APPENDIX K

PHASE 2 MHP PROGRAM MEETING MINUTES

Meeting Minutes
Modular Hybrid Pier (MHP) Phase 2
Kickoff Meeting

8:30 a.m. Tuesday, 24 October 24 2000
BERGER/ABAM Offices
33301 Ninth Avenue South, Suite 300
Federal Way, WA 98003

In attendance:

George Warren	NFESC
Bob Mast	BERGER/ABAM
Markus Wernli	BERGER/ABAM
Phil Birkeland	BERGER/ABAM
Mike LaNier	BERGER/ABAM
Larry Williams	Vansant and Gusler
Rennie Tisdale	Vansant and Gusler

1. DISCUSSION OF COMMENTS TO PHASE 1A REPORT

Extensive discussion of NFESC comments transmitted in writing, plus additional comments from George Warren's mark-up of the draft report. These comments are being addressed separately in finalization of the Phase 1A report. With this report, we will transmit a listing of the comments received and an indication of how we responded to them.

2. REVIEW OF SCOPE OF WORK FOR PHASE 2

General

Dr. Rizkalla, of ISIS Canada, has moved to North Carolina State University. His replacement as president of ISIS is Dr. Mufti at University of Manitoba. NFESC indicated an interest in continuing involvement with ISIS. We will explore getting input and review from Dr. Mufti at ISIS.

Dr. Warren indicated that there is resistance to the 20 percent premium cost for the initial MHP. The Navy feels that every new pier is going to be maintenance free. Thus, there needs to be some significant difference in the maintainability of a MHP that is going to carry any cost premium at all.

The pier configuration and approach to mooring and access should consider security and antisabotage issues. Dr. Warren will discuss these issues with NFESC security people and provide input to us.

Along these lines, it was felt that procurement approaches that foster a high level of quality in construction are nearly as important as design details. Procurement objectives that lead to long, low-maintenance facilities need to be carefully determined and defined. We will add a section on procurement to the Phase 1A report to introduce the issue. Each of the tasks in the Phase 2 report will include a discussion of procurement issues and recommended procurement approaches or

provisions. Discuss issues like prequalification of contractors, and use of procurement models previously used by LANTDIV, PACDIV, and EFA Northwest.

Include discussion of how the input of the ROICC should influence the project and how the Navy ROICC's can make use of Navy materials and construction experts for special projects.

A section on quality of life enhancements for ships' crews will be included in the report. Plan drawings will show potential areas that can be developed as crew areas.

TASK 1 – DEVELOPMENT OF MHP MOORING PROVISIONS

Discussion of This Task

The issue of whether storm bollards raised above the operations deck were needed was discussed. It was determined that we need to determine if the rationale for these bollards on fixed piers applied for floating piers. For example, is fire truck access required past storm mooring lines?

The assumptions relating to this task were discussed (see attached detailed agenda for meeting). There was general agreement that the assumptions were appropriate for this assignment.

It was agreed that once a baseline mooring dolphin is developed, a parametric evaluation will be made for the dolphin design that considers variations in tidal range, variations in seismic conditions, and some variation in site soils.
Site for mooring is assumed to the San Diego Southern Pier area in the areas of Piers 10, 11, 12, and 13.

Further Input or Questions

Summary of Input and Discussion

Dr. Warren will try to locate some soils borings for this area that can be used as a basis for the mooring dolphin design or provide a contact name for this information.

Proposal assumptions valid for this task, except as noted.

TASK 2 – DEVELOPMENT OF STRUCTURAL JOINING CONCEPTS FOR MODULAR SECTIONS

Discussion of This Task

A rationale for setting the module length (preliminarily set at 350 feet) should be developed. It should consider

- Other nontraditional uses of individual modules
- Delivery wave design effects
- Likely graving dock availability
- Joining cost per joint
- Mooring configurations
- Module usefulness for pier lengths other than 1,400 feet

It was agreed that if suitable corrosion-resistant, post-tensioning duct joining methods could be identified that would allow a grouted joint joining approach, this alternative would be described in the report.

Further Input or Questions

Summary of Input and Discussion

Proposal assumptions valid for this task, except as noted.

TASK 3 – DEVELOPMENT OF UTILITIES AND UTILITY CONNECTION METHODS ACROSS MODULE JOINTS

Discussion of This Task

The Assumption A-7 should be revised to say that the utilities should allow a major mission change with requiring demolition of utility support provisions. The 15-year interval proposed should be challenged and a rationale for the mission change interval provided.

Discussion of vessels to be berthed led to the conclusion that Dr. Warren will check to be certain that our assumptions for berthing are correct at

- Guided Missile Cruisers (CG)
- Guided Missile Destroyers (DDG)
- Guided Missile Fast Frigates (FFG) – Two Abreast

It was agreed that the utilities would be configured to allow berthing of any of these vessels at any berth location on the MHP. Berthing for AOEs and carriers should not be considered at this time.

The topic of putting electrical receptacles only at the utility mound with the switching located away from the bull rail was discussed. V&G to inquire with ship users to determine if there is any reason not to do this.

Routine utility maintenance should be possible without major equipment. Preferred maintenance methods in order of preference is as follows:

- By hand
- With hand truck
- With fork lift
- Jack to dollies (wheeled or air bearing)
- Use crane

Other utility design criteria included

- Provide vehicle access to utility deck – conventional vans
- Configure to allow crane to get as close to ship as possible
- Evaluate whether or not a bull rail is needed on the operations deck
- If possible, move fenders to the operations deck level to accommodate flare sided vessels
- Use fender system to provide the utility hose and cable access slots from the vessel to the utility deck
- On utility level, provide headroom so that space can be used for training rooms or crew amenity space (evaluate this further if this is a controlling criteria)

Objective should be that hose and cable management is much cleaner and neater that what is now done.

It is requested that, as the utility layout is developed, it be informally bounced off LANTDIV representatives for reaction and input.

High-mast lighting will be used as carriers with large deck overhangs will not be berthed at this facility.

It is assumed that fire truck access is not required for utility level. Trucks can access operational level and put hoses and men over the side or down stairwells to the utility deck level.

Further Input or Questions

The potential for future vessel fueling will be handled as provisions for future utilities. A design for fueling and all fuel-handling provisions will not be developed for this preliminary design.

Summary of Input and Discussion

Dr. Warren to give a San Diego contact so V&G can determine what power is available on shore to service the pier.

Proposal assumptions valid for this task, except as noted.

TASK 4 – MHP ACCESS RAMP CONCEPTS

Dr. Warren indicated that he was hopeful that funding for the ramp preliminary design would be forthcoming. Hopefully, this funding will be made available early in the 2001 calendar year. He indicated that he has a funding level for FRP decks and he may task one of his other consultants with the development of an FRP bridge that could be used for service van access to the utility level of the MHP.

Discussion of This Task

The idea of using lifts for vehicle access to the utility deck level was not well received. Discussion was to use two ramps. A heavy-duty ramp that can carry a mobile crane to the operations deck and a lighter duty ramp for van service to the utility deck.

The ramp system should be kept simple. Assure that the ramp system does not become a high-maintenance item. Minimize ramp length consistent with tidal variation. Also minimize dredging for both pier and vessels.

Consider a ramp system that can be adapted by changing ramp length for different tidal situations.

Further Input or Questions

The amount of personnel access between the operations deck and the utility deck needs to be determined to set the number of stairwells provided. It was decided to ask Howard Kelly of LANTDIV this question.

Summary of Input and Discussion

Proposal assumptions valid for this task, except as noted. Dr. Warren to provide contact to determine San Diego yard elevation relative to water elevation.

TASK 5 – PHASE 2 REPORT

Discussion of This Task

It was agreed to add some discussion of procurement approaches to achieve quality. It was agreed to add a section on possible crew amenities that could be included.

Further Input or Questions

Summary of Input and Discussion

Proposal assumptions valid for this task.

REVIEW OF PROJECT SCHEDULE

It was agreed that schedule end dates can be met if authorization to address access ramp is delayed until January/February time frame.

Meeting Minutes
Modular Hybrid Pier Progress Meeting No. 2
BERGER/ABAM Offices
Monday, 16 April and Tuesday, 17 April 2001

15 May 2001

Dr. George Warren
ESC62
1100 – 23rd Street
Naval Facilities Engineering Service Center
Port Hueneme, CA 93043-4370

Subject: MHP Phase 2 Progress Report No. 2

Dear George:

Attached is Progress Report No. 2 for Phase 2 of the MHP program. This progress report contains the following:

Attachment A – Meeting Agenda
Attachment – Stainless Steel Reinforcement Selection Task Description

The following issues were discussed and direction given by NFESC is noted. Updated copies of drawings and preliminary copies of selected calculations were provided to the participants in hard copy form.

NFESC suggested that we review the LANTDIV Heavy Weather Mooring Criteria given on the web site that addresses this topic. George Warren provided the web site address.

We should list the type of trucks that can turnaround on the 88-foot-wide pier.

There was an expressed concern that a 16 percent ramp angle associated with extreme high water and extreme low water may be too steep from an operational point of view. The consequences of limiting the ramp slope to 10 percent should be addressed in the discussion of the ramp configuration.

It was requested that BERGER/ABAM consider Mayport as the East Coast alternative site (San Diego is the primary site). It was pointed out that the storm surge at Mayport is on the order of 18 feet. The report should address in the discussion of MHP mooring in text how the MHP would be configured to accommodate a large storm surge on this order of magnitude.

It was discussed that the bow of the vessels shown on the berthing plans could be located closer to the end of the pier, if it were desired to increase the spacing between the berthed vessels.

In the discussion of the trim variation associated with the damaged condition of two compartments flooded, NFESC was interested in reducing the trim variation. BERGER/ABAM was directed to reduce the exterior compartment size in the most economical way so as to reduce the trim effects of the damaged condition.

BERGER/ABAM to review what the Phase 1 report said about damaged stability and provide text to reconcile any changes from the Phase 1 report to the current design.

In the text discussion of compartmentation, we should have a discussion of the consequences of a terrorist action along with some discussion of possible mitigating measures.

The effects of a two-compartment damaged condition on a two module pier should also be addressed in the discussion of compartmentation.

We should develop a text discussion regarding the strategy for collecting storm water from the MHP deck. It may not be acceptable to allow this runoff to go directly into the water in some jurisdictions.

NFESC was concerned that moving a replacement substation the full length of the pier down the service level drive aisle would be difficult. BERGER/ABAM was requested to provide for the provision to move a substation laterally on to a barge located alongside the substation location.

NFESC indicated that they thought the 1985 floating pier study indicated a need for 25,000 square feet of 1,200 lbs per square foot area. They thought that the Phase 1 study indicated that the MHP facility was designed for a uniform load of 1,200 lbs per square foot. Review these documents and provide text to reconcile any changes between these documents and the current design.

The distinction between a deck structurally designed for 1,200 lbs per square foot and the ability of the MHP to accommodate 1,200 lbs per square foot from a hydrostatic perspective was discussed at some length. It was agreed that this was an important distinction to address in the report.

Since, for a floating pier, the operational performance constraints generally decrease with increasing plan size and depth, the report should include discussion regarding the cost of operational capacity beyond what is really needed to support planned operations.

Eg: Cost for an additional ft. of deck width
Cost for an additional ft. of depth

NFESC requested that our seismic design be related to the latest seismic criteria for Navy piers by Ferritto (Seismic Criteria for California Marine Oil Terminals).

There was a discussion regarding the proposed use of Trellex fender components for the mooring load reaction assembly. The following concerns were expressed.

- Trellex fenders must be carefully evaluated if they are exposed to biaxial loading
- The Navy has had poor maintenance experience with Trellex fenders
- The bolted connections of the Trellex system are a potential source of failure and a potential source of maintenance.

Action: BERGER/ABAM to contact Trellex and resolve these issues with additional input from the Navy. Alternatively, BERGER/ABAM to identify other fender types that would be suitable for this application.

NFESC questioned the consequences of berthing forces reacted on a single mooring. BERGER/ABAM will investigate to determine if this is a designing condition for the mooring elements.

BERGER/ABAM to investigate of mooring alternate vessels LHAs and LHDs away from the center of the MHP (large eccentric wind loads on the MHP mooring system) and provide a text discussion of the effects of doing this.

NFESC requested that failure mechanism and maintenance requirement analysis for pier features that are unique or likely to be subject to maintenance requirements be included in the report.

Eg: Mooring system
Utility mobile wet well/pump
Bridge sliding bearing supports

Provide discussion on how long it will take to deploy a MHP on station. How long is the deployment site disrupted for the installation of an MHP?

Positioning of the mooring shafts to the tolerances required was identified as an issue requiring further thought and likely an addition to the construction concept.

The status of the ramp design was discussed. NFESC suggested that we should not design the ramp for higher crane wheel loads than given for the 140-ton crane in DM 1025.1. BERGER/ABAM to provide discussion of how the loads given in DM1025.1 relate to mobile crane wheel loads for the 140-ton cranes we have investigated.

BERGER/ABAM to review the Phase 1 report for design assumptions regarding crane wheel loads.

NFESC expressed interest in participating in the selection and qualification of the appropriate stainless steel type to use for reinforcing steel in the MHP. BERGER/ABAM was requested to develop a task statement for this material selection and qualification, and share it with NFESC for collaboration on this issue.

Regarding provisions for use of interior spaces for other support uses, it was agreed that BERGER/ABAM would make a live-load-draft allowance for one floor of office loading and provide watertight man door access into this space. It was agreed that corbels would be shown on the wall panels that would allow the easy installation of a floor system for this space, if desired.

It was agreed that text would be provided regarding general ways that power and HVAC could be provided to these spaces.

Report text will also be provided to address the pros and cons of having a watertight deck for the floor of the utility level interior spaces. Include likely cost effects.

Provide report text to discuss the possibility of providing ladders at the edge of the operations deck to allow more direct access from the operations level to the service level.

In the report, discuss the possibility of a composite stairway that could be hung over the side in the standoff space created by the fender system. This type of stair could be moved into place at the bow and stern of moored vessels after they have been berthed and moored.

The possibility of including additional substations to increase the electrical capacity of the MHP should be addressed in the report discussion of utilities.

It was decided to leave the 9-foot head room on the utility deck for now, with the realization that it may be possible to reduce this as a value-engineering effort, providing alternative methods of replacing substations prove to be economically viable.

V&G to provide a report discussion of possible ways to incorporate metering of electrical and potentially other utilities to and from berthed vessels. Naval stations are trending toward direct charges to ships for berthing support utilities and services.

V&G to add report commentary regarding the ability to provide data and communication hookups using state-of-the-art methods. NFESC requests that, with regard to data and communications, provide a capacity strategy that will hopefully be valid 50 years in the future.

V&G will provide a matrix of the vessels that can be served with the basic substation plan and with additional substations that could be added in the central pier turnaround space.

Regarding industrial power – it was decided that industrial power would be 440 volt into mobile power units. Thus, industrial power will come from the same turtlebacks that the ship's power comes from. Industrial power cables can be routed over the edge of the operations deck and through a utility gallery window in the same manner as the ships power cables (no holes required in the operations deck).

There will be one portable pump for CHT and one for oily waste for each berth. We may also use the same type of portable pumps for the stormwater. A report discussion of how this can be done will be developed.

For carrying mechanical utilities across the moving ramp joint, either three-ball joint type connectors or braided hose will be used. The system with the lower maintenance cost will be selected for use.

V&G will identify hardware that can be used for quick disconnect of utilities in the event of a warned storm surge at an alternate site and provide text about how these features could be used in the event of an impending hurricane.

V&G will provide a report discussion of the pros and cons of using portable steam generators in the event a requirement for steam is developed (there currently is no requirement for steam with the vessels currently under consideration as primary and alternate vessels).

A discussion of the proposed piping material led to the direction that PVC pipe should not be used for any of the utility systems. V&G will contact the Navy piping materials people to confirm their initial recommendations on piping materials. NFESC will provide contact information to V&G.

V&G to investigate Navy and commercial practice to determine whether or not fire water needs to be in a steel line. Preliminary piping material selections are as follows.

- Compressed air – stainless steel
- Potable water – FRTP (unless steel is required for fire water lines)
- CHT – fiberglass
- Oily waste – double wall FRTP

V&G to review the Phase 1 report for candidate places to use FRP in the utilities systems. Some candidate locations mentioned at the progress meeting include the following.

- Composite piping
- Service deck ramp or elements of the ramp
- Walkways/stairways
- Interior floor elements

- Cable trays
- Cable hangers
- Removable curb elements
- Secondary fendering
- Prestressing conduits

NFESC is interested in developing a scope of work for a potential prototype testing phase for the MHP program to begin in the fall of 2001.

The prototype testing phase would be focused toward high-risk items that must be proven to assure the viability and maintainability of the concept.

For example

- The function of the MHP mooring system
- Special tolerances

The program should address

- What are the high-risk items and why are they high risk?

  Technical risk – do we know how to design it?
  Functional risk – will it work as intended and do the things necessary?
  Cost risk – is it economical, do we understand cost factors?
  Maintainability risk – is the maintenance requirement low and acceptable?
  Constructability risk – Is it possible to economically construct details to reliably achieve acceptable quality?

- What critical criteria are verified by each test?

- What criteria, if met, shows that the test is successful?

To the extent feasible and practical, any prototype phase tests should be assumed to be performed at NFESC.

Next Step

The design team is currently working to develop a draft Phase 2 report for submission to NFESC in mid June. Subsequent to review by NFESC, we will issue a final report in late June.

If you have questions or comments please give me a call at 206/431-2300 or e mail lanier@abam.com.

Sincerely,

Michael W. LaNier, PE
Executive Vice President
BERGER/ABAM Engineers Inc.

MWL:kjr
cc: V&G – Schulte
BERGER/ABAM – Mast, Birkeland, Price, Wernli, Zinserling

Attachment A

Agenda
Modular Hybrid Pier Progress Meeting No. 2
BERGER/ABAM Offices
Monday, 16 April and Tuesday, 17 April 2001

Monday, 16 April – 10:00 a.m. (Assuming NFESC travel in the a.m.)

1. Review of configuration design revisions
    - Review of design criteria
        - Any questions regarding the criteria?
        - References are
            - Criteria for Piers 10/11 San Diego
            - Criteria for Bremerton Pier D
            - DM26.6
            - DM1025.1
    - Primary vessel berthing arrangements
        - Bollard spacing approach
        - Fender support provisions
            - Primary
            - Amphibs
            - ABAM Bollards
    - Optional vessel berthing arrangements
        - Optional vessels have been added as they have been identified
        - Optional nesting arrangements?
    - MHP operations deck
        - Drive lanes
        - Width
        - Lighting standard locations
        - Drainage options
    - MHP overall length
        - Distance between vessels
        - Potential use of space between pier and seawall
    - MHP modular approach
        - Typical pier 4 modules
        - Three module pier
        - Two module pier
        - Modular mooring approach
    - Status of weight/draft determination
        - Items included in draft determination
        - Discussion of operations deck live load assumptions
2. Discussion of status of MHP mooring design
    - Modular concept
    - Environmental criteria
    - Benefits of concept/approach

Design of mooring elements within MHP
Design of pile cap/ mooring shaft
What is needed to moor in different locations?
Construction sequence

3. Discussion of status of MHP access ramp design
   Concept
   Common elements
   Site specific variations to ramp design

4. Discussion of status of MHP module-to-module joining design
   Issues
      Clearance on utility level
      Constructability
      Tolerances
      Ability to disassemble
      Corrosion prevention

5. Discussion of auxiliary uses of internal MHP spaces
      Ships' personnel shore side services
      Training rooms
      Vessel equipment maintenance shops
      Maintenance stores
      Maintenance offices

6. Discussion of NFESC interest in floating submarine berthing pier
   See attachment

7. Discussion of possible prototype testing phase
   See attachment

Tuesday, 17 April – 8:30 a.m.

1. Discussion of team responses to NFESC comments on progress report
   See attached

2. Discussion of utility deck configuration and layout
   Access provisions
   Utility windows
   Drive aisles
   Utility aisles
   Drainage options

3. Discussion of approach to electrical vessel service utilities
   General approach
   Approach for distribution to vessels
   Amount of power provided
   High-voltage supply
   Substations
   Turtleback configuration
   Substation replacement approach
   Industrial power
   Design for easy modification

4. Discussion of approach to mechanical vessel service utilities
    - General approach
    - Approach for servicing different vessel types
    - Sizing of mechanical utilities
    - Mobil wetwell concept
    - Module-to-module utility joining
    - Design for easy modification

5. Status of utility interface design with ramp/pier relative motions
    - Motions to be accommodated
    - Concepts under consideration
    - Connections to shore side utilities

6. Discussion of NFESC interest in floating submarine berthing pier

7. Discussion of possible prototype testing phase
    - See attached

Floating Submarine Berthing Piers

NFESC client interests and thoughts

Recap of concept information sent to NFESC
- See attached

BERGER/ABAM applicable background in submarine berthing facilities
- Trident facilities
- Camels
- Utility handling booms
- Deperming piers

Next step

MHP Prototype Testing Phase Ideas

NFESC thoughts regarding prototype phase

Ramp mock-up
- Scale model
- Full size

Pier width functional mock-up in a parking lot
- Operations deck
- Service deck

Build and test a mobile wet well

Build a mooring installation and exercise under load
- Scale model (no loading)
- Full scale test installation

Utility connection at module-to-module joint mock up

Utility connections across ramp – mock up and test
- Scale model
- Full scale test (repetitive motion test)

Utility connections to force mains mock up

Turtleback mock up with utility windows

Applied mooring and berthing study
- Meet with docking officers and tug captains
- How best to moor the full range of design vessels
- Bollard locations
- Fendering for the full range of design vessels

Mock up of substation replacement using air bearings

Develop full-size pier with reduced length
(two modules long)

- Evaluate
  - Construction costs
  - Constructability
  - Tolerances
  - Mating concept
  - Mooring concept
  - Ramp concept
- Validate operational assumptions

Design facility as an operational facility with one berth on each side

Deployment study

- Determine how to take best operational and economic advantage of the modular approach proposed
- How many modules are needed to support Navy plans?
- What is the full range of needs to be addressed?
- How can the modules best be procured?
- How can the MHP installation best be handled?
  - FAR requirements
  - Contracting methods
  - Quality assurance concepts