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DATA ENTRY ABOARD SHIP - U.S.S. ALBANY (CG-10) - SHIP TRIAL REPORT

**DAVID W. TAYLOR NAVAL SHIP  
RESEARCH AND DEVELOPMENT CENTER**

Bethesda, Md. 20084



DATA ENTRY ABOARD SHIP  
U.S.S. ALBANY (CG-10)

SHIP TRIAL REPORT

by

Ronald N. Koontz  
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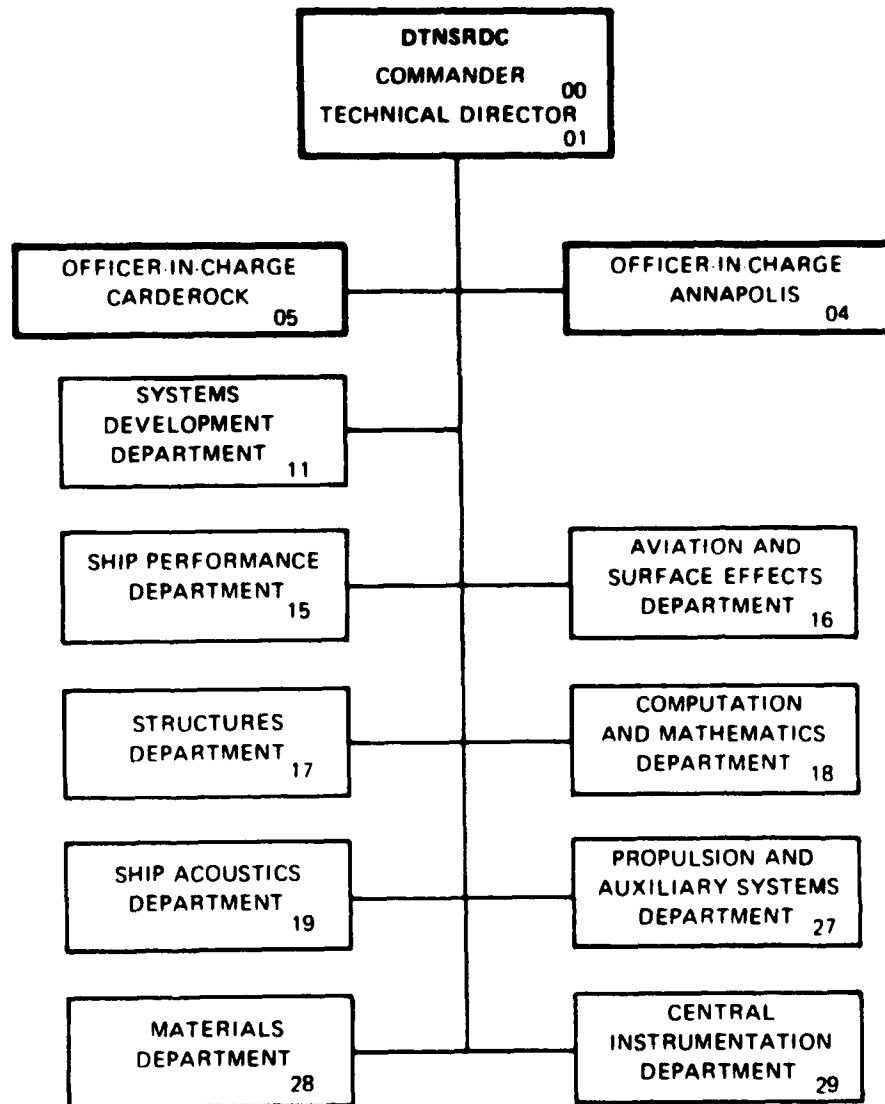
COMPUTATION AND MATHEMATICS DEPARTMENT  
DEPARTMENTAL REPORT

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------|
| 1. REPORT NUMBER<br>14 CMD-05-76                                                                                                                                                                                                                                                                                                                                                                | 2. GOVT ACCESSION NO. | 3. RECIPIENT'S CATALOG NUMBER                                                                        |
| 4. TITLE (and Subtitle)<br>DATA ENTRY ABOARD SHIP - U.S.S. ALBANY (CG-10)<br>SHIP TRIAL REPORT                                                                                                                                                                                                                                                                                                  |                       | 5. TYPE OF REPORT & PERIOD COVERED<br>INTERIM REPORT 1974                                            |
| 7. AUTHOR(s)<br>Ronald N. Koontz<br>Jack A. Jeffers                                                                                                                                                                                                                                                                                                                                             |                       | 6. PERFORMING ORG. REPORT NUMBER                                                                     |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS<br>David W. Taylor Naval Ship R&D Center<br>Bethesda, MD 20084                                                                                                                                                                                                                                                                                      |                       | 8. CONTRACT OR GRANT NUMBER(s)                                                                       |
| 11. CONTROLLING OFFICE NAME AND ADDRESS<br>Naval Supply Systems Command<br>Code 043<br>Washington, D.C. 20376                                                                                                                                                                                                                                                                                   |                       | 10. PROGRAM ELEMENT, PROJECT, TASK<br>AREA & WORK UNIT NUMBERS<br>62760N<br>TF53531045<br>1-1867-012 |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)                                                                                                                                                                                                                                                                                                                     |                       | 12. REPORT DATE<br>11 January 1975                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                 |                       | 13. NUMBER OF PAGES<br>13                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                 |                       | 15. SECURITY CLASS. (of this report)<br>Unclassified                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                 |                       | 15a. DECLASSIFICATION/DOWNGRADING<br>SCHEDULE                                                        |
| 16. DISTRIBUTION STATEMENT (of this Report)<br>16 TFE-531, NS500-1-1867-012<br>APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED.<br>17 TFE-531-045                                                                                                                                                                                                                                           |                       |                                                                                                      |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)                                                                                                                                                                                                                                                                                                      |                       |                                                                                                      |
| 18. SUPPLEMENTARY NOTES                                                                                                                                                                                                                                                                                                                                                                         |                       |                                                                                                      |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number)<br>Microprocessors<br>Logistics<br>Shipboard Data Processing<br>Source Data Automation                                                                                                                                                                                                                       |                       |                                                                                                      |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br>This report documents the results of a shipboard test, on the CG-10, of the Data Entry Aboard Ship (DEAS) breadboard system. A six week test of the system was conducted using ship's data and personnel to exercise the system. This initial test of system concept feasibility was generally successful. |                       |                                                                                                      |

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#### A. OBJECTIVE

The general objective of this shipboard test was to evaluate the viability of DEAS in support of effective execution of shipboard logistic services. The area of application addressed by this test was supply department information processing, excluding Optar reporting and financial reconciliation. The specific test objectives for this experiment were to:

- 1) Evaluate DEAS as a replacement for the existing manual operations of the supply system,
- 2) Measure the ease of adaptability of supply personnel to the DEAS system, and
- 3) Operate the DEAS supply system in parallel with normal supply department operations.

#### B. ENVIRONMENT

DEAS was tested in port on board the cruiser, U.S.S. ALBANY, from 23 September 1974 to 15 November 1974. The DEAS hardware was set up on a desk in the ship's busy supply office. There were often eight or more supply personnel working in the office. The entire test was conducted under in-port conditions. The naturally hectic activity experienced by the supply department during a port assignment was increased during this experiment because the ship was in the process of being transformed into a flagship. This made it difficult to reasonably request a large amount of the personnel's time for aid in the DEAS test.

NSRDC civilian personnel were responsible for monitoring the experiment. Two supply department personnel, an SK2 and an SKSN were available for operating the system between one and two hours per day. In addition, the supply officer, the supply support center warrant officer, and the supply chief were able to spend time getting fully acquainted with and evaluating the DEAS system. The ship carried approximately 1,400 SIM and 55,000 Non-SIM stock items. About 6,000 outstanding requisitions and status messages were contained in the outstanding requisition file. It was not feasible to automate the entire files. Instead, the consumable stock records were selected as a meaningful segment for automation. The consumable items had more actions per record than other items in the ship's stock battery. The frequency of consumable stock actions provided a valid, thorough test of the DEAS supply system.

#### C. TEST DESCRIPTION

The DEAS shipboard test aboard the U.S.S. ALBANY was comprised of training, supply data file creations, and operation in parallel with supply department operations. Phase one of the test was to train the two assigned supply personnel to use the DEAS breadboard hardware and create master files containing the consumable records.

Each man was given two 2-hour training sessions to familiarize him with the data entry of forms and the master file search program in the DEAS system. The training included:

- 1) How to handle cassette tapes and change printer paper,

- 2) Load data entry programs (Supply Forms) into computer memory,
- 3) Switch from one data entry program to another,
- 4) Key in data to complete the displayed supply forms,
- 5) Learn the validation and correction features for the displayed supply form,
- 6) Learn to switch to the search program and interpret the displayed data fields of the 1114 Stock Record or the 1348 Requisition and Status Records, and
- 7) Learn the proper open and close down procedures of the DEAS computer.

After the training sessions the entire consumable stock battery and consumable outstanding file were keyed in to create the 1114 SIM and 1348 Outstanding Master File and the Non-SIM Master File. A total of 996 records was placed on the master files. A breakdown of the records is given in the following list:

- 1) 1114 SIM Stock Records - Total 382 Records
- 2) 1114 Non-SIM Stock Records - Total 379 Records
- 3) 1348 Outstanding File (Requisitions and Status) - Total 235 Records.

Data entry times for these records were typically 50 records entered per hour. Entry times of up to 65 records per hour were recorded. These times include printing the form upon completion of entry but exclude such things as major interruptions to perform non-DEAS duties, coffee breaks, and master file updating times.



The next phase of the DEAS test was to run parallel to the supply department manual system.

Each sailor spent 10 hours to train and familiarize himself with all facets of the DEAS system. Included in their training were such points as:

- 1) Key input of 1250 issues, 1348 requisitions, status messages, 1114 SIM and Non-SIM data changes, and 1348-1 receipts,
- 2) Tape changing to provide inputs and outputs required by various DEAS programs,
- 3) Creating new daily master files and storing yesterday's master files,
- 4) Performing all functions of program selection, updating master files, and generating reports,
- 5) Audit trail-reject lists were produced and studied to check accuracy of inputs to update the master files, and finally,
- 6) Producing reports to determine reorder quantity, latest status and progress of outstanding requisitions, and data field maintenance required for stock records.

Following the 10-hour training period, the supply personnel were operating the DEAS system parallel to the manual system.

The assigned supply personnel worked two hours each day to run the DEAS hardware and performed supply data maintenance and forms creation. Manual forms which related to the DEAS test files were tagged during daily manual processing and later entered into the DEAS system. After key entry of daily supply transactions (1250 issues, loss by inventory, gain by

inventory, 1348 requisitions, etc.), the 1114 SIM and 1348 outstanding file was updated each afternoon. The audit trail was produced by the master file update program. The listing was examined by the supply clerks to check the accuracy of the update action. If an error occurred on the audit trail, corrective action was taken.

Every two or three days these actions occurred:

- 1) The 1114 Non-SIM file was updated and the Non-SIM audit trail was checked,
- 2) Candidate reorder lists were produced for both the SIM and Non-SIM files,
- 3) A listing of 1348 outstanding orders and status was printed for the ship's departments,
- 4) A complete listing of stock records was printed to keep current information on all 1114 records accessible for review and for test monitoring.

In addition, one batch (fifty 1348 requisitions) was successfully transmitted to and received back from the NSRDC shore computer in Bethesda, Maryland via voice grade telephone lines.

#### D. REVIEW OF SUPPLY DEPARTMENT MANUAL SYSTEM

##### 1) Record keeping within the supply department.

A typical survey of the 1114 stock battery showed approximately 13 percent of SIM and 6-1/2 percent of Non-SIM records were below reorder point and not on order. This indicates that 1250 issues are posted correctly, but there is no time for a 1348 order for stock replenishment to be produced.

Another survey indicated that up to 40 percent of the SIM records contain incorrect high and low limits and a smaller percent of other incorrect data, such as an outdated unit price. Many Non-SIM records also contained inaccurate data fields.

##### 2) A review of the 1348 outstanding file indicated frequent errors in the 1348 requisitions released by the ship for ordering supplies. Data fields repeatedly incorrect were unit of issue and unit price. Other errors included fund code, NSN, etc.

There were frequent problems in locating 1348 orders listed on the 1114 stock record. That is, it was sometimes difficult to determine whether a stock item had been ordered or if, in fact, the ordered stock item had already been received. The 1348 order listed should be in the 1348 outstanding file, but sometimes it was found in the 1348 completed file and not so indicated on the 1114 stock record.

Another problem in locating order information may be that the order is out-of-sequence in the 1348 outstanding file or 1348 completed file.

#### E. CONCLUSIONS

The DEAS system was well received by the personnel in the supply office. Their critique was positive, their only complaints being that we had not yet automated the financial portion of the supply system and that we could not leave the system on board permanently. The tutorial approach designed into the software allowed the personnel to learn the entire system in a very short time (14 hours). In fact, training was accomplished at a rate exceeding expectations. Changes recommended by the supply personnel were easily incorporated into the system. Also, it was found that the financial system can be easily added.

The supply officer, Lieutenant Commander Haase, made two recommendations that should not be ignored. First, he recommends that the actual shipboard system be programmed in a higher level language, preferably COBOL. Second, he did not think that using cassette tapes as the only storage medium was adequate to handle the volume of data processed on board a heavy cruiser.

AREAS WHERE MANPOWER CAN BE UTILIZED WHEN AUTOMATION SAVES TIME IN PRESENT DUTIES.

According to W03 Clarke the key areas of manpower need are:

- 1) expediting material,
- 2) monitoring SIM's, Outstanding, and Historical Demand Files, and
- 3) financial review.

LIST OF AREAS WHERE PERSONNEL EFFORT SAVED BY DEAS COULD BE REAPPLIED WITHIN THE SUPPLY DEPARTMENT.

1. SIM Review - personnel needed for proper updating, correcting stock records. More frequent physical inventory checks required and more accurate counts posted. Consolidate stock locations for easier access to material.
2. Outstanding File - continuous review and expediting of orders. Provide back order reconciliation which is ineffective today.
3. Historical Demand File - include frequently ordered items into stock battery.
4. Financial Management - improve the accuracy of the accounting and reporting systems by spending more time on record keeping and bills payment.
5. COSAL Maintenance - manpower is needed for continuous updating of the APL (Allowance Parts List) and the ISL (Integrated Stock List). It is also necessary to maintain the various electronic configurations versus the 4110 record (manufacturers guide). 1220 record listing COSAL updates require additional manpower.

6. Enlisted Personnel Improvements with Automation -

morale and labor will improve if:

- 1) the night duty section is relieved of completing day shift work,
- 2) frequent after hours work by the day shift is relieved, and
- 3) skills of the supply ratings will improve when time is gained for the necessary training of the entire supply department personnel.

#### F. MANAGEMENT CONTROL IMPROVEMENTS USING DEAS

The key area for manpower requirements in the supply department in navy ships is: 1) expediting material, 2) monitoring SIM's, outstanding and historical demand files, and 3) financial review of the accounting and reporting systems.

At the present time, however, the majority of the supply department's duties are clerical and filing tasks, there is no time to perform many of the above listed requirements.

The DEAS system saves time in completing forms. Updating records is automatic whenever an issue is posted or a receipt is entered. Re-order and generation of the 1348 order document is automated. Status records are automatically sorted and listed to the 1348 outstanding file. A daily OPTAR log will be automatically produced for each 1348 order document.

Thus, many of the DEAS project objectives are met by reducing supply department clerical duties and freeing supply department manpower to accomplish other key supply department duties.

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