTERFACE BETWEEN ARMY LIGHTERAGE AND OTHER SHIPS

CONFIGURATIONS:
- CAUSEWAY PIER
- CAUSEWAY FERRY
- RO/RO DISCHARGE FACILITY



MODULAR CAUSEWAY SECTION

Resolute!

MODULAR CAUSEWAY SYSTEM

Floating Causeway Pier

ISO-PAK

Resolute!

MODULAR CAUSEWAY SYSTEM

Causeway Ferry

Roll-on / Roll-off Discharge Facility

Resolute!

CARGO TRANSFER CO

PURPOSE: TO DISCHARGE, LOAD, AND TRANS-SHIP CARGO AT AIR, RAIL, OR TRUCK TERMINALS, WATER TERMINALS LOCATED IN FIXED PORTS OR LOTS OPERATIONS. ADDITIONALLY SUPPLEMENT CARGO/SUPPLY HANDLING OPERATIONS AT CSS SUPPORT ACTIVITIES IN CORPS AND DIVISION AREAS.

CHARACTERISTICS:
PERSONNEL: 6/1/261
EQUIPMENT:
16 ROUGH TERRAIN CONTAINER HANDLER
8 ROUGH TERRAIN CONTAINER CRANE
16 ALL TERRAIN LIFTER ARMY SYSTEM

DAILY CAPABILITIES (Fixed Port):
500 CONTAINERS OR
1000 VEHICLES
ADDITIONAL 2500 STONS BREAKBULK OR 500 CONTAINERS WHEN AUGMENTED BY PORT OPERATIONS CARGO DET

Resolute!

PORT OPERATIONS CARGO DETACHMENT (POCD)

PURPOSE: TO PERFORM TERMINAL OPERATION SERVICES TO DISCHARGE AND LOAD BREAKBULK AND CONTAINERIZEDCARGO AT A PIER OR DURING A LOTS OPERATION.

CHARACTERISTICS:

PERSONNEL: 1/0/94

EQUIPMENT:
- 3 140-Ton Cranes
- 6 4K Electric Forklifts
- 6 6K Electric Forklifts

DAILY CAPABILITIES:
(Fixed Port):
- 500 CONTAINERS OR
- 2500 STON BREAKBULK

140-TON CRANE

Resolute!

DIVE COMPANY

PURPOSE: TO PROVIDE DIVING SUPPORT TO BRIGADE THROUGH THEATER LEVEL COMMANDERS IN THE AREAS OF PORTS, HARBORS AND COASTAL ZONES.

CHARACTERISTICS:

PERSONNEL: 1/0/21
(PER DETACHMENT)

4 LIGHT DETS, 1 X HEAVY DET

CAPABILITIES:
- CONSTRUCTION
- RECONNAISSANCE
- OBSTACLE EMPLACEMENT
- OBSTACLE REDUCTION
- RIVER CROSSING SUPPORT
- MAJOR PORT CONSTRUCTION (HVY)
- SHIP HUSBANDRY (HVY)
- HEAVY SALVAGE OPERATIONS (HVY)

Resolute!

AUTOMATED CARGO DOCUMENTATION DETACHMENT

PURPOSE: TO PROVIDE AUTOMATED DOCUMENTATION DURING UPLOAD, DISCHARGE AND STAGING OF PERSONNEL, EQPT AND SUPPLIES AT AIR, RAIL, TRUCK OR WATER TERMINALS.

CHARACTERISTICS:

PERSONNEL: 1/0/26
(PER DETACHMENT)

2 CARGO DOCUMENTATION TEAMS CONSISTING 10 SOLDIERS

DOCUMENTATION CAPABILITIES:

FIXED PORT: 4 SHIPS PER DAY

LOTS OPNS: 2 SHIPS PER DAY

Resolute!

FORCE CLOSURE COMPONENTS

Resolute!

APS 3

HOW WE GET THERE

Resolute!

Port Opening Package

American Cormorant
Army Watercraft

Gopher State
MCS/CSS

Strong Virginian
Army Watercraft

Resolute!

Port Opening Package

AMERICAN CORMORANT — 3 X LCU 2000 — 1 X BG — 3 X LT

GOPHER STATE — 4 X SLWT — 1X RRDF — 4 X CF
MISSING ANCHORS AND ANCILLARY — 3 X LCM 8 — 1 X FCP

STRONG VIRGINIAN — 4 X LCU 2000 — 2 X LCM 8

Resolute!

VESSEL SAIL TIMES

	*LCU	LSV
TACOMA to KUWAIT	N/A	48.3
STOCKTON to KUWAIT	47.3	N/A
FEVA to KUWAIT	46.0	42.2
HAWAII to KUWAIT	43.3	41.2

Resolute!

VESSEL SAIL TIMES

	LCU	LSV
TACOMA to PUSAN	30.7	30.7
FEVA to PUSAN	26.6	26.1
HAWAII to PUSAN	16.5	16.5

Resolute!

LOTS
HOW WE FIT IN

Resolute!

LOTS DEFINED

"LOTS is the loading and unloading of ships without the benefit of fixed port facilities in either friendly or undefended territory and, in time of war, during phases of theater development. LOTS operations are conducted over unimproved shorelines, through fixed ports not accessible to deep draft shipping, and through fixed ports that are inadequate without the use of LOTS capabilities."

Joint PUB 4-01.6 JOINT TACTICS, AND PROCEDURES FOR JOINT LOGISTICS OVER THE SHORE

Resolute!

ARMY LOTS CAPABILITIES

Notional Task Organization

Resolute!

LOTS OPERATIONS AREA (LOA)

Resolute!

TRAINING
CHALLENGES & IDEAS

Resolute!

CHALLENGE

~~BRIGHT STAR/99~~ WHAT'S NEXT? ~~NATIVE ATLAS/99~~

4 out of the last 4 JLOTS cancelled!

~~FOAL EAGLE/00~~ ~~PURPLE DRAGON~~

Source: USTRANSCOM

Resolute!

SEDRE REDEPLOYMENT THROUGH FORT STORY

Example:

Port to Bare Beach/ Open Ocean discharge

Resolute!

WARFIGHTER REDEPLOYMENT THROUGH FORT STORY

Resolute!

LOTS COST AVOIDANCE

- **Possible reduced sailing days (56.4K per day)**
- **No port operational fees for open ocean, bare beach discharge**
- **Approx 1.2M for BDE set at a fixed port**
- **Avoid all costs to move 7th Group personnel and equipment (and Navy Seabees, too)**

Bottom line- Local bare beach discharges save dollars while providing training opportunities

Resolute!


25TH ID SEDRE
BARE BEACH OPEN OCEAN JLOTS
NTC
JRTC
17 SEPTEMBER-14 OCTOBER 2000
Resolute!


TRANSLOTS 00
NATO MINISTERS VISIT
9-23 JUNE 2000
TP 11
STAGING AREA
ACD


QUESTIONS?
Maj. Wayne Stultz
Plans and Exercise
7th Transportation Group
DSN 927-5416
COM 757-878-5416
EMAIL stultzw@eustis.army.mil
Resolute!

Joint Logistics Over-the-Shore - JLOTS

Commander Glen White
Director, Navy Training EWTGPAC
San Diego, CA
619-437-3714 DSN 577-3714
email whitegt@ewtgpac.navy.mil

AGENDA

- JLOTS Course
- JLOTS CPX
  - Lessons Learned
  - JLOTS Phases

JLOTS Planning & Employment Course

- Tasked by JLOTS Board Nov 97
- Open to all Services/CINC Staffs
- Joint Pub 4-01.6
- Officer & Senior Enlisted
- 3 days
- Exportable
  - Three times this year
  - Six more scheduled
    - very successful

JLOTS CPX

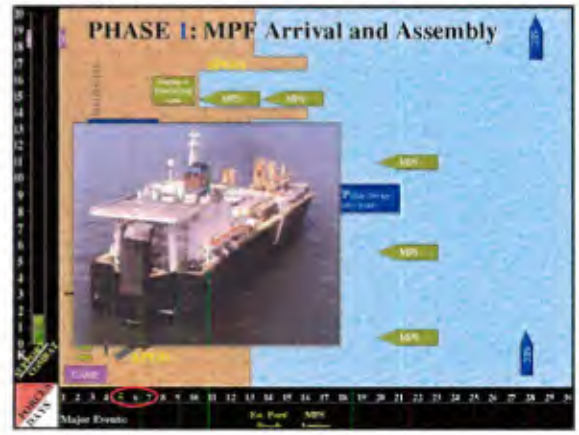
- 11-14 January 2000
- Location: EWTGPAC, Coronado, CA
- Purpose:
  - Game Native Atlas 00 Scenario
  - Game new JLOTS C2
- Major Participants:
  - COMPHIBGRU Three
  - 143rd TRANSCOM
  - 7th Transportation Group
  - Naval Beach Group ONE

Lessons Learned/Recommendations

- Run CPX annually prior to JLOTS Exercise
  - JCS sponsored & scheduled
  - CINC involvement
  - Need OPORDER prior to CPX
  - Host Nation Participation
- Landward and Seaward Security/Force Protection & Medical Plan more fully developed
- MPF to JLOTS transition more fully developed - All FIVE phases

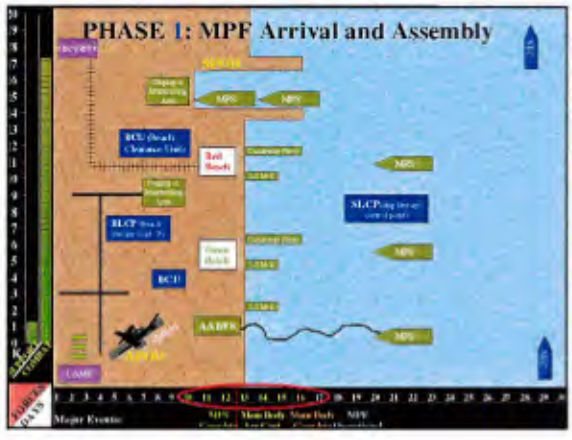
QUESTIONS?


PHASE 1: MPF Arrival and Assembly
SLRP
ADVON
OPP
Major Events:


PHASE 1: MPF Arrival and Assembly
Major Events:


PHASE 1: MPF Arrival and Assembly
BCU
Main Body
Major Events:


PHASE 1: MPF Arrival and Assembly
BCU
Major Events:


PHASE 1: MPF Arrival and Assembly
Major Events:


PHASE 2: Pre-JLOTS
PSA
OPP
SLRP
Trans Group
PREPO ADVON
Major Events:

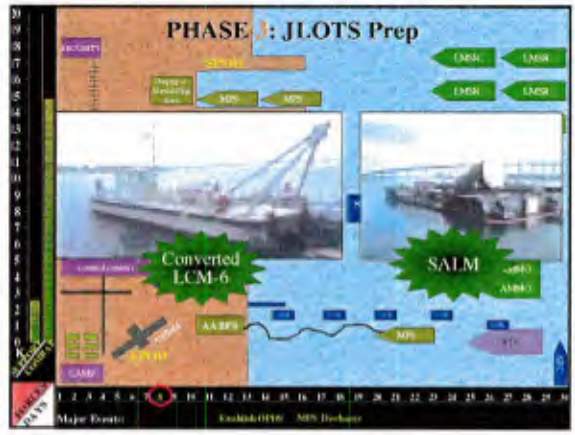

PHASE 2: Pre-JLOTS
Major Events:


PHASE 2: Pre-JLOTS
Major Events:


PHASE 3: JLOTS Prep
300,000 +/- Sq Ft of Cargo Space
950' long 35+ft Draft
Carries a 2X2 BDE
Currently 6 in APS -3
Major Events:

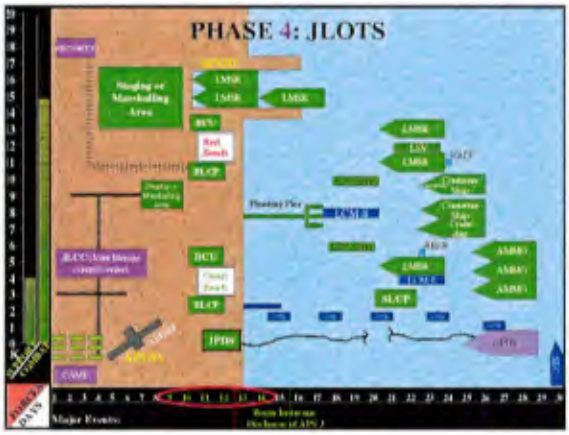

PHASE 3: JLOTS Prep
Carries 24 M1A1's
Self Deployable 12 knots
Forward Deployed
Shallow Draft 12 ft.
Major Events:


PHASE 3: JLOTS Prep
5 Tankers (2 JWD 3RRF)
Delivers up to 1.2 Mill Gal. of product
5 QUB's
Major Events:


PHASE 3: JLOTS Prep
Converted LCM-6
SALM
Major Events:


PHASE 3: JLOTS Prep
Staging or Marshalling Area
LMSR
LSV
Container Ship
Container Ship Crane Ship
MPS
AMSO
BCU
SLCP
IPDS
Floating Pier
Major Events:

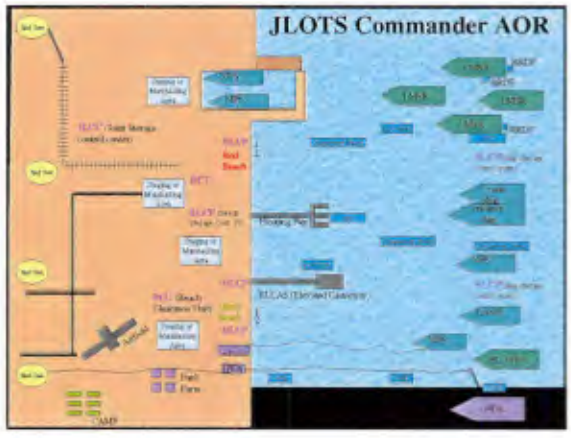

PHASE 4: JLOTS
Staging or Marshalling Area
LMSR
LSV
Container Ship
Container Ship Crane Ship
AMSO
BCU
SLCP
IPDS
Floating Pier
Major Events:


PHASE 4: JLOTS
Staging or Marshalling Area
LMSR
LSV
Container Ship
AMSO
BCU
SLCP
IPDS
Floating Pier
Major Events:


PHASE 4: JLOTS
2 Systems ELCAS (M) (N2)
Critical to throughput across to beach
Staging or Marshalling Area
LMSR
AMSO
BCU
SLCP
IPDS
Major Events:


PHASE 4: JLOTS
Staging or Marshalling Area
LMSR
BCU
SLCP
IPDS
Major Events:


PHASE 5: JLOTS Sustainment
Staging or Marshalling Area
Container Ship
LMSR
SLCP
IPDS
Major Events:


JLOTS Commander AOR


JTF CDR
JLOTS
NAVFOR
PHASE I
Major Events:

NAVFACHQ NCF PROGRAM MANAGEMENT

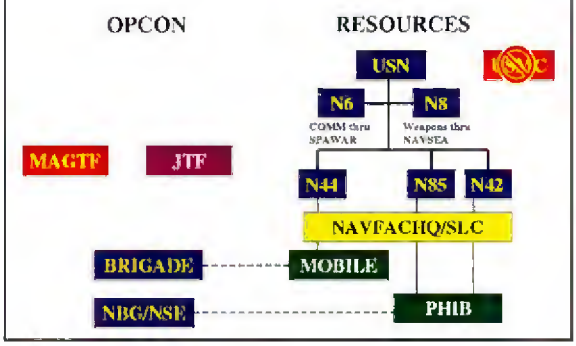
CAPT Jim Barrett
Director, Seabee Readiness
NAVFACHQ
29 Mar 00

SYSCOM Responsibilities

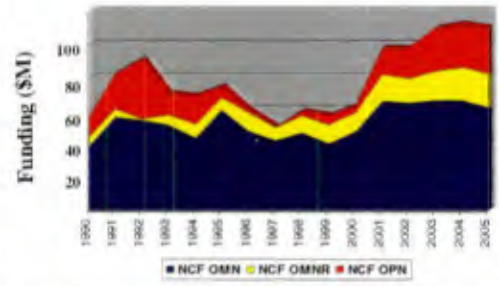
- NCF Program Management - Acquisition
  - Oversight of hardware procurement
    - Planning-Programming-Budget (PPBS) Process
    - Requirements Based on ROC/POE
    - Initial Outfitting
  - Oversight of TOA Management
    - Contents and Configuration
    - Recapitalization Strategy
    - Mobile TOA worth about $35M

The Seabee Logistics Center operates as NAVFAC's execution agent for NCF.

Relationships

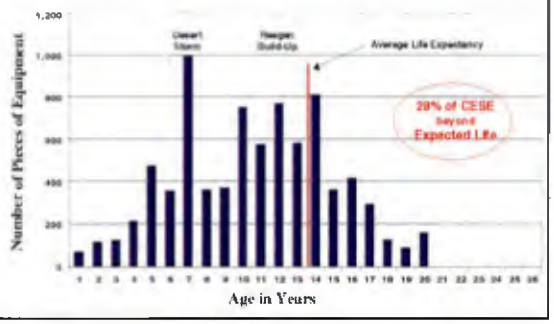


NCF Funding: FY90-FY05



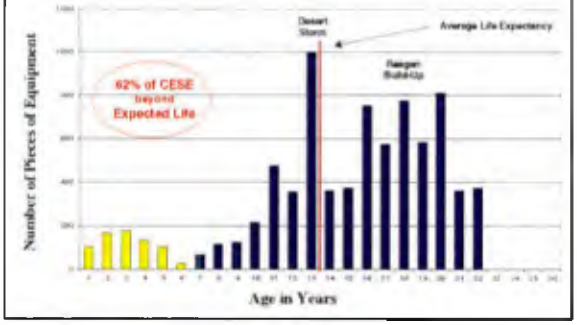
Age of NCF CESE

Current: As of 1 Jan 99



Age of NCF CESE

Projected as of 1 Jan 05 (with PR-01)



PR-01
The Approach

- Goal: To Start TOA Recapitalization Process
- Naval Expeditionary Engineer Force Initiative
  - Focused on 14 Construction Battalions
  - Top Priority: Tactical Vehicles for Interoperability
  - Sought additional $165M for TOA "Modernization"
    - Approx $15M per Battalion x 11 Battalions by FY05
    - Remaining 3 Battalions in FY06-FY07

	FY01	FY02	FY03	FY04	FY05
POM-00		$ 0.0	$15.0	$15.0	$15.0
PR-01 Request	$15.0	$15.0	$30.0	$30.0	$30.0
# NMCBs Modern:	1	1	3	3	3

PR-01
The Result

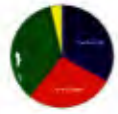
- Received Strong Support from N4/N80

	FY01	FY02	FY03	FY04	FY05	Total
POM-00	$ 0.0	$ 0.0	$15.0	$15.0	$15.0	$ 45.0
PR-01 Request	$15.0	$15.0	$30.0	$30.0	$30.0	$135.0
N80 CPAM :	$35.0	$22.0	$19.0	$20.0	$22.0	$118.0
Final PR-01	$20.0	$22.0	$19.0	$20.0	$22.0	$103.0
# NMCBs Modern:	1.3	1.5	2.2	2.3	2.3	9.6

- Vast Improvement over Past Funding !
- Funded Other Critical Requirements:
  - Prepositioning of 3rd TOA with MPSRON
  - Containerization of TOAs
  - Cold Weather Gear

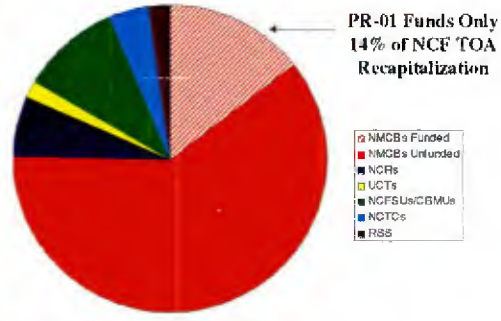
PR-01
What It Did Not Do

- Modernization Reqm'nt Remains for 4.4 NMCBs
  - Focus Remains on Tactical Vehicles
- Does Not Fully Recapitalize NMCBs
  - Const & Maint Equip TOA
  - Tactical Support TOA



- Does Not Recapitalize Other NCF Units
  - NCRs, UCTs, NCFSUs, CBMUs, NCTCs, RSSs
- Total NCF TOA Req: $1,070 M
  POM00/PR01 Recap Funding: $ 148 M
  - Replacement Cycle (32 Yrs) Exceeds Life of Equipment

PR-01
What Is Left to Recapitalize



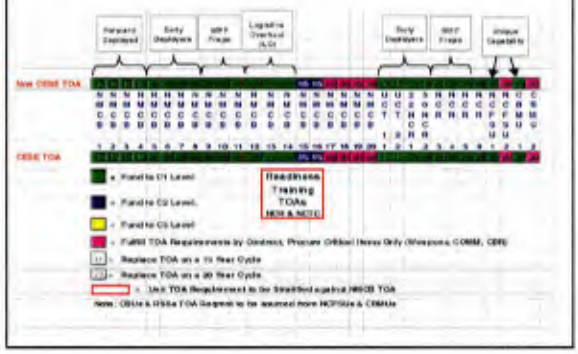
POM-02
DPG Guidance

- NCF Recapitalization and Manpower initiatives were validated as DoD wide Engineer problems in FLOW war game. Consensus:
  - » Not enough Engineers to support mission requirements
  - » Engineer readiness hurt by deteriorating equipment
  - » Engineer readiness was one of Top 4 war game issues!
- JCS Input to OSD for DPG Guidance:
  - » "Contingency Ops have surfaced significant engineer deficiencies and insufficient Engineer assets"
  - » Directs study of "active/reserve force mix" and "recapitalization/ modernization of engineer equipment"
  - » "Study to drive programming of engineer capabilities"

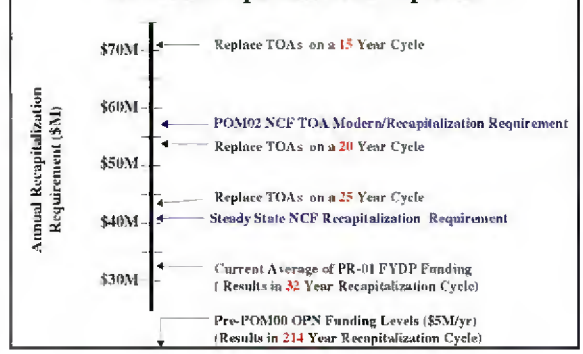
NCF TOA Recapitalization
POM-02 Approach

- Scrub TOA Recapitalization Requirement Hard
- Develop Comprehensive Recapitalization Plan
  - Goal:
    - Highest Readiness at Most Economical Cost
    - Balance Between Readiness & Risk
- Finish NEEF Modernization
- Commence Recapitalization of All TOAs

NCF TOA Utilization & Recapitalization Plan

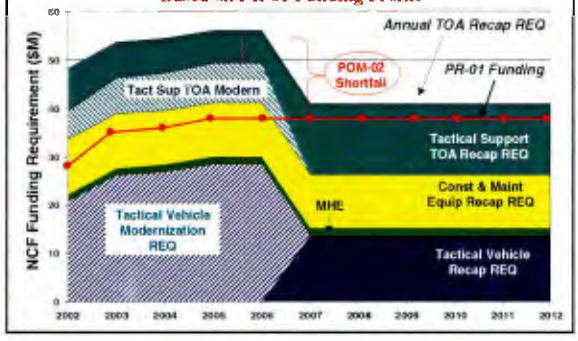


Comparison of TOA Recapitalization Options



TOA Funding Requirements

Recapitalization plus NEEF Modernization Based on PR-01 Funding Profile



NCF POM-02 Issue

Priority 1a: Recapitalization

- Modernize Remaining 4+ NMCBs in FY06-07
- Will Submit 2 Recapitalization Issues
  - Construction & Maintenance Equipment TOA Recap Shortfall
  - Tactical Support TOA Recap Shortfall
- Will Submit Issue for TOA Support Contract

	FY02	FY03	FY04	FY05	FY06	FY07
POM00/PR-01*	$28.0	$35.0	$36.0	$38.0	$38.0**	$38.0**
Const & Maint EQ	$11.3	$11.3	$11.3	$11.3	$11.3	$ 1.5
Tact Support TOA	$ 8.9	$ 7.4	$ 7.1	$ 6.7	$ 6.7	$ 1.6
TOA Contract	$ 1.0	$ 1.0	$ 1.0	$ 1.0	$ 1.0	$ 1.0
POM02 Totals:	$49.2	$54.7	$54.4	$57.0	$57.0	$42.1
TOA Modernized:	1.8	2.2	2.3	2.4	2.4	1.0

* Includes SLEP ** Continuation of PR-01 Funding for FY-06/07

SEALIFT RESEARCH AND DEVELOPMENT

MARTY FINK
NAVAL SEA SYSTEMS COMMAND, PMS 308 - PEO EXW (PMS 325R3)
DSN 332-0920, ext 109 COMM(703)602-0920, ext 109 FinkMD@navsea.navy.mil

29 MARCH 2000

1

PROJECT AREAS

JLOTS SYSTEMS LEVEL

- System option study updates
- JLOTS master plan updates
- Planning tools
  - (S) "JLOTS Environmental Requirements Study" (Issued Mar 1999)
  - CD-ROM (or On-line) capabilities/mission planner

2

PROJECT AREAS (CONT.)

SHIP OPERATIONS / INTERFACES

- Ship Heading Control
- Ramp/Platform Interface
- Ship/Lighter/Platform mooring and fendering systems
- T-ACS/Containership Interface
- Personnel Transfer (lighter to/from ship)
- Advanced Lighter Simulator
- Phone/Distance Data Link
- OPDS Improved Mooring System

3

PROJECT AREAS (CONT.)

CARGO MOVEMENT SYSTEMS

- CRANE / LOAD PENDULATION CONTROL
  - Advanced Shipboard Crane Motion Control System(ATD)
  - Improved Rider Block Tagline System
- CRANE / LOAD VERTICAL MOCOMP
  - Platform Motion Compensation
  - Lighter System Impact
  - Spreader Bar Tagline System
  - Intelligent Spreader Bar
  - Crane Operator Stereovision

4

PROJECT AREAS (CONC.)

- CARGO HANDLING SYSTEMS
  - Lightweight Rigging
  - OMNI Directional Transporter
- PRIOR PROJECTS
  - Float-Ballast Breakwater
  - Crane Operator Sensory Feedback
  - LCAL/LASH Ship Lift
  - Vertical Pallet lifter
  - Tensioned Hose for OPDS

5

JLOTS SYSTEMS LEVEL

6

JLOTS SS 3 Options Study Update
JLOTS Master Plan Update

Objective

Update 1996 JLOTS SS3 Options Study
Update 1997 JLOTS Master Plan

Milestones

- Enabling Technologies Synopsis Update — FY00 1st qtr
- Update Tech sheets and Master Plan Data — FY00 2nd qtr
- JLOTS Master Plan Update — FY00 3rd qtr

Lays groundwork for Joint Navy/Army JLOTS Improvement Program

7

JLOTS PLANNING TOOLS

Develop a planning tool and procedures to assist CINC level planners in the selection of JLOTS systems and lighters to deploy.

Update environmental study with additional data or sites.

8

JLOTS PLANNING TOOLS

- Completed and distributed environmental data report.
Investigate combining with Army effort to document worldwide nearshore sea state probability and inland trafficability.

- Develop an easy to use JLOTS primer and planning computer program for CINC planners to use when initiating planning for JLOTS or for "what if" drills. It will include a model to provide estimate of cargo throughput for systems selected for deployment.

3rd Qtr 99	JLOTS Environmental Study - Delivered
FY00	Planner interviews / Acquire Planning Software
FY 00	Prototype planning tool & documentation
FY 00/01	Verification and Validation, fleet introduction

9

SHIP OPERATIONS / INTERFACES

10

Ship Heading Control

Objective:

Control ship at optimum heading relative to environment.

Benefits:

- Reduction of roll motion, the primary cause of crane cargo heave and pendulation and RO/RO ramp torsion.
- Create a lee which can be used as a sheltered lighter station.

Possible Solutions

- Tugboats
- Active rudder
- Stern anchor
- Stern thruster

11

Ship Heading Control

Plan:

- ✓ Research ship wave interaction
- ✓ Investigate technology and procedures
- Complete parametric analysis
- Report and Recommend future actions

12

RO/RO Ramp to Platform Interface

Develop a SS3 interface capability between ramps of existing RO/RO ships and existing and future causeway platforms

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RO/RO Ramp to Platform Interface

- **Increase RO/RO operations window through sea state 3 (3.5 to 5 ft. sig. wave ht.)**
  - Provides significantly increased operational time
- **Avoid costly RO/RO ship ramp modifications**
  - Single RO/RO ramp modification costs $$$$
- **Enable operations with MPF, RRF, Commercial and foreign RO/RO vessels**
- **Reduced maintenance on dunnage**

14

Ship/Lighter/Platform Interface

Develop sea state 3 capable docking and mooring systems for JLOTS lighters, ships and platforms.

15

Ship/Lighter/Platform Interface

FY99:

- **Defined interface problems**
  - **Navy/Army operator feedback**
  - **Brainstorming**
- **Benchmarked motion analysis (T-ACS + NL CF)**
- **Initiated technology survey**

FY00:

- **Completed motion analysis of SLP interfaces (T-ACS, LMSR, RRDF, JMLS, LCU-2000, LSV)**
- **Develop performance requirements**
- **Complete technology survey**
- **Evaluate concepts & select system(s)**
- **Conduct preliminary design & engineering analysis**

16

T-ACS/CONTAINERSHIP INTERFACE

Develop a sea-state-three T-ACS to containership fendering and mooring system that will improve the current capability to on/offload cargo.

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T-ACS/CONTAINERSHIP INTERFACE

STATUS

- CD/NSWC is investigating mooring and fendering for T-ACS, Panamax, and Post-Panamax ships in SS-3
- DD/NSWC (CSS) is investigating the Geometry of above ships to determine load/offload limitations
- Determine if current T-ACS mooring, fendering and geometry suffice. If not, develop a POA&M for follow up efforts
- Deliverable: Final report

18

Personnel Transfer

Ensure the safe transfer of JLOTS personnel between small craft and cargo ships in sea state 3

19

Advanced Lighter Simulator

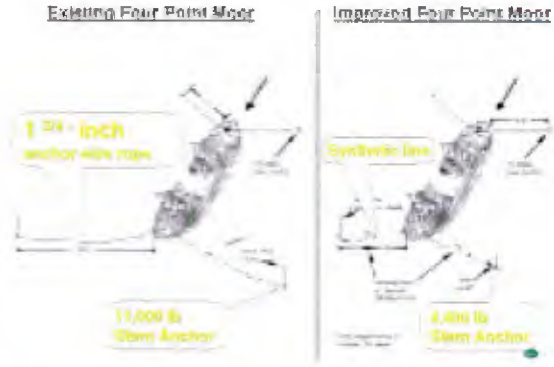
Provide realistic simulation of entire lighter operating environment including sea state 3 to evaluate simulator/trainer technology, support JMLS development and support NL and JMLS crew training

PHONE, DISTANCE, AND DATA LINK

Develop a wireless system that will replace the existing hand tended phone and distance rig to reduce manning, improve personnel safety, and enhance communications between combatants and MCDS equipped ships during underway replenishment operations.

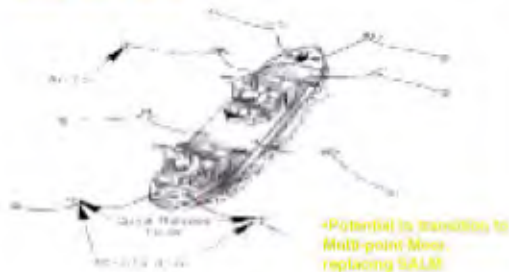
21

OPDS Improved Mooring System (IMS)



Future IMS Benefit

•Multi-point Moor



•Potential to transition to Multi-point Moor replacing SALM

OPDS IMS Benefits

- Utilizes proven commercial technology
  - Lightweight anchors
  - Lightweight synthetic rope
- Significantly increased safety
- Increased holding power
- Easier, less time to deploy and retrieve
- Provides unassisted, emergency breakaway

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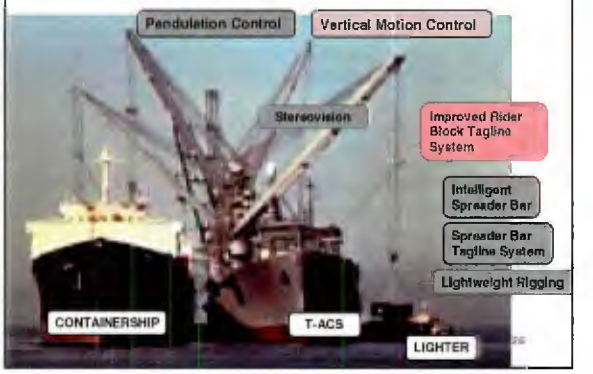
CARGO MOVEMENT SYSTEMS

Shipboard Crane Systems



CRANE/LOAD PENDULATION CONTROL

Advanced Shipboard Crane Motion Control System (FY00 Start ATD)

Problem - Pendulation

Load pendulation is caused by:
- crane operator
- ship motion
- system dynamics

Pendulation slows all crane operations in any sea state and prevents any safe crane operations from high sea state 2 through sea state 3.

This ATD solves these problems.

Technical Approach

- Sensors and computer with dynamic control algorithms to be integrated with minimum impact on existing crane machinery
- Realistic crane simulator for development evaluation, operator acceptance and training
- Ship roll stimulation system to generate motions of the ship for testing, demonstration and long term training
- Shipboard crane installation for testing pierside and at anchor
- USJFCOM exercise demonstration

Pendulation Control Algorithm Development

- Video

CRANE SIMULATOR

Increase the existing crane trainer to include a T-ACS ship, the IRBTS and the pendulation control system.

31

Roll Stimulator Concepts 1/8th Scale Model

SHIP ROLL STIMULATOR

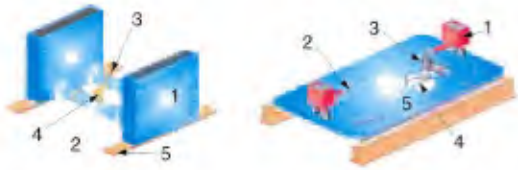
Major Components of Final Roll Stimulation Concepts

FLUME TANKS

1. Water Tanks
2. Transfer Tubes
3. Butterfly Valves
4. Hydraulic Bow Thruster Units
5. Base Mounting Board

COUNTER ROTATING WEIGHTS

1. Weighted Carts
2. Drive Shafts & Bearings
3. Drive Motor & Reduction Gear
4. Reversing Chain Drive



ROLL STIMULATOR COMPARISON

CRW	1/8 Scale Model	Full Scale Model
Cart Dimensions	16"x10"x12"(H)	8'x8'x5'(H)
Cart Rotation	In Opposition	In Opposition
Dist. C.O.R. to Cart CG	27"	17'
Dist. betw. C.O.R.	72" Apart	24' Apart
Cart Weight (lb)	50-150 lb. (Variable)	25-75 LT (Variable)
Power Source	2 HP AC Motor, Var. Freq	100-250 HP Motors, Var. Freq
Synchronization	Via Chain & Gears	TBD
Roll Period	2.5-4 Seconds	10-16 Seconds

FLUME	1/8 Scale Model	Full Scale Model
Tank Dimensions	60"x12"x18"(H)	40'x8'x20'(H)
Transfer Tubes	Reversible Flow Bow Thrusters	Variable Flow Axial Pumps
Tube Diameter	9" OD	69" OD
Dist. betw. Tank Centers	90"	58'
Max. Tank Capacity	1200 LB Water	170 LT Water
Transfer Rate	260 LB per Roll Period	52 LT per Roll Period
Power Source	One 5 HP Hydraulic Motor	Three 150 HP Hydr. Motors
Safety Feature	Butterfly Valves Limit Free Surface Movement when off	Gate Valves Limit Free Surface Movement when off
Roll Period	2.5-4 Seconds	10-16 Seconds

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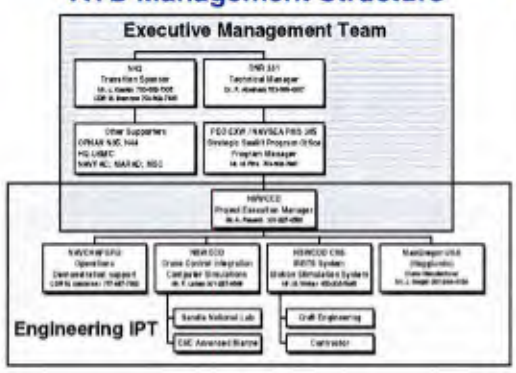
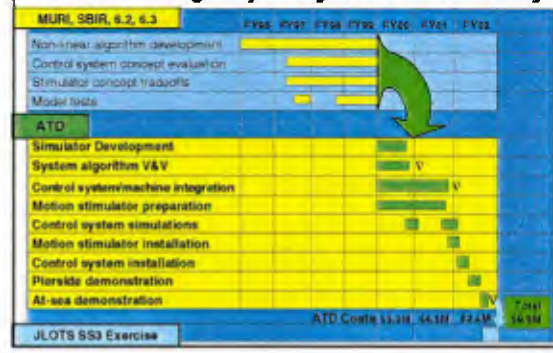
ATD Management Structure



Product Demonstration

Total Funding Trajectory / Milestone History



INTEGRATED RIDER BLOCK TAGLINE SYSTEM (IRBTS)

Develop an improved RBTS by automating the control system aboard T-ACS and LMSR ships and eliminate slack rope conditions, increasing safety and operator efficiency.

37

CRANE/LOAD VERTICAL MOCOMP

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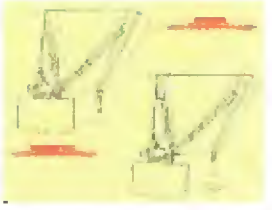
PLATFORM MOTION COMPENSATION (PMC)



Develop a system to compensate for the vertical motion of a load caused by own ship motion. Investigate relative motion between the ship and a lighter.

39

PLATFORM MOTION COMPENSATION (PMC)

A PMC was previously developed by CSS, installed aboard T-ACS 1 and successfully tested during the 1980s. The system was excessively costly and discarded. The new effort will concentrate on developing a cost effective capability, using the existing hardware with modifications, using new technology. This effort complements the pendulation control effort to be pursued under the Crane ATD toward obtaining complete load stabilization.

40

LIGHTER SYSTEM IMPACT

Review previous development efforts and technology to develop a capability to reduce the impact of loads during cargo transfer to a lighter in sea state three.

- **Investigate ideas and technologies for reducing load impact of loads on lighters in sea-state-3; consider swells**
- **Determine alternatives with highest payoff**
- **Prepare POA&M**
- **Develop system and demonstrate**

Note: Joint CDNSWC and DDNSWC Effort

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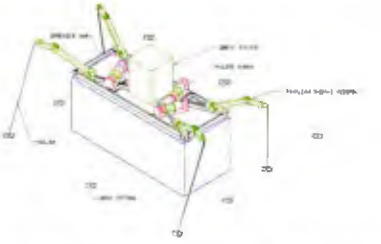
Spreader Bar Tagline System



Reduce pendulation and provide positive control of containers during sea state 3 transfer from the T-ACS ship to alongside lighters via powered taglines.

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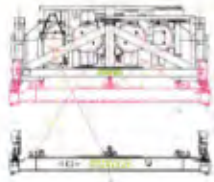
Intelligent Spreader Bar System



6 Degree-of-freedom spreader bar system for rapid connection to and placement of containers in sea state 3.

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Stereovision for Crane Operation

- Installation on Flickertail State - Apr 00
- Functional System Testing
- Crane Operator Training
- Operational Testing

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Stereovision for Crane Operation

Employ camera systems to assist the crane operator:

Increase productivity
Increase Safety
Reduce damage to cargo and equipment
Aid in operations in rough weather
Ease operator fatigue and stress

Camera Locations:

Boom-Tip
Mid-Boom
Rail (view of lighter or pier)

Stereovision System:

Dual cameras send real-time video to stereo-capable displays.
A variety of display methods exist
Lightweight, partial immersion head mounted display (HMD) selected

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CARGO HANDLING SYSTEMS

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Lightweight Rigging

Objective Provide durable, cost effective lightweight rigging system for JLOTS crane lifts.

Accomplishments Researched literature, selected materials (synthetic slings and steel sling shackles) Purchased test materials

Tested lightweight slings during NAVCHAPGRU MPF download / upload operations at Blount Island Command

FY00 Evaluate data and lessons learned, work with NAVCHAPGRU to incorporate as standard purchase

47

OMNI-DIRECTIONAL TRANSPORTER

Develop, fabricate, and test a first article omni-directional transporter (ODT) to be deployed on MCDS equipped and MSC-CLF ships.

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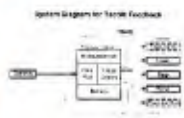
PRIOR PROJECTS

FLOAT BALLAST BREAKWATER (FBB)

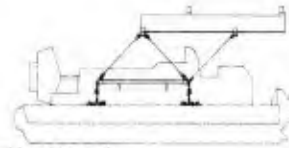
Develop a system that forms a protected area of reduced waves for cargo operations in a sea-state-3 environment, using geometric arrangements of very large tankers, large ships, other structures, or combinations thereof.

CRANE OPERATOR SENSORY FEEDBACK



Provide a T-ACS crane operator with a non-visual sensor system to enhance load/lighter relative position information via a tactile interface. This will improve operator productivity and situational awareness.

LCAC / LASH Ship Lift



Rigging system fabricated and land tested
Ship test schedule TBD

VERTICAL PALLET LIFTER

- Marine, hydraulic crane that plumbs the hatch area and spots pallet loads on main deck where they are transferred to the MCDS station for subsequent transfer to the receiving ship. The VPL reduces load pendulation due to its short load line length over the Yard-and-Stay Rig, and thus increases operating crew safety.
- **Status:** 5 Systems installed on the SS CAPE JACOB. Cranes and their installations are certified by ABS and approved by NAVSEA (NAVSSES) for ordnance handling. VPL cranes were used successfully at sea during a recent exercise involving the MCDS. The VPL meets the MCDS throughput requirement of 30 loads per hour.
- **Future Plans:** Five MCDS ships remain to be outfitted with the VPL. Approximate cost is $2.5M per ship.

VERTICAL PALLET LIFTER (VPL)

Provide MCDS equipped ships with a sea state 3 strike-up capability during underway replenishment operations.

VERTICAL PALLET LIFTER

TENSIONED HOSE FUELING AT-SEA (THFASS) FOR OPDS TANKERS

Extend capability of the Offshore Petroleum Discharge System tanker to be re-supplied from other tankers in higher sea states using THFASS technology.

The End

AMPHIBIOUS BULK LIQUID TRANSFER SYSTEM (ABLTS)

MARCH 2000

MIKE SMITH
SEABEE LOGISTICS CENTER
SEALIFT SUPPORT FACILITIES
(805) 982-3205
(805) 982-5195 FAX
smithml@slc.navfac.navy.mil

Amphibious Bulk Liquid Transfer System

POTABLE WATER SUBSYSTEM

Amphibious Bulk Liquid Transfer System

FUEL SUBSYSTEM

Amphibious Bulk Liquid Transfer System

Unique Features

- Lay Flat Hose
- Bow Assembly
- Powered Hose Guide
- Hose Deployed and Retrieved from Tandem Hose Reels
- Hydraulically Driven Spool
- Lighting System for Night Operations
- Machinery Compartment
- Air Certified

Amphibious Bulk Liquid Transfer System

Contractor Demonstration

- Date
  - 9 AUG through 13 AUG 99
- Location
  - seaward side of Naval Amphibious Base, Coronado, CA
- Deployed, Flow Tested, and Retrieved 10,000 ft. of 4-Inch Water Hose
- Deployed, Flow Tested, and Retrieved 10,000 ft. of 6-Inch Fuel Hose
  - 7,000 ft. deployed during daylight operation
  - 3,000 ft. deployed during nighttime operation

Amphibious Bulk Liquid Transfer System

4-Inch Water Hose Retrieval

Amphibious Bulk Liquid Transfer System

6-Inch Fuel Hose Deployment

Amphibious Bulk Liquid Transfer System

Performance Comparison

CHARACTERISTICS	AABFS/AABWS	ABLTS
System Deployment		
• 4-Inch Water Subsystem	12 hours	6 hrs 20 min
• 6-Inch Fuel Subsystem	16 hours	5 hrs 30 min
System Retrieval		
• 4-Inch Water Subsystem	16 hours	8 hrs 30 min
• 6-Inch Fuel Subsystem	20 hours	7 hrs 0 min
Fluid Throughput		
• 4-Inch Water Subsystem	250 GPM	Same (250 GPM)
• 6-Inch Fuel Subsystem	600 GPM	Same (600 GPM)

Amphibious Bulk Liquid Transfer System

Improvements

- Hose Reel and Bow Assembly Materials
  - change from carbon steel to stainless steel
- Fuel and Water Hose
  - Increase jacket thickness and jacket material hardness
    - Benefits of change
      - greater resistance to cuts and tears
      - greater burst capacity
      - greater tensile capacity
      - increased life expectancy
- Powered Hose Guide
  - no interference during hose deployment
  - positioned in front of spool for hose retrieval

Amphibious Bulk Liquid Transfer System

Production Unit Contract Status

- Contract Awarded — 29 OCT 99
- Protest Lodged — 4 NOV 99
- Contract Terminated and Rescinded — 20 NOV 99
- RFP Re-issued — 15 JAN 00
- Contract Awarded — 28 FEB 00
- Protest Lodged — 7 MAR 00
- 3 Month Delay Due to Protest

Amphibious Bulk Liquid Transfer System

Production Unit Delivery Schedule for Basic Contract

SUPPLIES/ SERVICES	NUMBER OF HOSE REELS	DELIVERY DATES	DESTINATION
ABLTS System	3	30 NOV 00	ACB1
ABLTS System	3	30 NOV 00	ACB2
ABLTS Systems	12	(3) 30 MAR 01 (3) 30 APR 01 (3) 30 MAY 01 (3) 30 JUN 01	BICmd
ABLTS First Article	3	(3) 30 JUL 01	BICmd

Amphibious Bulk Liquid Transfer System

Delivery Schedule for Option 1

SUPPLIES/ SERVICES	NUMBER OF HOSE REELS	DELIVERY DATES	DESTINATION
ABLTS Systems	12	(3) 30 AUG 01 (3) 30 SEP 01 (3) 30 OCT 01 (3) 30 NOV 01	BICmd

Amphibious Bulk Liquid Transfer System

Delivery Schedule for Option 2

SUPPLIES/ SERVICES	NUMBER OF HOSE REELS	DELIVERY DATES	DESTINATION
ABLTS Systems	12	(3) 30 JAN 02 (3) 30 FEB 02 (3) 30 MAR 02 (3) 30 APR 02	BICmd

Amphibious Bulk Liquid Transfer System

Delivery Schedule for Option 3

SUPPLIES/ SERVICES	NUMBER OF HOSE REELS	DELIVERY DATES	DESTINATION
ABLTS Systems	12	(3) 30 AUG 02 (3) 30 SEP 02 (3) 30 OCT 02 (3) 30 NOV 02	BICmd

Amphibious Bulk Liquid Transfer System

Delivery Schedule for Option 4

SUPPLIES/ SERVICES	NUMBER OF HOSE REELS	DELIVERY DATES	DESTINATION
ABLTS Systems	12	(3) 28 FEB 03 (3) 30 MAR 03 (3) 30 APR 03 (3) 30 MAY 03	BICmd

Amphibious Bulk Liquid Transfer System

Inventory Objective

- MPF ships
  - 3 hose reels (fuel & water) each and accessories x 13 = 39
- ACB1
  - 3 hose reels (fuel and water) and accessories = 3
- ACB 2
  - 3 hose reels (fuel and water) and accessories = 3

Amphibious Bulk Liquid Transfer System

Inventory Objective (continued)

- EWTGPAC
  - 3 hose reels (fuel and water) and accessories (prototype) = 3
- BICmd
  - 3 hose reels (fuel and water) rotation for MPF ships = 3
- Total Number of Reels = 51

Note: ABLTS logistics support contract will be awarded within 30 days of hardware contract

TA67

AMPHIBIOUS CONSTRUCTION BATTALION HOMEPORT TOA

WHAT IS IT?

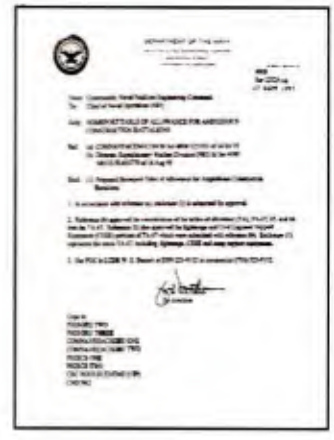
- Combination of Wartime/Homeport
- TA07 - Wartime TOA
- TA65 - PHIBCB ONE-Homeport TOA
- TA66 - PHIBCB TWO-Homeport TOA

WHY CONSOLIDATE?

- STRATIFY TRAINING ASSETS AGAINST WARTIME REQUIREMENTS
- REDUCE DUPLICATION OF REQUIREMENTS
- ENHANCE MOBILITY BY REDUCING WEIGHT/CUBE
- STREAMLINE INVENTORY MANAGEMENT OF AVAILABLE ASSETS
- SAVE FUNDING DOLLARS

TA67 STATUS

- MARCH 97 - COMPLETED 1200 MAN CAMP.
- APRIL 97 - LETTER SENT BY NAVFAC TO PHIBCB'S TO CHOP, FINALIZE AND RETURN CHANGES/APPROVALS BY END OF APRIL 1997.
- JUNE 97 - TOA TO NAVFAC FOR CNO APPROVAL* (*Time adjustable from 07-30 days)

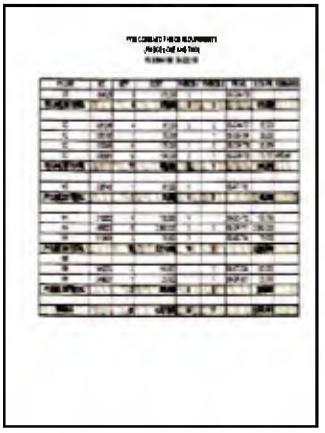


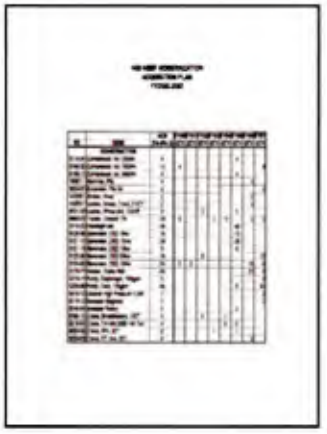
ACQUISITION PLAN

1. The plan was tailored to the Facility, Assembly/EC level to give procurement flexibility at the NSN level.

2. Some clothing & Cranes were cut to stay within budget.

3. The plan will divide the true adds between the units.





FUTURE EXPECTATIONS

- Meeting with both PHIBCBs on CESE & other TOA issues
- NBG'S AND BMU'S ALSO HAVE 2 ALLOWANCES EACH (WARTIME & HOMEPORT)-NEED TO CONSOLIDATE
- NBG 1 & 2 - TA17(W) & TA61,TA62 (HP)
- BMU 1 & 2 -TA18(W) & TA63,TA64 (HP)

D-DAY MOBILE FUEL DISTRIBUTION (DMFD)

Buck Thomas
Chip Nixon
Mark Miller

29 Mar 00

Task Overview

Requirement: Navy has the mission to supply fuel ashore in support of USMC assault forces.

Objective: Develop a system/method to accomplish ship-to-shore fuel transfer during an Amphibious Assault (D+0 thru D+3).

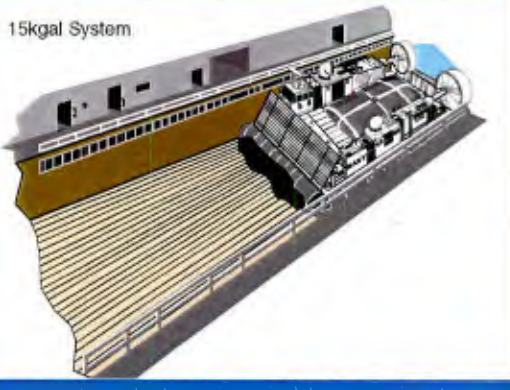
Drivers: Retirement of LST/Increasing Standoff

Approach: Use Landing Craft, Air Cushion (LCAC) as high capacity, high speed delivery platform.

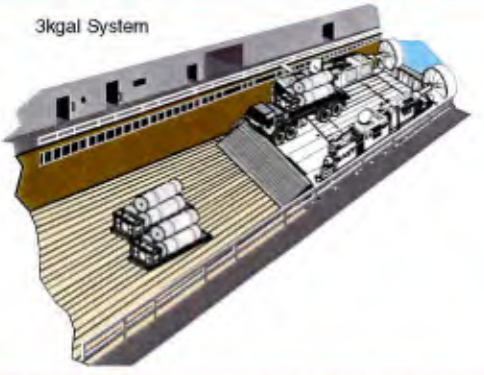
Task Overview

- Deliverables:
  - 15,000 Gal. System
    - Single System
    - Fixed to LCAC Deck (Dedicated Platform)
  - 3,000 Gal. System
    - Multiple Systems
    - Flat Rack Mounted (LVS Compatible)
  - 400 Gal. System
    - Multiple Systems
    - Mobile (MHE/Air Lift)
    - Transportation/Manifold Pallet
    - Modular Pump Assembly
- Demonstrations/Testing
  - *FY98/99*
    - DMFD Component Testing (Loads, Interfaces)
  - *FY00*
    - Initial Fleet Evaluation/Testing
    - Fleet Demonstration

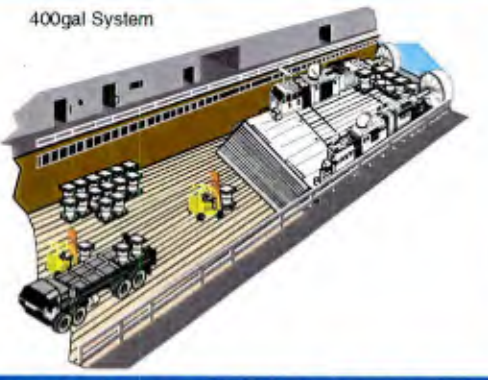
15kgal System



3kgal System

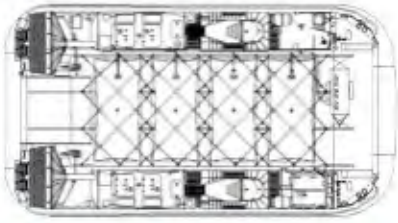


400gal System



DMFD FY99 Milestones

- 15kgal System Development
  - Basic Design Completed



DMFD FY99 Milestones

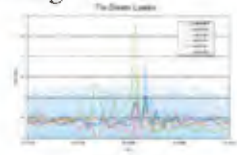
- Full System Fabrication Complete July 98
- LCAC Interface Testing Aug 99
- Tanks, Restraints, Manifold Optimized in FY 99

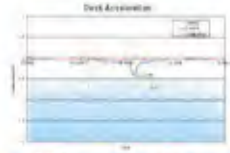
DMFD FY99 Milestones

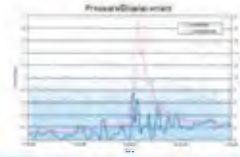
- LCAC Dynamic Testing Sep 98

DMFD FY99 Milestones

15kgal Dynamic Testing







DMFD FY99 Milestones

- LCAC Range Extension and Re-Fueling Capability System Developed
  - CSS (LCAC ISEA)
  - LCAC In-transit Fuel Transfer System (LIFTS)
  - Frame mounted Pump and Transfer Hoses
    - Uses Existing LCAC Transfer Pump
    - Plumb Directly to LCAC Tanks or Fill through Forward Fueling Fittings
    - Reel mounted Hose to Fuel other Vehicles ie AAAV

DMFD FY99 Milestones

- 3kgal System Development

  Tanks of Lightweight, High Strength CSSHW Construction.

  - 36-in. CSSHW Loom Operational. Loom Mechanism has been Modified to allow Weaving of Heavier Yarns
  - Development of an Automated Control Necessary to Achieve Repeatability
  - Work on 54-in Loom CSSHW Modifications has been Suspended
  - Developmental System Fabricated
    - 36-inch Tanks (1500x1500 Denier Kevlar)
    - Pallet Interface and Restraint
    - Tank Manifold Hardware

DMFD FY99 Milestones

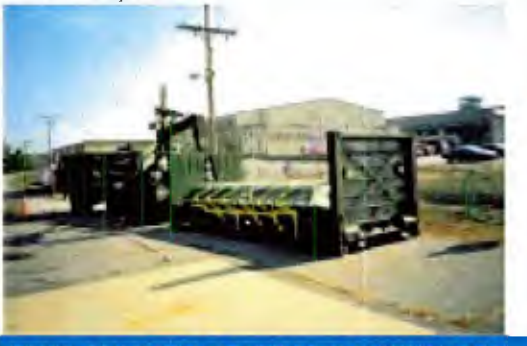
- Preliminary Testing Conducted at Ft. Devens using Army PLS and Camp Pendleton using USMC LVS MK48/18A1
  - Interfaces
    - Restraint System to Pallet
    - Tanks to Restaint System
    - Manifold to Pallet
    - Pallet to LCAC
  - Vehicle Testing
    - On-road/Off-road
      - LCAC loading
      - Emergency Manuevers
      - Rough Terrain

DMFD FY99 Milestones

System Components

DMFD FY99 Milestones

Assembled System



DMFD FY99 Milestones

DMFD FY99 Milestones

DMFD FY99 Milestones

DMFD FY99 Milestones

- Conclusions
  - Increase Durability of CSSHW Tanks
    - Tank Materials/Yarns
      - Kevlar, P.E.N., Vectran
    - Liner (20 mil. Vs 6 mil.)
    - Coating (6 mil. Vs 3 mil. Sprayed Urethane)
  - Improve Restraint/Tank Interface to Reduce Chaffing
    - Redesign
  - Ruggedize Tank Manifold Assembly
    - Redesign
    - Alternate Materials

DMFD FY99 Milestones

- Initial Alternate Materials Testing Statistically Insignificant
- Additional Materials Testing Funded
  - Kevlar, PEN, Vectran
  - 1500x1500 and 1500x3000 Denier Warp/Weft
  - 72 Samples
- Testing concluded (Hydro, Puncture, Drop)
- Downselect Final Tank Materials and Construction -- Vectran 1530

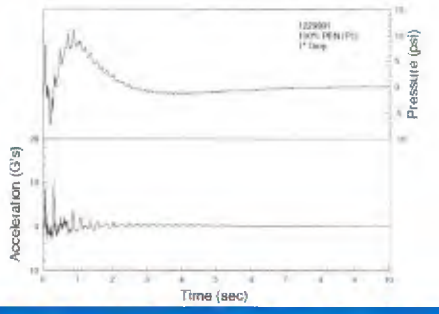
DMFD FY99 Milestones

DMFD FY99 Milestones

Initial Alternate Materials Testing at FFF

DMFD FY99 Milestones

Alternate Materials Testing at FFF (Sample Output)



DMFD FY99 Milestones

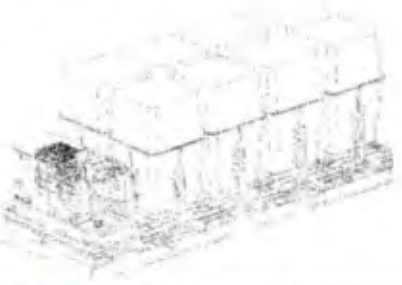
Follow-on Alternate Materials Testing. (Puncture Resistance)

DMFD FY99 Milestones

- 500gal System Development
  - BAA Contract awarded to Engineered Air Systems Inc. July 98
  - System design and stress analysis completed
  - 10 tank weldments completed
  - 1 Transport pallet/manifold completed
  - Pump module completed
  - Filter/seperator module completed

DMFD FY99 Milestones

500gal System Concept



DMFD 400 with Pump and Filter/Separator Modules

DMFD 400 with 10 tanks

SIMULATED

DMFD FY99 Milestones

- 500gal System Development
  - Contract modified to include USMC specific features:
    - Manifold re-design to permit fuel consolidation among tanks on the pallet.
    - Fuel Automated Quantity Sensor (FAQS) and Onboard Vehicle/Refueler Communication (OVRC)
    - Develop Filter/Separator Module
      - Dispense Aircraft Quality Fuel
      - Permit Fuel ReCirculation

DMFD FY00 Milestones

- DMFD Initial Fleet Evaluation scheduled during 5/00 RIMPAC EAST Exercise
- Live Fuel Exercise scheduled during Foal Eagle, Korea 10-11/00

Unresolved Problems/Solution

- NONE - Excellent support being offered by both PHIBRON and FMF for upcoming demonstrations.

Joint Modular Lighter System (JMLS)

Joint Modular Lighter System Program Status

AMPHIBIOUS SYSTEMS WORKING GROUP MEETING
29 - 30 March 2000

Cliff Lederer
JMLS Deputy Technical Manager

JMLS Definition

A ship-to-shore, sea state 3, in-stream offload capability for Army Transportation Group and Naval Beach Group

JMLS Navy Deployment

JMLS Army Deployment

Afloat Pre-positioning Stocks

- Army deploys JMLS in container cells of T-ACS
- Use JMLS primarily for RO/RO of LMSR

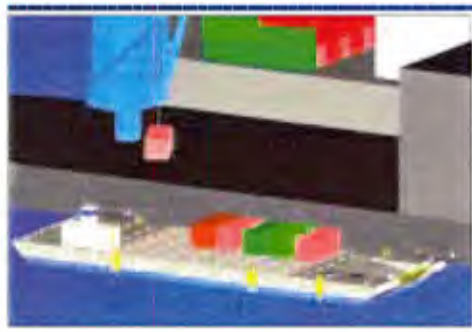
JMLS Subsystems

- Warping Tug (WT)
- Causeway Ferry (CF)
- Roll-On/Roll-Off Discharge Facility (RRDF)
- Air Cushion Vehicle Landing Platform (ACVLAP)
- Floating Causeway (FC)

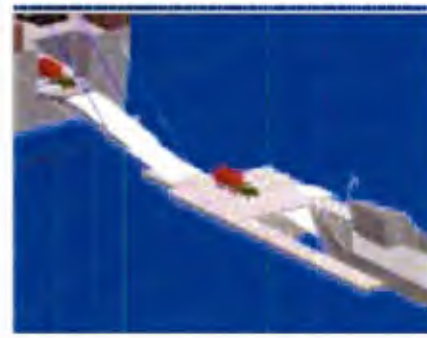
Warping Tug

Joint Modular Lighter System (JMLS)

Causeway Ferry



Roll-On/Roll-Off Discharge Facility



Floating Causeway

Air Cushion Vehicle Landing Platform

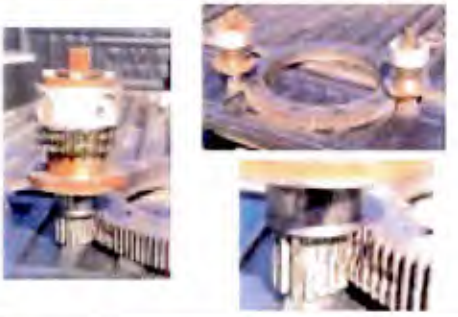
Modular

Flat End Module (clockwise) female end, male end, and UHMW non-skid deck

Modular

Joint Modular Lighter System (JMLS)

Propulsion Modules



Status

- Design and Phase II manufacturing complete
- Test and Evaluation
- Acquisition
  - ORD staffing complete; final approval imminent
  - Acquisition Planning underway

Test and Evaluation

- Calm Water Connections at BMI
  - July/Aug 99
- First Open Water Connection Tests at Little Creek
  - Sept/Oct 99
- Contractor Demonstration
  - Jan - Apr 00
- Military Utility Assessment
  - Jun - Jul 00

~ End of ACTD ~

- OPEVAL
  - FY 01

Calm Water Connection Tests

- Successfully connected flat end modules end-to-end and side-to-side
- Conducted User Familiarization at end of test period

First Open Water Tests

- Connection tests of flat end modules
- Gain experience
- Maximum encountered was high SS2 (~3.2 ft)
- Results were encouraging

Warping Tug

- Warping Tug self-assembly in SS3 -- 3/23/00

Joint Modular Lighter System (JMLS)

Warping Tug

- Self-assembly of warping tug in SS3 -- 3/23/00

Warping Tug

- Warping Tug setting anchors for FC demonstration -- 2/29/00

Warping Tug

Warping Tug underway in 4' - 5' seas -- 3/23/00

Causeway Ferry

Causeway Ferry Beach Operations

Causeway Ferry

Causeway Ferry underway in 5' - 6' seas -- 3/22/00

FC Beaching Operations

- 2/29/00

Joint Modular Lighter System (JMLS)

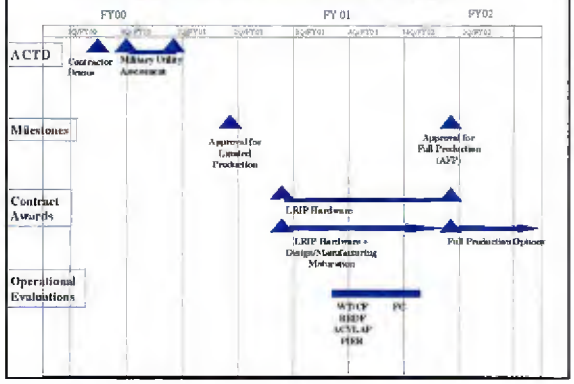
FC Flexible Hinge Concept

- 2/29/00

RRDF

- Problems
  - Looseness of Connectors
  - Cracked Weldments
- Causes
  - UHMW preventing balls seating fully
  - Ball rotation backed off cams
  - Flexing of structure
  - Connector flexing overstressed connector welds
- Corrections
  - Thinner UHMW
  - More substantial cam locking device

Current JMLS Acquisition Strategy



Challenges

- Schedule
- Design Issues
- Ship space
- Power module mechanical systems

In terms of military utility, the design looks promising

Summary

- CINC's require a SS3 JLOTS capability
- JMLS program challenges (technical, schedule, funding, etc.)
- Initial T&E successes with connections in calm water through SS3
- Contract completion scheduled for 8 April 2000
- Program schedule under review and may change

Intuitive Joystick/DP Control Systems for Joint Modular Lighter System (JMLS)

Steve Maggipinto

Need:

- JMLS connection operations in high sea states requires improved maneuvering capabilities.
- For high sea state cargo operations increased station keeping capabilities needed.
- Precision maneuvering capability can:
  - —decrease connection and mooring time
  - —improve SAFETY
  - —increase through-put

Operator Terminal

Kongsberg Simrad Compact Joystick/DP Operator Terminal (OT) Display

- Current Display:
  - Thruster Azimuth and Thrust vectors for each thruster.
  - Sum Force vector
  - Thruster Ready Alarms
  - Reference System and Sensor Status and Alarms
  - Vessel to DP Set Point Status
- With Software Upgrade
  - Engine and Thruster Status and Alarms
  - Track Waypoints
  - Commands and new Track Waypoints via Telemetry from Command Center

Kongsberg Simrad Compact Joystick/DP Operator Terminal (OT) Joystick/DP

- Small Display
  - Heading
  - Lat./Long.
- Three Axis Joystick
- Buttons
  - Mode selection
  - Main Display Page selection
  - Individual Selection of Computer or Joystick control for:
    - Surge, Sway or Yaw
  - Precision Maneuvering
    - 1 meter position moves
    - 1 degree heading changes

Status

- Intuitive Control demonstration 1997
- Dynamic Positioning demonstration 1998
- MCS WT steering solution demonstration 1999

Pre-JMLS demonstrations proved operational viability

- Scheduled JMLS installation post KR demo, pre-MUA

Intuitive Control Demonstration (EWTGPAC/PHIBCB ONE 1997)

- WT+2NP+WT CONFIGURATION
- One SJS-01 INTUITIVE JOYSTICK SYS.
- SUCCESSFUL Demonstration

Dynamic Positioning Demonstration (PHIBCB TWO 1998)

Portable Operator Terminal
- better visibility and control
  - flex-in connections
  - beaching
  - coming alongside

Dynamic Positioning Test
- Tested relative to anchored platform
- <3 meter accuracy
- Performed 1 meter position moves

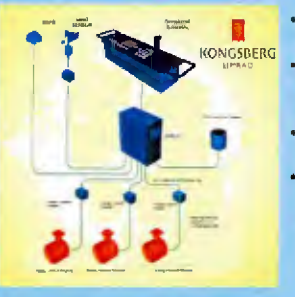
MCS WT steering solution (7TH TRANS GROUP May 1999)

KONGSBERG

Solved steering problem

Unit demonstrated capability to hold heading with engine casualty within +/- 0.5-deg

JMLS Installation



- Install on JMLS Craft post KR-demo
- Test in high sea state and compare with manual controls
- Test DP capability in higher sea state.
- Test ability to control craft with one thruster online.

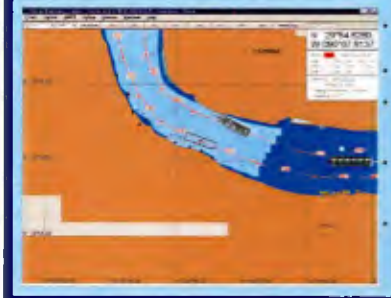
JMLS Phase III & Phase IV Recommendations

- Eliminate extra hardware by replacing Omega thruster processor with Joystick/DP system processor. (Currently one processor talks to the other.)
- Upgrade OT software to read Engine/Systems telegrams and display on OT page.
  - Systems parameter range monitoring and alarms.
- Laptop Training Simulator Reduces Onsite Watercraft Training

Intuitive Joystick/DP advantages for JMLS

- Optimizes thruster control
  - more precise control
  - less wear on engines and thrusters
  - improved fuel usage
- Operation
  - enables operator to have "head out of the cockpit"
  - reduced training time
  - system can be installed on any craft NL, LCU, & etc for common operator control
  - Operator OT can be moved by operator for improved visibility
- Maintenance
  - Modular OT and Processor easy to replace.
  - Centralized alarm and diagnostics for troubleshooting.

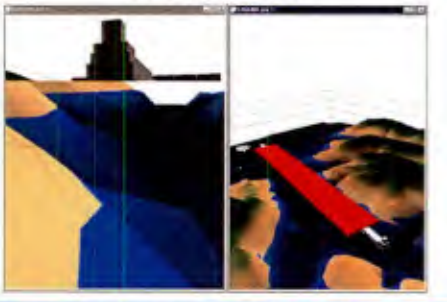
SPS Planning Station with Autotrack



- Can be run on Laptop
- Local charts
- Track files created with mouse or trackball
- Track files via telemetry from Command Center
- Add depth information for 3D display

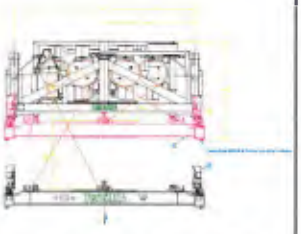
NAVAL FACILITIES ENGINEERING SERVICE CENTER

SPS 3-D View



NAVAL FACILITIES ENGINEERING SERVICE CENTER

Intelligent Spreader Bar System



6 Degree-of-freedom spreader bar system for rapid connection to and placement of containers in sea state 3.

Intelligent Spreader Bar System

Fabricate and test teleroboticc version of the ISB.

Fabrication - Complete
Factory Testing - Ongoing March-April '00
Installation/Field Test at MOTSU - May-June '00
Recommendations for Automation - August '00

Future: Perform computer simulations using motion data from MOTSU field test. Expand work on machine vision sensor system required for automatic control of the ISB. Investigation of pedestal crane version of ISB.

Stereovision for Crane Operation

Employ camera systems to assist the crane operator:

- Increase productivity
- Increase Safety
- Reduce damage to cargo and equipment
- Aid in operations in rough weather
- Ease operator fatigue and stress

Camera Locations:

- Boom-Tip
- Mid-Boom
- Rail (view of lighter or pier)

Stereovision System:

Dual cameras send real-time video to stereo-capable displays.
A variety of display methods exist
Lightweight, partial immersion head mounted display (HMD) selected

Stereovision for Crane Operation

- **Installation on Flickertail State - June 00**
- **Functional System Testing**
- **Crane Operator Training**
- **Operational Testing**

Carderock Division

Presentation to Amphibious Systems Working Group Meeting

Jeff Green
NSWC, Carderock Division
March 30, 2000

Carderock Division

Scope of Presentation

- Personnel Transfer
- Lighter System Impact
- Spreader Bar Tagline System

Carderock Division

Personnel Transfer

- Project Overview
- Problems/Obstacles
- Solutions Being Investigated
- Work to be Done
- Conclusions

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Project Overview
What is to be done?

- Study the problems/issues of at-sea personnel transfer
- Study current military and maritime industry practices
- Determine solutions that are:
  - Safe
  - Efficient
  - Cost Effective

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Project Overview
How will it be done?

- Interviews with responsible parties from a variety of military and industrial organizations
- Determine applicability of current practices/systems to use in JLOTS operations
- Develop equipment and procedural recommendations for different vessels involved

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Problems/Obstacles

- Relative Motion
  - ± 10 feet of heave possible for lighters
  - Lighter sway motions hazardous to the crew

NAVSEA Carderock Division

Problems/Obstacles

- Current Equipment
  - Bulky Flotation Jackets for boat passengers
  - Accommodation and Jacob Ladders

- Current Procedures
  - Lack of Common Procedures

NAVSEA Carderock Division

Solutions Being Investigated

- Standoff mooring for small craft
  - Help diminish lighter motion problems

NAVSEA Carderock Division

Solutions Being Investigated

- New Flotation Vests
  - Stearns Type III
  - Inexpensive ≈ $60

NAVSEA Carderock Division

Solutions Being Investigated

- "Billy Pugh" Personnel Nets for ships with cranes
  - Require little effort on part of the crew
  - Low cost ≈ $1500

NAVSEA Carderock Division

Work to be Done

- Investigating further options
- Determining which options are applicable to which vessels
- Prepare a report of findings and recommendations

NAVSEA Carderock Division

Conclusions

- Current practices found throughout various maritime industries are applicable
- Common procedures needed
- Available equipment is useful and affordable

Lighter System Impact

- Project Overview
- Problems/Obstacles
- Solutions Being Investigated
- Work to be Done
- Conclusions

Project Overview

- Sea State 3 JLOTS
- Ship to lighter container transfer

Project Overview

- Identify potential problem areas
- Investigate the severity of current problems and determine the need for solutions
- Investigate solutions if necessary

Problems/Obstacles

- Three system components to consider
  - Lighter
  - Container
  - Container Contents

Problem Severity

- Lighters - LSV, LCU2000, JMLS
  - Damage to deck and supporting structure
  - Finite Element Analysis

Problem Severity

- Containers
  - FEA analysis
  - Review of drop tests
  - Discussions with cargo handlers and commercial shippers

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Problem Severity

- Container contents
  - Damage to cargo, pallets, etc…
  - Discussions with cargo handlers and commercial shippers

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Problem Severity

- Motion analysis
  - Analysis of simulation data

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Potential Solutions

- Impact absorption
- Relative motion reduction
- Motion compensation

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Work to be Done

- Completion and analysis of simulation and FEA
- Further solution investigation
- Preparation of findings

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Spreader Bar Tagline System

- Project History/Overview
- Work to be Done
- Conclusions

Carderock Division

Project History

- Sea State 3 JLOTS
- Container transfer operations

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Project History

- Initial concept development
- Simulation testing and analysis
- Design refinement

Carderock Division

Project Overview

- What is a Spreader Bar Tagline System?

Carderock Division

Project Overview

- How does it work?

Carderock Division

Work to be Done

- Address user concerns
  - Operational
  - Safety

Carderock Division

Conclusions

- System effectively reduces cargo pendulation
- Operational and safety concerns must be addressed
- Effect of other programs to be considered

Advanced Lighter Simulator Presentation

30 March 2000

Advanced Lighter Simulator

- Project Purpose
- Milestones
- Hardware Overview
- Trainer Instance

Advanced Lighter Simulator
Purpose

- Provide a realistic simulation of causeway-based lighterage in a sea state 3 environment
- Evaluate the effectiveness of new or modified lighterage technology
- Evaluate lighterage simulation technology
- 365 day/year training for Coxswains and Pilots

Advanced Lighter Simulator
Milestones Slide 1

- April 97 – Requirements analysis completed
- June 97 – Initial system design completed
- July 99 – Fabricated HW, built SLWT trainer
- Aug 99 – Development site preview to PHIBCBTWO

Advanced Lighter Simulator
Milestones Slide 2

- Sep 99 – Limited capability simulator with SLWT instance installed at LittleCreek, VA
- Feb 00 – PHIBCBTWO initial useage
- FY 00-01 – Enhancements, training effectiveness, JMLS variant/instance, H/W & S/W configuration study, re-host analysis
- FY00-01 – Trainer useage assistance

Advanced Lighter Simulator
Analogy

- Woodworker's Shop
  - Core Tools
    - Cutting tools - table saw, radial saw, router
    - Hand tools
    - Fasteners
  - Shop to House Tools and Project

The Advanced Lighter Simulator Project has provided a core set of tools to enable the simulation of instances such as SLWT Trainer, JMLS trainer and Design Evaluator, and small boats. Just as with woodworking, H/W name brands are not as important as their reliability, performance, and functionality.

Advanced Lighter Simulator
Hardware Overview

- Coxswain station mock-up
- Pilot station
- Instructor / operator station (IOS)

Advanced Lighter Simulator System Overview

Instructor / Operator Station (IOS)

Instructor / Operator Station (IOS)
Hydro Workstation

- Runs Virtual Ship* Simulation & Training System (VSHIP®) Hydrodynamics Model
- Drives Coxswain and Pilot View Displays
- Drives Coxswain and Pilot HMDs
- "Talks" to all other computers

* Virtual Ship and VSHIP are trademarks of CSC / Advanced Marine

Instructor / Operator Station (IOS)
Virtual Situation Display

- Provides Visual Overview (bird's eye view) of scenario in which simulation exercise is being run
- Shows land masses, Traffic ships, Ownship
- Shows Navigation Aids
- Can Zoom In/Out
- Can Move Window of Viewing [left, right, up, down]
- Can Display freeze-frame view of ownship icon
- Can introduce & control traffic ships
- Displays and records ownship data (coordinates, heading, speed, etc)
- Allows Instructor / Operator to re-position ownship

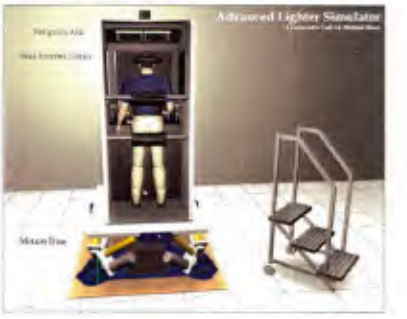
Instructor / Operator Station (IOS)
Simulator Control Display

- Displays ownship status (location, heading, speed, etc)
- Displays Simulation Duration
- Allows toggle between bridge mode and Instructor Mode
- Allows Instructor to freeze simulation
- Displays environmental, visual, mooring, traffic ships, alarms, failures, malfunctions, sounds, etc parameters and conditions
- Allows Instructor to select one of eight pre-defined SLWT configurations
- Allows Instructor to introduce failures or warning conditions

Playing GOD via Environment Control Window of Simulator Display

- Visibility by time of day, by distance, by weather conditions
- Weather (clear, haze, fog, rain)
- Current speed and direction
- Wind speed and direction
- Wave height and direction
- Introduce sounds (traffic ships, seagulls, rain volume, thunder volume and frequency)

Coxswain Station



Coxswain Station
Slide 1

- Duplicates controls & Visuals of SLWT
- Overhead & console mounted touch screens
- Ship control console
  - Port and starboard throttle and clutch levers
  - Port and starboard water jet direction joysticks
  - Center levers are "backup" joysticks
  - Alarms and whistle display panel

Coxswain View via head-mounted display

Coxswain Station
Slide 2

- Command Information Display for ship control
  - Heading, Speed, Rate of turn
  - Rudder Angle, Propeller RPM
  - Water depth
  - Wind speed and direction

Pilot Station

SLWT Instance
Slide 1

- Used Core Tools (e.g. VSHIP® Simulation)
- Built coxswain & pilot stations
- Duplicated controls and visuals of existing SLWT
- Instrumented an SLWT to capture motion data for hydro model
- Introduced a pilot station with motion capturing, HMD, motion base capable
- Allowed coxswain and pilot to see one another via the HMD

SLWT Instance
Slide 2

- Considerations for pre-defined lighter configurations
  - Basic skills training
  - Basic skills training for long craft
  - Ship approaches, beaching

Summary

The Advanced Lighter Simulator is a core set of tools that allows the Navy to build small craft trainers and evaluators. Trainers such as the powered causeway trainer in LittleCreek, VA allow the Navy to train 12 months a year, in conditions usually not available in the real world, and review the results in a classroom setting.

Points of Contact

- Art Rausch 301-227-4590
  Logistics Department, Carderock NSWC
- Mike Christie 301-227-5977
  Project Coordinator, Carderock NSWC
- Chief Jeff Hall 757-462-2682
  PHIBCBTWO Training Coordinator

Backup Slides

Advanced Lighter Simulator
Hardware Overview

- Coxswain Station Mock-up
  - Navigation Aids, Engine and Craft Controls
  - Head Mounted Display (HMD)
  - Motion Base
- Pilot Station
  - Tracking System, HMD (360° Viewing)
  - Motion Base (optional), Joystick for simulated movement
- Instructor / Operator Station (IOS)
  - 2 Simulator Control Workstations with Graphics Displays
  - Hydro and Visual Simulation Workstation
  - Large Screen Monitor with Split Views
  - Personal Computer with Monitor for Controlling Motion Base

NAVSEA Carderock Division

RO/RO Ramp to Platform Interface

Develop a SS3 interface capability between ramps of existing RO/RO ships and future causeway platforms

NAVSEA Carderock Division

RO/RO Ramp to Platform Interface

Payoffs:

- **Increase RO/RO operations window through sea state 3 (3.5 to 5 ft. sig. wave ht.)**
  Provides significantly increased operational time
- **Avoid costly RO/RO ship ramp modifications**
  Single RO/RO ramp modification costs $$$$
- **Reduced maintenance on dunnage**
  Use of foam/low maintenance material to replace timber dunnage
- **Enable operations with MPF, RRF, Commercial and foreign RO/RO vessels**

NAVSEA Carderock Division

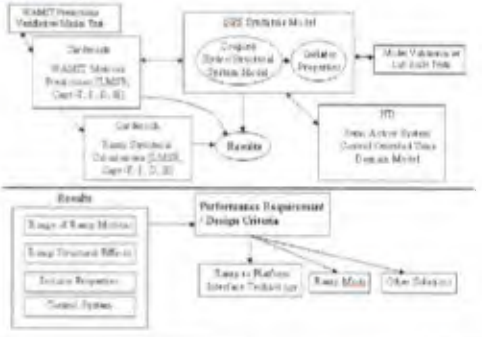
RO/RO Ramp to Platform Interface

Progress:

- **Ramp information matrix developed**
- **Government and Industry concepts sought - BAA**
  Web site developed in support of BAA
  http://www.dt.navy.mil/code293/rororamp.html
- **Revised plan based on BAA response**
- **Initiated collection of RO/RO ship ramp detail drawings**

NAVSEA Carderock Division

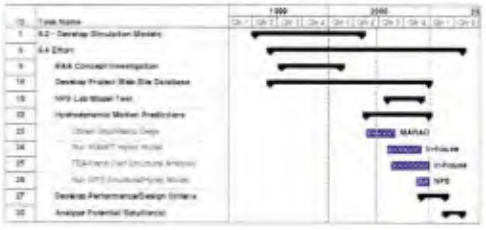
RO/RO Ramp to Platform Interface



NAVSEA Carderock Division

RO/RO Ramp to Platform Interface

Schedule:



PLANS

- 1st release of SUL ACTD package
  - Initial developmental test at CAX 6 additional DT during MEFEX, UFL and Millennium Challenge
- Development continues until August
- IATO Dec 00
- Transition to MS III a after DK 01
- Synchronize with ILC

SUL Development

- Problem definition
- Requirements definition
- Architecture
- Detailed design
- Build
- Test
- Deploy

MAGTF Tactical Logistics C2 Today (The Problem)

- Multiple log AIS stove-piped, stand-alone logistics systems
- Incomplete tactical picture
- Difficult to turn data into information supportive of tactical decision making
- Inefficiencies throughout system/processes

MAGTF Tactical Logistics C2 Today (The Problem) Cont.

- Observe, Orient, Decide, & Act (OODA) loop and COA logistics supportability determination slow and cumbersome
- Lack automated method for achieving JV2010 focused logistics/OMFTS based logistics requirements

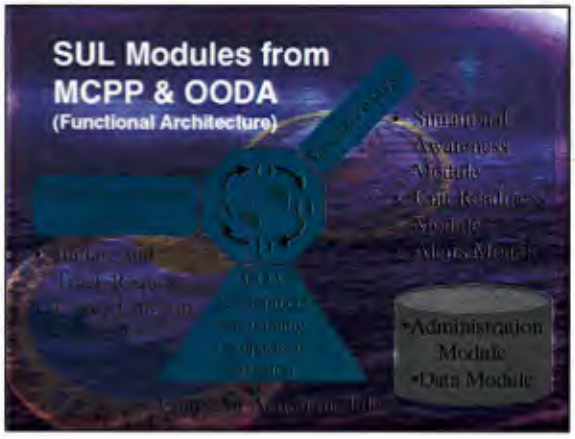
SUL Purpose Statement (Requirement)

- To provide an interoperable tactical logistics command and control system that uses existing and emerging technologies to improve combat service support effectiveness and efficiencies.

Vision (Requirement)

SUL Modules from MCPP & OODA

(Functional Architecture)



MOP & MOE Proving Requirements Are Met

- In a joint environment can the CSS CMDR :
  - conduct tactical level planning?
  - prepare automated plans and orders?
  - exercise tactical command and coordination of his assigned forces?
  - synchronize/integrate operations?
  - Maintain the system without specialized training, tools or equipment?

MOP & MOE Cont.

- Can the SUL system:
  - Influence a reduction or reconfiguration of logistics footprint?
  - Operate under field conditions
  - Deploy between sites
  - Allow the CSS commander to improve support and increase MAGTF effectiveness?
  - Allow the supported commander to improve his organic logistics readiness?

Baseline Objectives

- Document the current CSS information management system during Steel Knight 00 (6-11 Dec. 1999) in 29 Palms, California.
- How are CSS requests generated, processed and filled?
- How do CSS future planners develop a logistics plan?
- How does the CSS staff make command decisions?

Baseline Assessment Tools

- Data Collection Sheets
  - Supported Unit
  - CSSOC
  - Detachments
  - LMCC
  - Future Plans
- Questionnaires
  - CSS Staff
  - Planning Staff
  - Supported Unit Satisfaction
- Data Collection Templates
  - Equipment Status
  - Dump Status

CSS Information Management Assessment

Metric	Inefficient	Inadequate information for command decisions
Timeliness	• Report preparation 8-9 h • Dump Status update 2-3 h • Equip. update ongoing	• GCE logistics picture 1/day • Organic logistics picture 2/day
Resources	• Strepr: 14 Marines/6 computers. • Dump Status: 4 Marines/2 computers • Equip: 2 Marines (train.)	• Organic/GCE strep/logstat 1/day • Dump Status Board • Equipment Status Board • ECS software
Available/ Usable	• No standard reporting forms • Data passed through several levels • Duplication of effort	• Limited basic GCE force structure information • No visibility of Class V • Class IX process

Information management is not efficient

Example: Sitrep

Resource Summary
14 Marines
6 computers
8-9 hours

Information management does not support command decisions

Example: Asset Tracking

Information in CSSOC	Organic Assets	GCE Assets
EDL	Yes	No
Deadline	Yes	No
Class IX (parts) Requests	No	Yes
Maintenance ERO	No	Yes (95%)
Estimate repaired	Yes	No

Baseline Assessment Summary

- CSS information management is not efficient
  - Stock level and support information takes a long time to collect
  - Collecting information takes a lot of resources
  - The information gives an incomplete logistics picture
- CSS information management does not support command decisions
  - Limited basic information on GCE
  - Limited updates on status changes
  - Different accounting practices

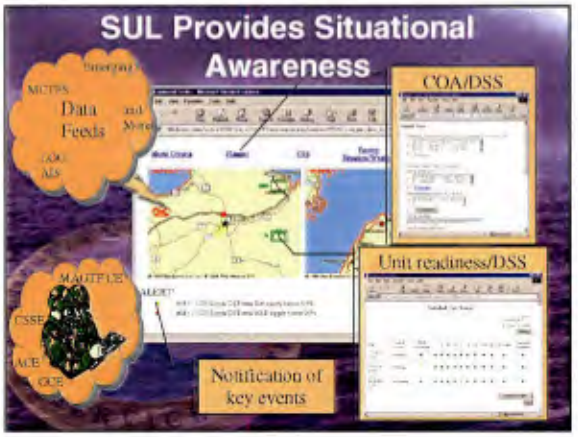
Impact of SUL C2 system

- Quantitative
  - Near Real Time
  - Reduction in OODA loop cycle time
  - Enhanced logistics response time (e.g. repair and product order cycle time, etc.)
  - Right sizing logistics footprint
  - Open Architecture (Scalable, User friendly, Web based, DII/COE compliant)

Impact of SUL C2 system

- Qualitative
  - Staff focused on decision making versus data gathering
  - Efficiently support and sustain 21st Century littoral maneuver

ACTD SCOPE



- More information at
  - https://iis.marcorsyscom.usmc.mil/actd/
- Trouble calls to
  - http://sulactd.altservices.com/
- Points of Contact
  - Col. Willie Williams: SUL Operational Manager
    - (760) 725-5121
    - WilliamsWJ@1fssg.usmc.mil
  - Col. Mark Hayden: MARCORSYSCOM PMIS
    - HaydenMK@mcsc.usmc.mil
  - Lynn Torres: MARCORSYSCOM SUL Program Manager
    - (703) 696-4715
    - torresl@onr.navy.mil

Sea Based Logistics

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JLOTS Ops

Traditional Ops

- 90% of expeditionary tonnage flows from the sea
  - seastate limiting

ONR's focus is changing

JLOTS Joint Logistics Over the Shore

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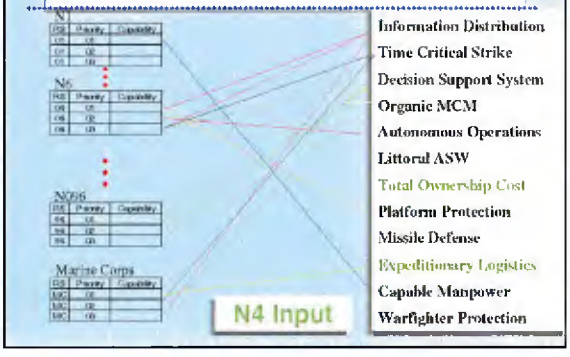
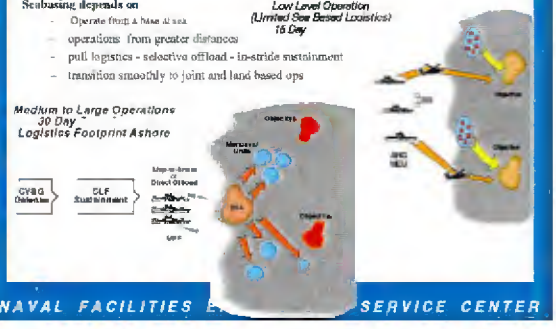
SPIKES



Sea Basing Logistics



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Seabasing ESC Projects

- Seabase Aerobuoy Link (SAIL)
- Submersible Cache
- Asset Visibility
- SEAWAY Contractor Support
  - CPX exercise
  - Test Protocol
  - Legacy systems translators

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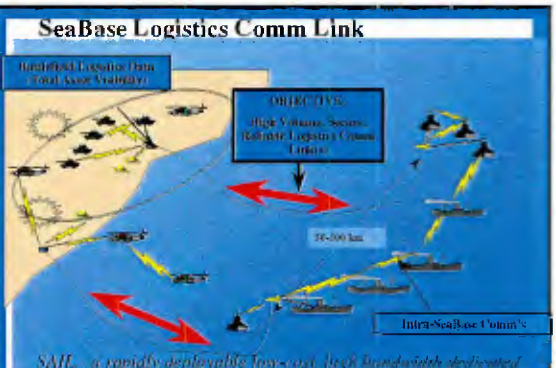
SeaBase Logistics Comm Link



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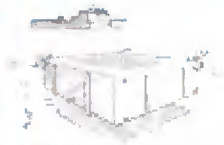
SUBMERSIBLE CACHE



EMERGING SEA BASING CONCEPTS

OBJECTIVE

Develop a near shore submersible fuel and dry cargo cache to support OMFTS

Payoff

NEARSHORE REFUELING MODULE

- Moveable Logistics Facility - Ease of Delivery & Relocation
- Extend Range of Sea Base Transporters
- Shorten Supply Lines

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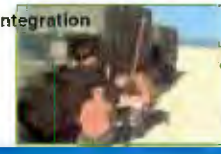
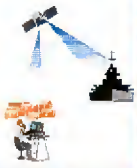
NAVAL TOTAL ASSET VISIBILITY

Develop Naval Asset Visibility Architecture

- Tag-to-tag with true autonomous manifesting
- Tag Initiated Communications
- Sensor Tag
- Satcom Integration





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SEA BASE WAREHOUSE AUTOMATION & SEAWAY

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SEA BASE WAREHOUSE AUTOMATION & SEAWAY

CONTRIBUTING TECHNOLOGIES

SEAWAY - A THEATRE LOGISTICS DECISION TOOL

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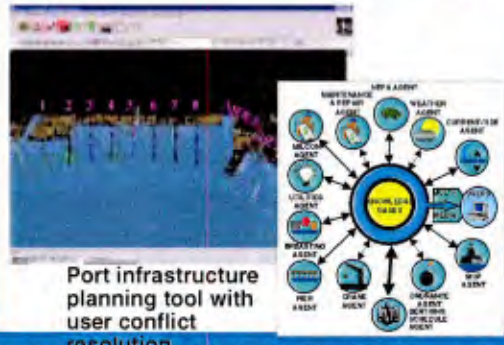
Collaborative Infrastructure Assessment Tool



Port infrastructure planning tool with user conflict resolution

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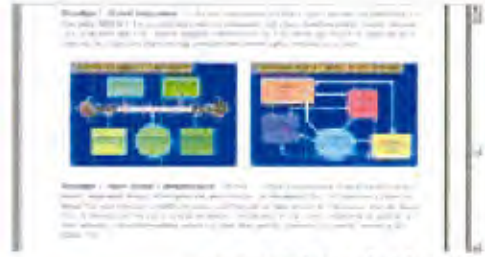
SEAWAY Architecture



www.cadrc.calpoly.edu

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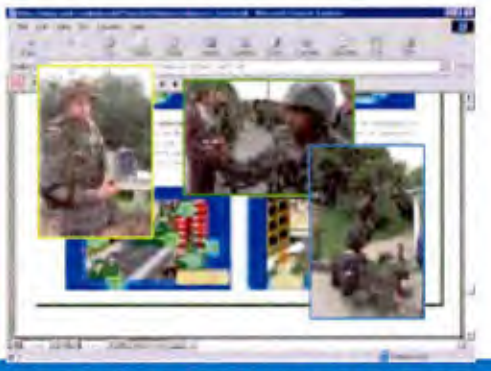

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Seabasing Logistics

- *Enabling Technologies for FNC - i.e. Spikes*
- *Situational awareness of a unit's supply and logistics integration*
  - *Total asset visibility of critical supplies in-transit and in-theater*
- *Supports Integrated Logistics Force Deployment Planning and Execution within the MAGTF and JTF*
- *Integrated selective off-load planning within the Sea Base*

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APPENDIX

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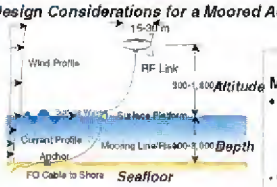
SeaBase Aerobuoy Info Link(SAIL)

Design Considerations for a Moored AeroBuoy.....



Mooring/Riser/Aerostat
- **Completed Dynamic Model**
  - ocean currents - buoy/mooring
  - wind - aerostat
- **Completed Offshore Test**

Engineering tradeoffs for SeaBase Aerostat Platform
- size, deck space, power, station keeping, duration
- High bandwidth/channels, networked radios
- aerobuoys - aerostats operated from buoys, range & altitude
- SDFO fiber optic cables - aerobouys to shore

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INTERACTIVE DATA DISPLAY

A user-friendly way to access, integrate, and display massive quantities of data is essential to the success of a large scale Sea Base

FY98 Accomplishments
- Investigated ICODES Integration w/Geographical Software Systems
- Tool for SAIL Deployment

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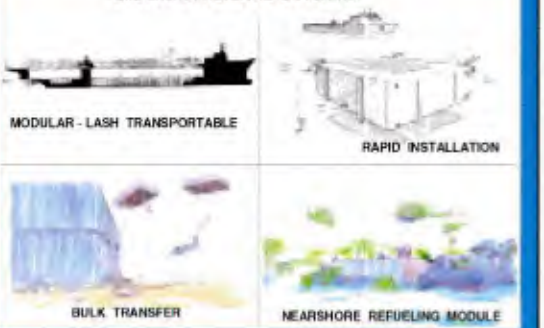
SEA BASE LOGISTICS

SUBMERSIBLE CACHE



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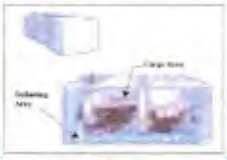
SUBMERSIBLE CACHE



Supply Cache

Bulk Fuel Cache

- *double walled submersible boxes*

Technical Challenges

- Hull Form Optimization
- Establish Drag Forces/Stability
  - Numerical Modeling
  - Scale Basin Testing
- Connections/Modules
- Test Mooring/Tie Down solutions
- Materials of Construction

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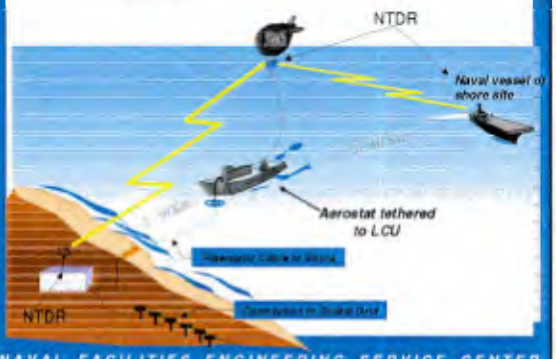
SAIL Test



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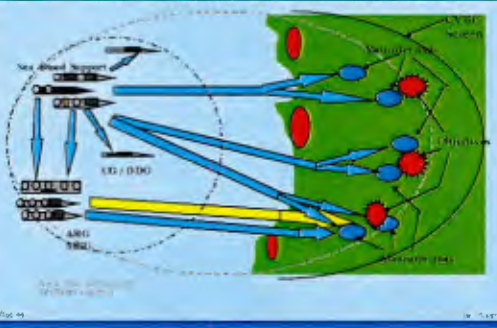
TLanDS - Helping Make OMFTS a Reality



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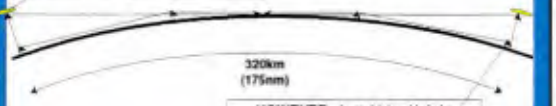
Aerostat Horizons

2000m (6600 ft) Height Allows LOS (aerostat-aerostat) Over Full 320km (175nm) Standoff



HOWEVER, Just 200m Height Allows LOS = 100km (55nm)

Aerostat Height	2000m	1000m	200m
Buoys To Link LOS	2	3	4

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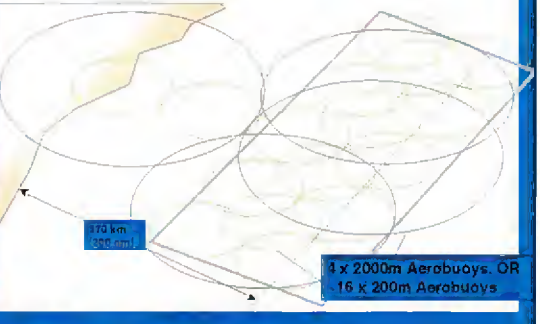
AeroBuoys Required To Cover Op Area



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Autonomous Marine Booster Pump

Martin Fickel
30 March 2000

AMBP Requirement

Requirement: Navy has the requirement to provide fuel/water from extended distances during ship to shore cargo movement.

Objective: Develop a system to support ship to shore transfer of bulk liquids from extended standoff distances.

Drivers: Shallow Bathymetry at likely Operational Sites.

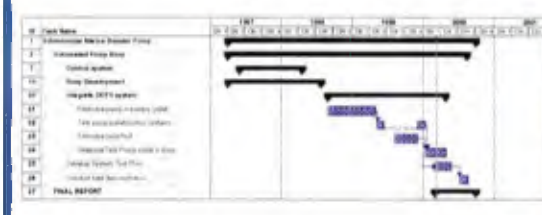
Task Overview

Project scope: Demonstrate Full Scale System

Deliverables: Advanced Development Model & Feasibility Demonstration.

Demonstration: NWTG-PAC will support Demo in conjunction with ABLTS training

Task Overview



- FY00 Funds Provided to Complete Full Scale Demonstration

AMBP Requirement

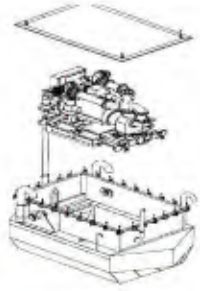
S & T Requirements (7-97)

8.3 Strategic Sealift
e. Develop dual use tech. that improves commercial viability:
2. Develop systems to provide enhanced fuel product transport & handling on existing & future merchant ships.

8.4 Joint-Logistics-Over-The-Shore (JLOTS)
a. Develop throughput technology to:
2. Provide a rapidly deployable bulk fuel delivery system to support the assault echelon & JLOTS.
- can be installed in 12 hours in sea-state 4
- provides up to 1.2m gal/day

OPNAV Sponsor: N85
SYSCOM POC: NAVFAC, Chief Engr, A. Del Collo

AMBP Pump Buoy Concept



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AMBP Features

- Single AMBP will increase standoff distances at least 100%
- AMBP hull will fit into ISO Container
- SLWT could launch & recover AMBP
- Automatic control w/ remote Monitoring & Override
  - Onboard Control System (Opto 22)
  - Radio modem provides comm.s link
  - Transducers to monitor
    - Product flow pressures
    - Engine-pump speed
    - Engine & buoy temps
    - Bilge fluid level & bilge pump
    - Onboard fuel tank
- Engine coolant heat exchanger uses product flow

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FY00 Milestones completed

- Integrated machinery pallet & hull assembly
- Conducted hull floating stability tests
- Lab tested integrated AMBP assembly
- Test system control functions
  - Environmental extremes
  - Full scale feasibility demonstration

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AMBP Milestones

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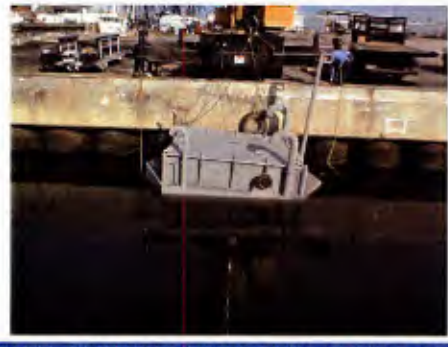

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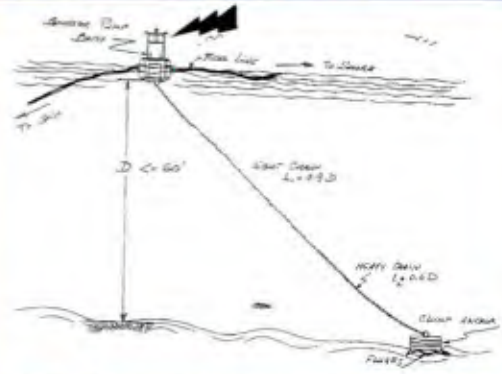

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AMBP Transition

- FY00

  Advanced Development & Procurement

  Under OPNAV N42 Sponsorship

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Rapid Pile Splicer
for
ELCAS(M)

Martin Fickel
30 March 2000

Rapid Pile Splicer

Requirement: Install 3,000 ft ELCAS(M) within 7 days. Current welding practices bottleneck installation.

Objective: Develop the components or systems that decrease the time (manpower) required for cutting and splicing pilings on the ELCAS and in the marshalling yard.

Drivers: 7 day ELCAS installation time limit necessitates the use of state-of-the-art technologies wherever possible

Task Overview

Project scope: Develop two pile splicing concepts: Vertical (on ELCAS) & Horizontal (marshalling yd)

Deliverables: Splicing system model & cutter

Demonstration: Perform laboratory tests and Conduct field demonstrations with ACB-2

Current Practice

Hand held, electric arc, stick gun

- Apply spot welds
  - Align pilings and spot weld
  - Rotate piling about 1/4 turn
  - Adjust piling position to ensure alignment
  - apply next spot weld
- Weld approximately 25% of the circumference, stop
- Manually rotate pile using pinch bar
- Weld the next 25% of the circumference until entire circumference is welded
- Clean weld and apply next pass using the above procedure

Rapid Pile Splicer (existing rollers)

Rapid Pile Splicer (existing rollers)

Rapid Pile Splicer

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Rapid Pile Splicer

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Rapid Pile Splicer

Cardinal Scientific Inc. deliverables:

- Task 12.0 Vertical Automated Pile Splicer. Manufacture and deliver two Vertical Automated Pile Splicers to ACB2. **Due 4/30/00.**
- Task 15.1 Horizontal Pile Splicer System Demonstration in Norfolk, VA. Demonstrate the salient feature of the horizontal marshalling yard splicer system (performed demonstration 24 Feb 00). **Due 4/30/00.**
- Task 16.0 Vertical Automated Pile Splicer Weld Quality Comparison. Compare the weld quality of current manual welding methods by ACB2 and the Automated Vertical Pile Splicer. Samples have been obtained from ACB2 and prepared IAW AWS B2.1-84. **Due 4/30/00.**

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Rapid Pile Splicer

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Naval Construction Force (NCF) Initiatives at NFESC

Ms. Katy Lunsford, PE
lunsfordkp@nfesc.navy.mil

1 March 2000

ESC30's Role

"The Amphibious and Expeditionary Department conducts RDT&E, provides program and project leadership, planning and management, and provides expert consulting services in support of the Naval Expeditionary Force."

- How are we going to get there for the NCF?
  - Provide general program and technical support to NAVFACHQ and via IPTs
  - Identify technology solutions/options for new procurement actions
  - Leverage ongoing USMC efforts
  - Pursue RDT&E funds where required

Efforts

- Advanced Base Functional Component (ABFC)
  - Class 70 Bridging
  - ABFC Review
- Information Technology Initiatives
  - Tool Crib Management System
  - TOAMS

Class 70 Bridging

- Class 70 Timber/Steel bridge (Feb 2000)
  - Based on existing Class 60 design
  - Drawings, material take-offs forwarded to 3NCB
  - Developing method for transitioning data to SLC
  - Design effort revealed installation issues
- Class 70 Steel Bridge (Mar 2000)
  - All steel decking addresses 3NCB war plans

ABFC Review

- Plan of Action
  - Identify areas of concern
  - Prioritize effort for next 3 fiscal years
  - Determine level of effort needed to update/modernize areas
  - Identify other funding sources to support development and improvement of ABFC facilities

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ABFC Review (continued)

- Tasks Completed
  - Conducted an ABFC owners meeting (Dec 99)
  - Submitted proposals to NAVFAC Code 13
    - ABFC View
    - EAF 2000
    - Davidson Seahuts
    - Expedient Troop Housing
    - Culvert Bridging
    - Expedient Bridging

ABFC View

- Web-enabled comprehensive planning, execution and evaluation tool
- Develop or modify existing program to include:
  - Stand alone version for expeditionary environments
  - Drawing viewer
  - Feedback loop for lessons learned including ACR
  - Training module for planning, execution and evaluation
- Goals for FY00: Document user requirements and define high level architecture

Expeditionary Airfield (EAF) 2000

- EAF2000 aboard MPF(E) and Seabees don't have planning data
- Approach
  - Review current ABFC EAF
  - Review EAF 2000 documentation for NCF taskings
  - Ensure technology advances are addressed
  - GOAL: provide construction time, matl. & equipment rqmts.

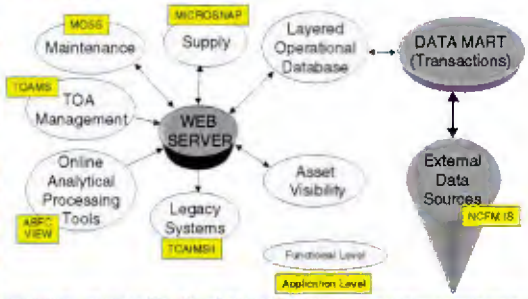
Other ABFC

- **Davidson Seahuts**
  - Capture lessons learned from NMCB3
  - Review, analyze and document Davidson Seahuts to support contingency environments
- **Expedient Troop Housing**
  - Review current ABFC facility for technology insertion
  - Adapt current facility to 1000- and 250-person increments
- **Culvert Bridging**
  - Evaluate COTS systems for inclusion into the ABFC
- **Expedient Bridging**
  - Evaluate GOTS/COTS systems for inclusion into the ABFC
  - Provide recommendations for future ABFC facilities

NCF IT Initiatives

- Vision: Enhance effectiveness and efficiency of Naval Construction Force asset management, employment, acquisition and visibility using information technology.

High Level Web Architecture...



Tool Crib Management System

- NAVSUP-funded effort to introduce AIT into the NCF
- Install prototype tool crib management system in FY00
- Residual system will be left in place
- Data will be captured locally and used locally

Table of Allowance Mgt. System (TOAMS)

"Field to SYSCOM level asset mgt. Tool"

- SLC directed by NCF ESG in Jan 00 to implement
- Function areas:
  - Visual load diagramming
  - Kitting management system
  - Automated asset tracking/visibility
  - Asset data comparisons
- Identified required interfaces: TC-AIMS II, MDSS II, MicroSNAP, ABFC View (specifically ABOIL), NCFMIS
- Goals for FY00:
  - Field TOAMS Phase II automated packing program.
  - Define TOAMS Phase III architecture.
  - Define required interface architecture.

TOAMS (continued)

- Implement Phase II of TOAMS via IPT (to be established)
- ESC areas of involvement
  - Conduct business case analysis of current/future processes
  - Provide integration with other NCF systems (via common data repository)
  - AIT technology
  - Contractual support
  - Act as neutral third party in development process

Other NCF Initiatives Requiring Interface

- Construction Battalion Construction Management (CBCM)
- MicroSNAP
- MOSS
- Maximo

Problem for NCF IT

- No coordinated effort to develop various IT solutions in concert.
- The lack of coordination will result in applications that cannot efficiently share information and support one another.

Program Plan

- Identify all NCF IT initiatives currently on-going
- Establish a NCF IT Integrated Product Team
- Define the NCF IT Problem
- Define Requirements of NCF IT System
- Develop High Level System Architecture
- Detailed Design
- Build the new NCF IT system
- Test
- Distribute/field system

Potential Funding Sources

- Leverage individual IT efforts to develop NCF IT
- OPNAV R&D funding line
- ONR/FNC

Summary

- Many challenges ahead, but…
- NCF issues appear to be getting visibility inside the beltway and hopefully the money (=solutions) will follow