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# APPROPRIATE SERVICING COMBINATIONS OF PLATFORMS AND SHORT RANGE AIDS TO NAVIGATION

TECHNICAL MEMORANDUM

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# 1 INTRODUCTION

## 1.1 BACKGROUND

This technical memorandum is one in a series of brief working papers in support of the Service Force Mix Evaluation Methodology Development Project (CG-569). The purpose is to provide input to the development of a methodology which will permit the determination of a preferable mix of servicing vessels and aids in a given district. This particular document will address one portion of the total aspect of input data.

This paper is meant to be an informal project working paper and not a formal referable report. It is one in a series which provides documentation for the derivation of some of the input data to be used in the service force mix evaluation methodology. The perspective within which this document fits is presented in the study plan entitled, "Short Range Aids Service Force Mix Methodology Development (CG- 569) - Study Plan" which served as the first project deliverable.

The project final report will draw together these individual efforts and summarize the results. The data are presented here to assist in the documentation effort. Work presented as developed rather than at the end of the study will more accurately represent the effort. Also, timely presentation of assumptions and data affords early review and comment and serves to improve the overall result.

## 1.2 SCOPE OF REPORT

This report develops and presents the data which allows the methodology to identify assignments of aids to platforms which might be inappropriate. Aids assigned to platforms are checked for three possible conficts. They are: mooring depth versus minimum vessel draft, aid/mooring weight versus vessel lifting capacity, and aid environment versus vessel seakeeping abilities. The data are presented in the form of matrixes of acceptable aid-platform assignment combinations for each condition.

# 2 MATRIXES OF ACCEPTABLE AID-PLATFORM ASSIGNMENTS

## 2.1 INTRODUCTION

The methodology requires that an operator assign all aids to servicing units. In usual practice, a new assignment would be made by altering the existing one. Many aid assignments can be made at one time by grouping aids geographically. This process may result in an inappropriate assignment of an individual aid to a servicing unit. This methodology attempts to minimize this possibility by checking each aid-platform assignment. Before the methodology evaluates an alternative, the assignments are checked to assure that three conditions are met. First, minimum aid mooring depths are compared to minimum draft for the servicing vessel. Second, maximum aid and mooring weights are compared to maximum lifting capacities of the vessels. Then, aid environment (exposed versus semi-exposed or protected) is compared to maximum environment allowed for the assigned vessel type. If any of these conditions are unfavorable, a message is presented to the person performing the aid assignment. This message will indicate that a potential conflict exists and the assigner will be given an opportunity to change the assignment.

## 2.2 VESSEL DRAFT RESTRICTIONS

Part of the platform performance characteristics presented in a previous technical memorandum included allowable drafts for servicing vessels. These drafts are used here in combination with a review of mooring depths from the First Coast Guard District current Assignment List. Minimum mooring depths for each aid type were determined. The resulting comparison is displayed in Figure 1. Acceptable combinations are checked. Non-checked combinations indicate a possible conflict and should be further investigated. Where possible, vessel draft will be compared with actual aid depth. Otherwise, the chart in Figure 1 will be used.

| | 9x32 | 9x20 | 8x26 | 7x17 | 6x20 | 5x11 | 3½x8 | 1 | 2 | 3 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WLB | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | |
| WLM | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| WYTL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| BU | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| BUSL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| ANB | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| TANB | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| OTHER | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |

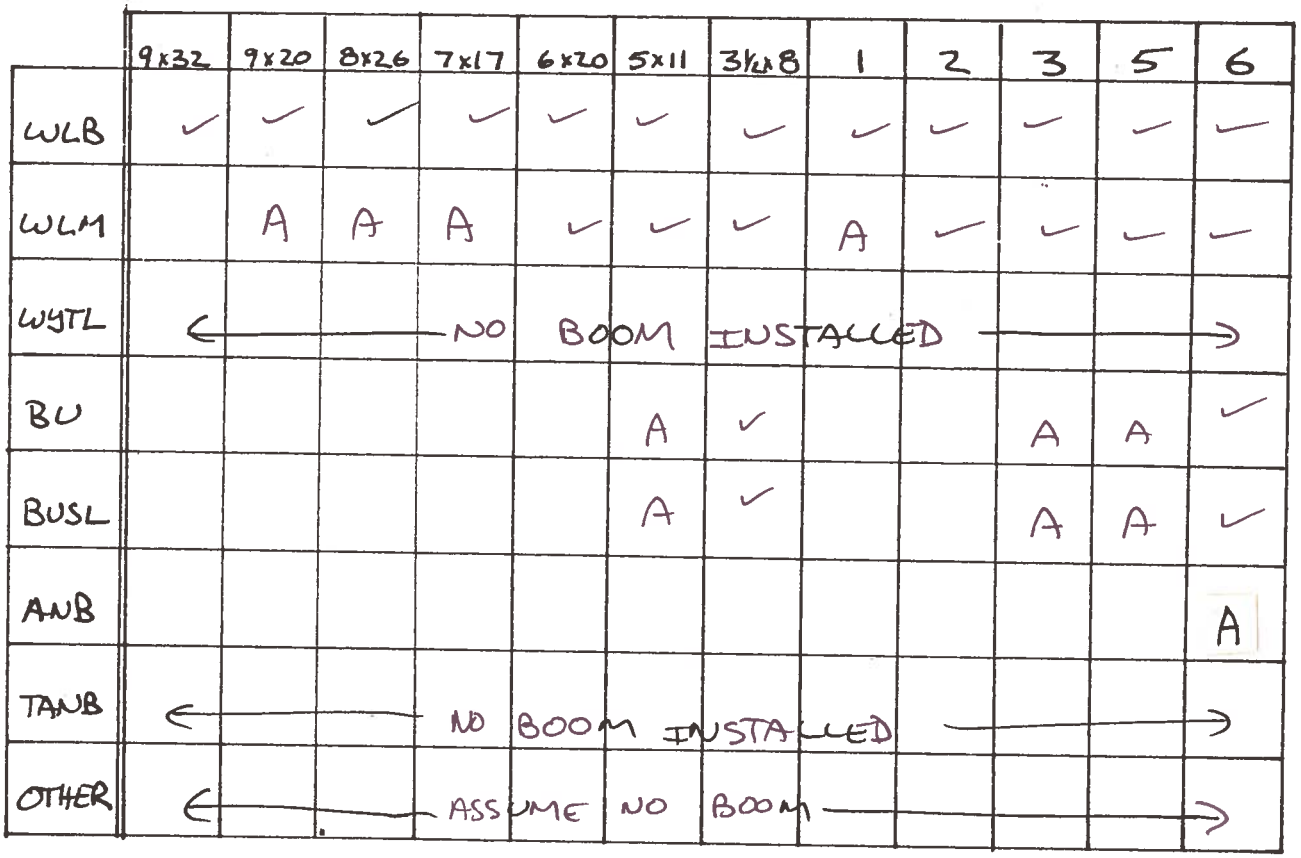
FIGURE 1 MINIMUM MOORING DEPTH VS PLATFORM DRAFT

## 2.3 VESSEL LIFTING CAPACITIES

An earlier technical memorandum, "Platform Lifting Requirements for Short Range Aids to Navigation in the First Coast Guard District", determined maximum weights by aid type in the First District. Weights were determined separately for buoys and for moorings which include sinkers and chain. The matrix in Figure 2 compares these maximum weights with platform lifting capabilities. Acceptable combinations of lifting capacities and maximum weights for floating aids are checked. Non-checked combinations indicate a possible conflict and should be further investigated. In the cases marked with an "A", the platform can lift the aid but not the mooring.

## 2.4 VESSEL SEAKEEPING ABILITIES

Similarly, the environment of the aid can be compared with the maximum seakeeping abilities of the servicing vessel. This capability will be built into the methodology, but the current status of the aids data base in the First District does not allow for this capability to be exercised at this time.




A - aid can be lifted, mooring cannot

FIGURE 2 MAXIMUM AID/MOORING WEIGHT VERSUS PLATFORM LIFTING CAPABILITY

| | 9x32 | 9x20 | 8x26 | 7x17 | 6x20 | 5x11 | 3½x8 | 1 | 2 | 3 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WLB | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| WLM | | | | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| WYTL | | | | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| BU | | | | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| BUSL | | | | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| ANB | | | | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| TANB | | | | | | ✓ | ✓ | | | | ✓ | ✓ |
| OTHER | | | | | | ✓ | ✓ | | | | ✓ | ✓ |

FIGURE 3 AID ENVIRONMENT VERSUS PLATFORM SEAKEEPING ABILITY