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AGENCY HYDROGRAPHIC/ TOPOGRAPHIC CENTER WASHI..
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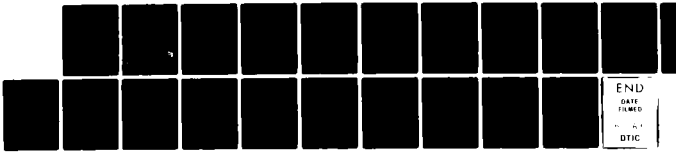

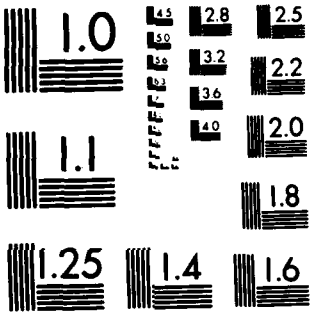

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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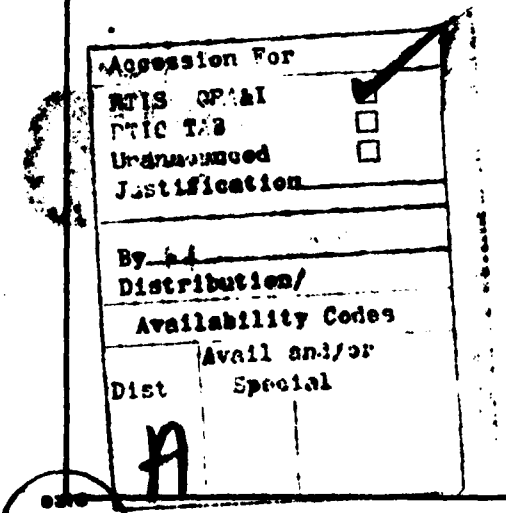
ABSTRACT:

The Defense Mapping Agency Hydrographic/Topographic Center (HTC) has just completed the automation of its Broadcast Warnings and this software is now operational on the Automated Notice to Mariners System (ANMS). The new Broadcast Warning Subsystem is comprised of over 40 programs and subroutines. The data base of active warnings is constantly updated by an interactive data entry subsystem to provide mariners with the latest navigational safety information. All data base management of canceled messages, as well as the printing of the messages, is now performed by the ANMS computer. The ANMS computer creates a tape to automatically typeset DMA's Daily Memorandum. This makes the text of Broadcast Warnings available to mariners and other hydrographic offices in the interim period between the actual radio broadcast and receipt of U. S. Weekly Notice to Mariners by the various users. As an added benefit, all global communications links which are already installed on the ANMS for the Chart Correction Subsystem have been connected to the Broadcast Warnings Subsystem. This new service will allow mariners who may have missed relevant warnings to query the ANMS computer for the complete text of all messages in effect in their subregion (as indicated by the first two numbers of any HTC chart). The implications of this system as a means to enhance and support a truly effective worldwide navigational warning service are immense. The ANMS host computer system, with its global communications links, promises to make HTC's system an important element of any future global Navigation Warning System.



AUTOMATION OF DMA's BROADCAST WARNINGS: A SIGNIFICANT MILESTONE IN MARINE COMMUNICATIONS

By

Maurice Harding

and

Morris F. Glenn

ABSTRACT:

The Defense Mapping Agency Hydrographic/Topographic Center (HTC) has just completed the automation of its Broadcast Warnings and this software is now operational on the Automated Notice to Mariners System (ANMS). The new Broadcast Warning Subsystem is comprised of over 40 programs and subroutines. The data base of active warnings is constantly updated by an interactive data entry subsystem to provide mariners with the latest navigational safety information. All data base management of canceled messages, as well as the printing of the messages, is now performed by the ANMS computer. The ANMS computer creates a tape to automatically typeset DMA's Daily Memorandum. This makes the text of Broadcast Warnings available to mariners and other hydrographic offices in the interim period between the actual radio broadcast and receipt of U. S. Weekly Notice to Mariners by the various users. As an added benefit, all global communications links which are already installed on the ANMS for the Chart Correction Subsystem have been connected to the Broadcast Warnings Subsystem. This new service will allow mariners who may have missed relevant warnings to query the ANMS computer for the complete text of all messages in effect in their subregion (as indicated by the first two numbers of any HTC chart). The implications of this system as a means to enhance and support a truly effective worldwide navigational warning service are immense. The ANMS host computer system, with its global communications links, promises to make HTC's system an important element of any future global Navigation Warning System.

INTRODUCTION:

DMA has had an important role in the broadcast of Navigational Warnings to Mariners since 1908. That year our parent organization, the U. S. Navy Hydrographic Office, began issuance of hydrographic warnings three times daily from eight stations on the Atlantic Coast and seven stations on the Pacific Coast (one of these being in Alaska). This system was amended over the years and today the U. S. participates in the Worldwide Navigational Warning Service (WWNWS). It is not the purpose of this paper to discuss the WWNWS, but to describe the in-house automation of DMA's broadcast warnings in support of WWNWS goals. The automation of DMA's message

handling, printing and global query capability is an important advancement in the field of marine communications for any cooperative global automation of WWNWS. Two recent papers provide an excellent overview of WWNWS and DMA's role in that service; namely:

a. "The Worldwide Navigational Warning Service" by J. E. Ayres and J. P. Lyall, presented at the International Symposium on Ship Operations in New York City in November of 1981.

b. "The Broadcasting of Navigational Warnings on the High Seas" by Mr. Mitchell Kalloch, presented at the Technological Interchange Week sponsored by the DMA Inter American Geodetic Survey from May 14-19, 1979.

Reference to these documents will answer all questions concerning the international considerations of DMA's participation in the WWNWS service, the history of our Broadcast Warnings program and the specific details of the entire manual procedure which DMA has since automated.

OVERVIEW OF DMA's BROADCAST WARNING SYSTEM

The United States navigational warning broadcasts consist of radio transmissions in the form of NAVAREA IV's, NAVAREA XII's, HYDROLANTS and HYDROPACS, which are broadcast to all ships without regard to nationality or purpose. The other fourteen NAVAREAS of the world are handled generally by other nations with extensive communication facilities.

The NAVAREA IV broadcast covers the waters contiguous to North America from the Atlantic coast eastward to longitude 35°W. and between latitudes 7°N. and 67°N. The NAVAREA XII broadcast covers from the Pacific coast westward to about 180° and the ocean area between latitude 67°N. and the equator. The HYDROLANT broadcast covers those water areas outside and eastward of the NAVAREA IV area, and the HYDROPAC broadcast covers those water areas outside and westward of the NAVAREA XII area.

All messages are consecutively numbered annually commencing 1 January and remain in force until canceled. These warnings, which are normally broadcast on the next two schedules after receipt by the transmitting station, contain information considered vital to safe navigation.

Broadcast particulars, including schedules, are listed in Radio Navigational Aids, Pubs. 117A and 117B, and are corrected in the weekly Notice to Mariners. Separate numerical lists of each series of messages issued during the past six weeks (and still in force) are broadcast every Wednesday.

Copies of NAVAREA IV and HYDROLANT messages are printed in the Atlantic edition of the Daily Memorandum while copies of NAVAREA XII and HYDROPAC messages are printed in the Pacific edition of the Daily Memorandum. The Daily Memorandum makes available to the mariner and hydrographic organizations each working day copies of the previous day's messages. It is designed to fill the time gap between the radio broadcast and the receipt of the Weekly Notice to Mariners.

The following are some examples of subject matter contained in warnings issued by the Defense Mapping Agency Hydrographic/Topographic Center;

1. Casualties to major and outlying aids to navigation; for example, primary lights, lightships, large navigational buoys (LANBY's), approach or sea buoys, etc. Local broadcasts should be monitored for information concerning inshore, harbor, and inland waterway aids that may not affect offshore navigation.

2. Establishment of new aids that could affect the safety of offshore navigation or alterations of an established aid, where the change might be confusing.

3. Floating dangers, such as drifting mines in or near sea lanes or large derelicts adrift on the high seas. Following the end of the "Ice Season", all reports of ice below 50° North latitude which endanger the North Atlantic Shipping Lanes are broadcast. Trees, timbers, or drifting buoys do not normally constitute a danger for oceangoing ships and are not broadcast on the long range systems, but are promulgated on short range or local broadcasts.

4. New or amended shoal depths or changes in hydrography.

5. Dangerous wrecks, obstructions, etc.

6. Marine, air or submarine disasters and searches for survivors. This type of information is normally broadcast over the long range navigational warning system, as well as the local broadcast in order to achieve the widest possible dissemination. Reports of overdue ships and aircraft are also normally broadcast.

7. Selected exercises and hazardous operations conducted by units of the armed forces. More specifically, exercises or operations employing the use of flares, searchlights or pyrotechnics that may be mistaken for distress signals; night firing exercises; darkened ship exercises; submarine exercises; missile launches; space missions; and nuclear tests are normally broadcast. Such warnings are purely cautionary and are not intended to obstruct the right of innocent passage upon the high seas.

8. Unexploded ordinance at depths of less than 100 fathoms is broadcast, when it constitutes a definite danger to shipping.

9. Mobile drilling rig operations at sea. Such rigs may be encountered in operation or in transit anywhere in the world. The on-site drilling location and transit through established sea lanes is broadcast if known. Also, vessels engaged in seismic operations often detonate explosives and tow extremely long cables.

10. Malfunctions, scheduled off-air time for maintainance, and other information concerning electronic aids to navigation including: marine radiobeacons (marker radiobeacons are not broadcast), LORAN-A, LORAN-C, Navy Navigation Satellite System and OMEGA.

11. The presence of large unwieldy tows in congested waters.

12. Notification of special changes or events. For example, alteration or suspension of mandatory traffic separation schemes or activation of a new buoyage system.

Section III of the weekly Notice to Mariners includes the text of each message issued during the week, except those canceled prior to publication. A quarterly summary of all the effective broadcast warnings is included in Section III of Notice to Mariners numbers 13, 26, 39, and 52.

THE AUTOMATED NOTICE TO MARINERS SYSTEM

There are several published articles that will provide readers with details concerning the ANMS hardware specifications and the capabilities of the initial Chart Corrections Subsystem. In particular, refer to a paper by Morris F. Glenn presented at the 12th International Hydrographic Symposium in Monaco in April 1982 entitled "Chart Corrections via Global Communications." This paper and several others are reprinted in a DMA/HTC Navigation Department pamphlet entitled "Automated Notice to Mariners System" dated 5 March 1982. (Available from DMA upon application).

The present ANMS hardware is a combination of three commercially available systems: Prime 400 computer and peripherals, Imlac PDS-4 intelligent terminals and peripherals, and a Photon Pacesetter Mark III typesetting machine. The intelligent terminals provide the man/machine interface to load the Broadcast Warnings data into the ANMS computer controlled and managed files. Intelligent terminals were utilized because they were already a part of the ANMS chart corrections system. Also, they provide a capabilty to plot a hard copy of the information shown on the screen display, and a simplified data entry procedure which could be aided by pre-programmed computer function keys. The Prime computer is the heart of the ANMS and manages all data files, data processing and data communications (See Figure 1). It also creates the print tape in a special format to drive a Photon typesetter. The resultant hard copy can be easily formatted into sequential pages which are camera-ready for making press plates. Once the data base is built or corrected via an Imlac terminal, the computer can generate an extract of Broadcast Warning information within minutes and the contents will be completely up-to-date. The three hardware units are combined to form a powerful publications management system collectively called the ANMS.

Although the hardware is important, one might say the real heart of the ANMS is the specially developed applications software. The Chart Corrections Subsystem software took over four years to develop and it consists of about 45 individual programs. They operate under the Prime system software, PRIMOS, and are written in COBOL. The intelligent terminal is connected to the Prime computer via a 9600 baud line and is in continuous communcation with the ANMS data files which are stored on the Prime Disk Units.

The Broadcast Warning Subsystem was the second software system to be installed on the ANMS. The first Daily Memorandum produced by the Navigation Department completely on the ANMS computer was No. 20 of February 1, 1982. The Broadcast Warning Subsystem shares the overall design concept of the Chart Corrections Subsystem (i.e., data is loaded to Prime disk files via the Imlac terminal and a print tape is created by the computer to drive the Photon typesetter). In addition, the data base containing all active Broadcast Warnings is maintained by the

Prime System and query software allows access over global communications links in the same manner as chart corrections.

The Prime computer now supports up to 64 interactive time-shared users. However, as the number of on-line users increases, the response time for all users will decrease. Another major system consideration in view of the importance of meeting extremely strict departmental production schedules, is to insure the existence of some reasonable back-up capability. There are many important reasons to maximize response time, e.g., remote users may be paying long distance communications rates for their connect time and data entry personnel need rapid response time to effectively utilize the Imlac terminals. The most important system planning consideration is to provide a back-up production capability for vital DMA publications and ANMS master data files.

The solution to the overall system problem of improving response time, providing production back-up, and back-up for on-line files, is to network the present ANMS CPU with a second CPU (this item is in the DMA 1984 equipment procurement program). This final hardware acquisition, which is planned to complete the ANMS hardware configuration, will provide two CPU's operating in a computer network to share on-line data files, split the processing workload, and essentially provide a complete back-up capability for all system hardware, files, and software. In addition to copies of all master files resident on a separate disk device, this configuration will make it immaterial which disk contains the master file; a benefit of a networked system. If one CPU becomes inoperative, the second CPU can be used to complete the query or data processing task. Even if the on-line disk is disabled, the task can be easily completed by use of back-up files.

Presently, the ANMS automation plan assumes a two processor environment that will allocate the data processing tasks as follows: the present CPU will handle routine production input/output, manage on-line Chart Corrections, support Broadcast Warnings and List of Lights weekly workfiles, and automatically schedule ancillary tasks to support production; the second CPU will handle remote data base queries that can be generated from anywhere on the globe on a 24-hour basis. The second CPU will also handle all batch processing necessary to produce:

A. Annual volumes of List of Lights

B. Periodic Summary of Corrections volumes

C. Daily back-up of work files

D. Periodic back-up of master files

E. New navigation publications which are planned for addition to ANMS.

F. Future projects such as processing graphics.

The increased computer capability is not considered an optional feature when so many important and highly time oriented publications are involved. Banks, airlines and other business establishments have pioneered the redundancy concept of computer operations and this capability is now offered by most modern computer manufacturers. Also, by use of widespread international standards such as the CCITT X.25 which supports computer to computer or computer to terminal communications via packet switching software, computers marketed by many vendors may be

connected into a single computer network. This is an important design concept when one considers the global nature and impact of the Chart Corrections, Broadcast Warnings and List of Lights data.

In addition to a worldwide geographic distribution of users, DMA has numerous cooperative agreements with U.S. agencies and foreign governments for the exchange of hydrographic data. Without such exchanges, DMA would be unable to produce its navigational publications in a timely, accurate and comprehensive manner. Conceptually, the new hardware configuration of the ANMS advances the time when computers will perform a major role in the exchange and dissemination of international hydrographic information.

BROADCAST WARNINGS AUTOMATION PLAN

All ANMS automation has included the capability to utilize new digital techniques and incorporate U.S. Navy communications systems into our query links as they become available. Future ANMS goals involve interfacing the system with all new global communications systems, new international hydrographic reporting methods which may be developed (between national hydrographic offices and major shipping companies), and international programs to automate the WWNWS.

The Broadcast Warnings Subsystem was essentially modeled after the original Chart Corrections Subsystem of the ANMS. As noted earlier, the nature of the initial software effort was research and development, because there were no other comparable systems available that DMA could use to develop specific designs. In addition to the existing Chart Corrections Subsystem software, all ANMS start-up hardware was already installed and its operational capability was well established and clearly demonstrated. Thus, the design constraints around which the Broadcast Warnings Subsystems were developed, compared to most other software efforts, were exceedingly specific. Fortunately, the need for a phased development plan which allowed the addition of other publications to the system was anticipated during the original ANMS system design. So, all hardware and software specifications were written accordingly. Since Chart Corrections data were only the first of several data sets to be automated on the ANMS, use of the software to allow input of data for other publications was an important stepping stone in ANMS development. Even though the particular specifications of the input were subject to change, the operational parameters required to load the other publications were presumed to remain the same.

GENERAL DESCRIPTION OF AUTOMATED BROADCAST WARNING SUBSYSTEM

The Broadcast Warnings Software has been divided into five separate areas for discussion purposes in this paper: Data Entry, Daily Memo, Weekly/Quarterly Print, Queries and Reports, and, Maintenance Utilities. The Broadcast Warnings Subsystem is referred to as BW in this text for purposes of brevity.

The flow charts, Figures 2-6, provide the best overview of the Automated Broadcast Warnings Subsystem. To prepare the reader to better understand the

software as shown in three detailed diagrams, we should identify the terminology used in the flow charts as follows:

a. The six character program identification numbers are coded with:

Character 1 and 2 = System ID (always BW)

Character 3 and 4 = Program Function
DE = Data Entry
UD = Update
PP = Photon Print
ED = Edit
QY = Query
UT = Utility

Character 5 and 6 = Unique Program Identifier
00 = Menu or calling program
01-99 = Assigned program number

As noted earlier, the Broadcast Warnings Subsystem is comprised of five functional areas (runfiles). This arrangement aids future expansion or enhancement of the subsystems. They are:

1. # BWENTRY = Data Entry
2. # BWMEMO = Daily Memo Print Run
3. # BWPRT = Weekly/Quarterly Print Runs
4. # BWQRY = File Queries and Reports
5. # BWUTIL = Systems Maintenance Utilities

After a user has successfully logged onto the ANMS in-house production system for Broadcast Warnings, any of the five modules and the applications programs may be invoked.

DATA ENTRY (Reference is Figure 2)

When the user selects DATA ENTRY, a segmented runfile (#BWENTRY) is generated which includes the applications programs and the required system libraries to load messages onto the computer. The reader should now refer to the flow diagram in Figure 2 which lists all the included application programs that may be used (12 programs are shown in the figure). Functionally the purpose of each program is as follows:

a. Add Warning. Program allows computer entry and an on-line edit of the DMA's Broadcast Message text from the hard copy (taken directly from message form). This entry creates the Daily Memo and Cancelation Files.

b. Correct Warnings. Program allows computer operator to correct data previously entered on Daily Memo File.

c. Delete Warning. Program will delete an entire warning on the Daily Memo file. If the Master file has been updated, the message will also be deleted from the update.

d. Warning Proof Copy. Program will generate a proof copy of message data as entered.

e. Master File Update. Program allows the operator to add new Warnings to Master file (or cancel a message).

f. Master File Edit. File will output an Edit List of any Warnings that dates prior to the last warning and any skipped numbers on the Daily Memo File.

g. Weekly Summary. Creates the Weekly Summary of Messages that are in force.

h. Other Programs. Several other programs mainly of interest to DMA operators, will not be discussed in this general presentation.

DAILY MEMO PRINT RUNS (Reference is Figure 3)

A segmented runfile is generated that includes the applications programs and the required system libraries comprising the Daily Memo Print Module. Figure 3 shows the software to accomplish the Daily Memo printing run processing.

WEEKLY/QUARTERLY PRINT RUN (Reference is Figure 4)

Another segmented runfile is generated that includes the application programs and required system libraries comprising the Weekly/Quarterly Print Module. A Photo tape is written to produce the typeset output of these publications.

QUERYS AND REPORTS (Reference is Figure 5)

In-house operator queries may be made to the master file as follows:

a. By Warning Number (If the message has been canceled but is still on system, the system will output to the user the time and date of cancelation and provide a reference check of the message that canceled it).

b. For all Active Warnings (User can get active warnings for all subregions or for one subregion).

c. By Subregion (Numbers of these subregions may be found on the Chart in the front of the Weekly Notice to Mariners).

d. For all Warnings on Library File (An in-house program to retrieve the text of long library messages that will be rebroadcast each week so the operator will not have to retype the text).

e. By Character String (To allow query on key words in the message, i.e., for Platform, Drill Rig, etc.).

f. For an Index of all Messages (User must specify the area to get this informational data base report extracted).

DMA has made two special query programs available to mariners. These programs may be invoked by users of ANMS telecommunication links.

To use Broadcast Warnings routine (QB11 which is BWQY03 in BW software) enter:

1. The world subregion (available from chart on page "v" of any Notice to Mariners).

2. The date back to which broadcast warnings (in force) are needed.

To use our program to query for Broadcast Warnings Affecting a NAVAREA (QB12 which is BWQY08 in BW software) enter:

1. The NAVAREA number, code, or type in HELP.

2. HELP gives the following information:

VALID CODES AND AREAS ARE:

CODE	AREA
12	NAVAREA XII
P	HYDROPACS
4	NAVAREA IV
A	HYDROLANTS

Again the user has option to enter NAVAREA, CODE or HELP for AREAS and CODES.

(above text is an example of a remote terminal's printout)

3. Once code or NAVAREA is entered, the computer asks for starting date by day, month, year (e.g., 12 February 1983).

SPECIAL NOTE: Figures 7 and 8 provide samples of printouts obtained from remote BW Subsystem Queries. Interested parties should write the Navigation Department, DMAHTC, Washington, DC. 20315 to request an ANMS Communications Users Identification number and Users Manual.

UTILITIES (Reference is Figure 6)

These programs, written to assist the DMA operator in managing the subsystem, provide data processing recovery programs, history file query programs and other software of a purely technical nature.

DATA FILES

The following files are created to automate the Broadcast Warnings:

a. Daily Memo File (File has all Warnings published in Daily Memorandums and after the print run is processed, the system deletes all entries on this file).

b. Broadcast Warning Master File (File contains all active warnings. Canceled warnings are flagged and remain on the file until transferred to the History Tape Program when it is run. Then, they are deleted from Master File).

c. Cancelation File. (File contains records of messages to be canceled. Entries to this file are made at the time a self canceling message is entered into the system. Previously entered messages may also be canceled. The Master File Update program will access this file and add the date, time and reference message to any record being canceled by the current message).

SUMMARY

The automation of the Broadcast Warnings has involved more than computer specialists and programmers. There has been an intensive effort to include Marine Information Specialists to ensure the user orientation of the final software.

The goals of the Broadcast Warnings Automation effort which have been developed in this paper can be summarized as follows:

A. To automate the production and publication of the Daily Memorandum as well as production of the Weekly/Quarterly output.

B. To provide mariners with an on-line data base of up-to-date Broadcast Warnings via global communications links.

C. To provide rapid, digital data management tools, to replace antiquated in-house data handling methods, to replace extensive space consuming manual file storage and slow manual publication set-up methods.

The software developed by this effort is a major advance toward DMA's long-term goal of achieving a totally automated weekly Notice to Mariners. Although it builds upon earlier software, the new Broadcast Warnings software will make the remaining automation steps easier and less costly. Therefore, some credit must be given to the synergistic effect of each of our completed ANMS Phases. The next phase will complete the text oriented, data entry capabilities. Research and development efforts, which are planned but are not now programmed, will address graphics. The impact of DMA's Automation of the Broadcast Warnings will extend beyond the actual publication of hard copy Daily Memorandums and Part III of Weekly/Quarterly Notice. Presumably, this automated subsystem will be a model for later automation efforts which may be undertaken by other nations operating Broadcast Warning systems. Also, it will provide a means to interface with new developments in automation of shoreside message handling and transmission of Broadcast Warnings to ships at sea. Figure 9, entitled "Milestones in Marine Communications," is provided as a summary of developments in marine communications including our automation of Broadcast Warnings.

FIGURE 1. FUNCTIONAL DIAGRAM OF AUTOMATED NOTICE TO MARINERS SYSTEM. (NOTE: BROADCAST WARNINGS DATA ARE LOADED VIA ONE OF THE TWO IMLAC TERMINALS. ALL DATA ARE STORED ON DISK FILES UNDER THE CONTROL OF THE PRIME 400 COMPUTER. A MAGNETIC TAPE IS OUTPUT TO DRIVE A TYPESETTING MACHINE FOR PRINTING THE DAILY MEMO AND WEEKLY/QUARTERLY NOTICE. PROOF PLOTS ARE OUTPUT ON TWO PRINTER/PLOTTERS ATTACHED TO THE IMLAC DATA IMPUT STATIONS OR ON A HIGH SPEED LINE PRINTER CONTROLLED BY THE COMPUTER. TWX, TELEX AND A VARIETY OF MODEMS ALLOW REMOTE ACCESS TO THE MASTER DATA FILE.)

FIGURE 1

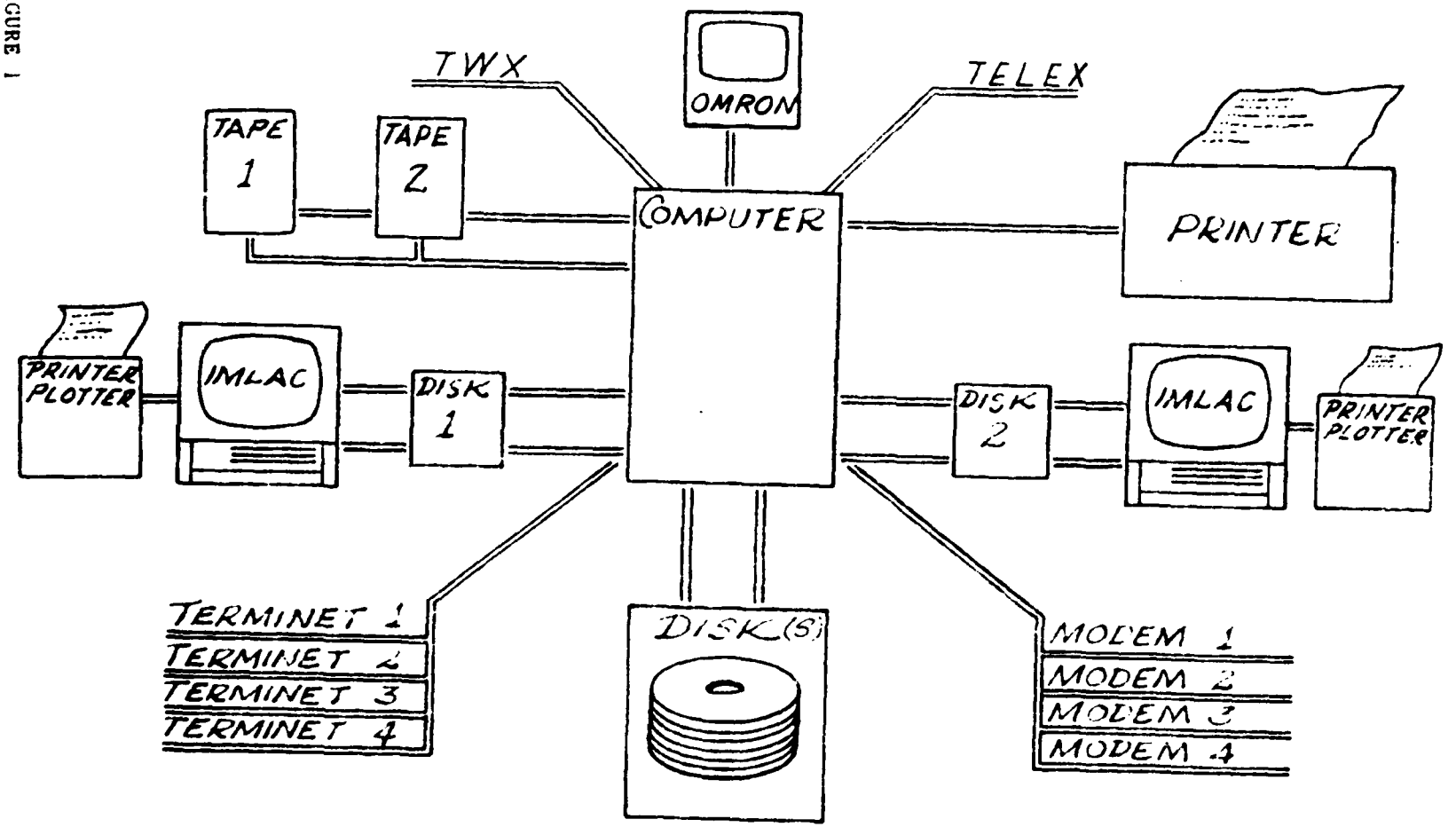

TWX
OMRON
TELEX
TAPE 1
TAPE 2
COMPUTER
PRINTER
PRINTER PLOTTER
IMLAC
DISK 1
DISK 2
IMLAC
PRINTER PLOTTER
TERMINET 1
TERMINET 2
TERMINET 3
TERMINET 4
DISK(S)
MODEM 1
MODEM 2
MODEM 3
MODEM 4

FIGURE 2

FLOW CHART FOR DATA ENTRY

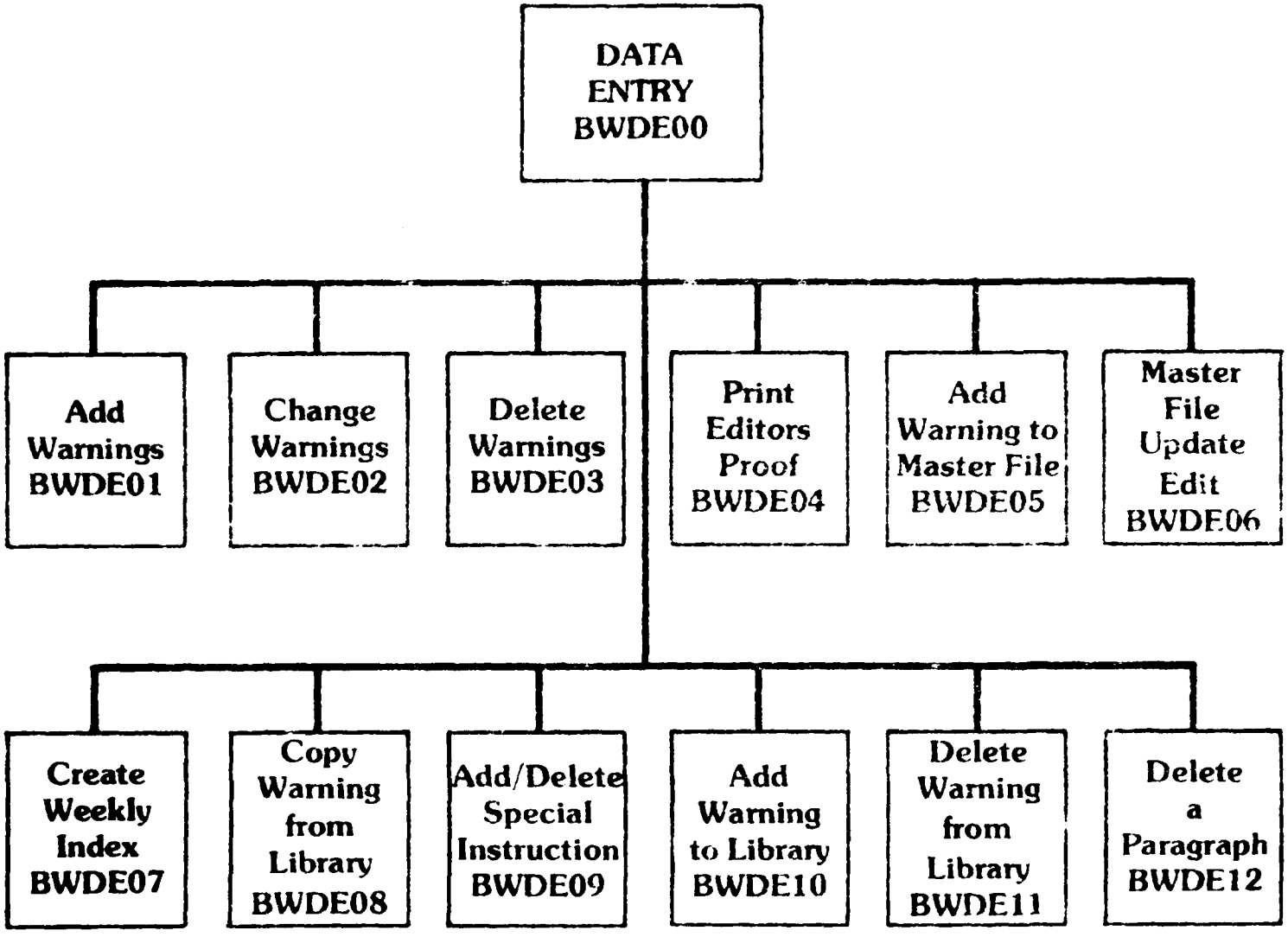


FIGURE 3

FLOW CHART FOR DAILY MEMO

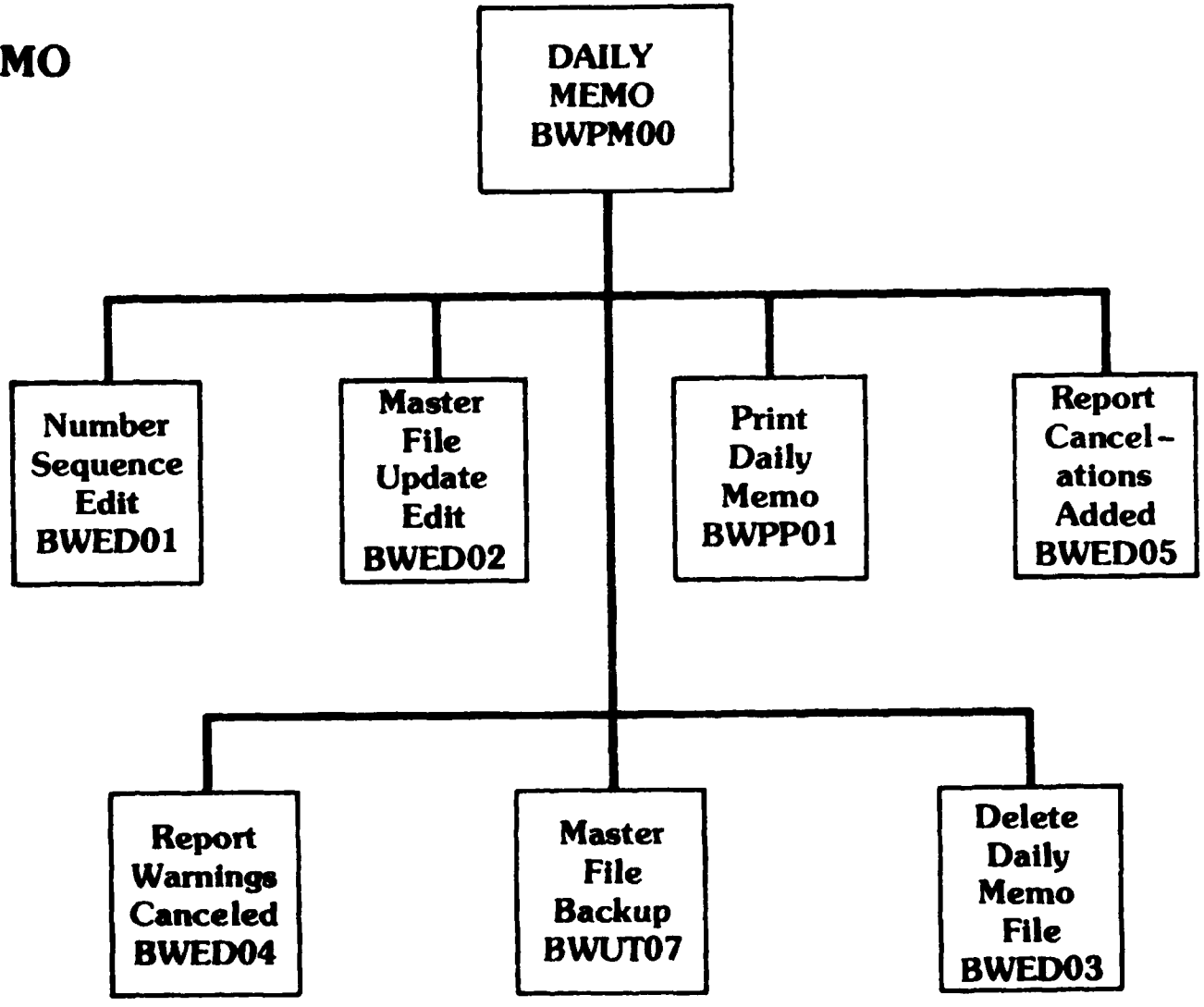


FIGURE 4

FLOW CHART FOR WEEKLY/QUARTERLY PRINT

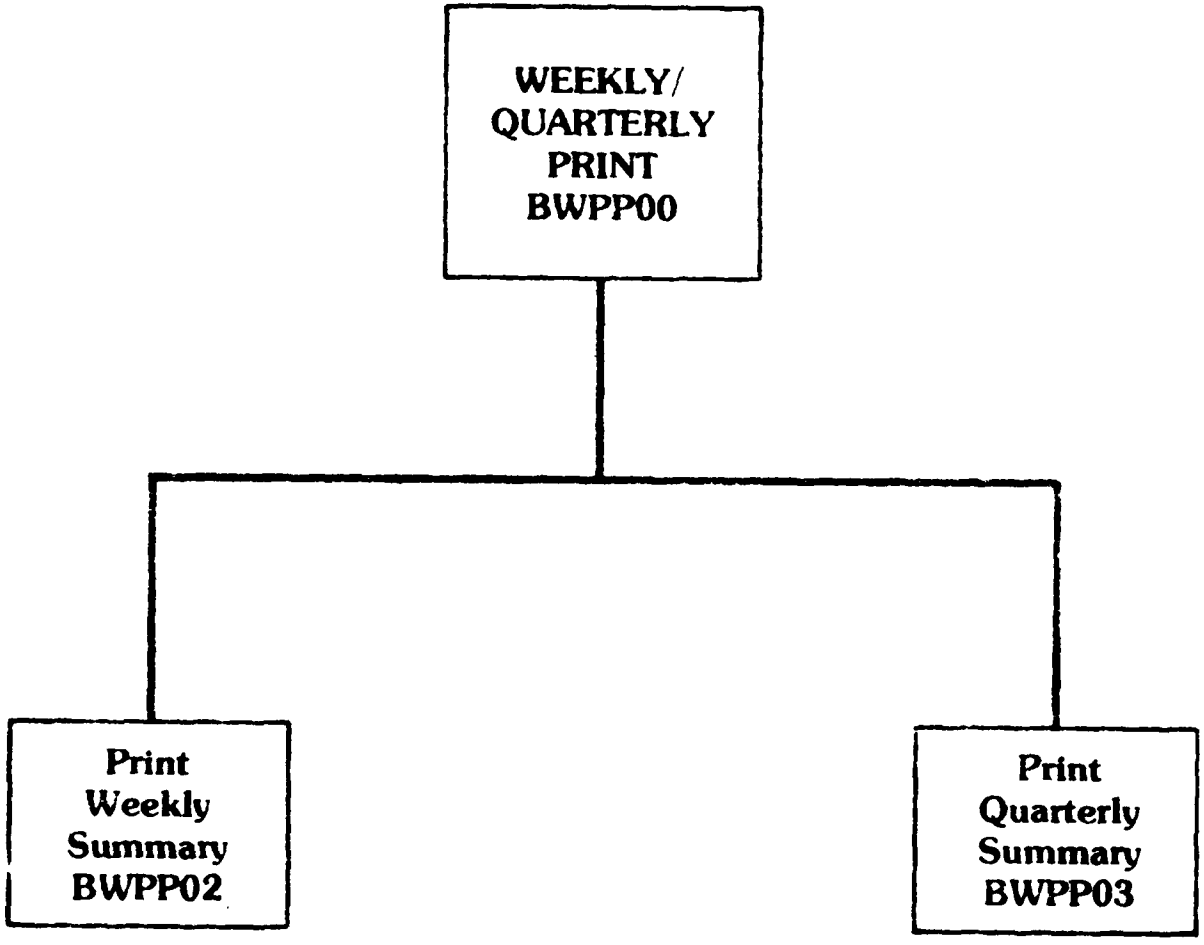


FIGURE 5

FLOW CHART FOR QUERIES AND REPORTS

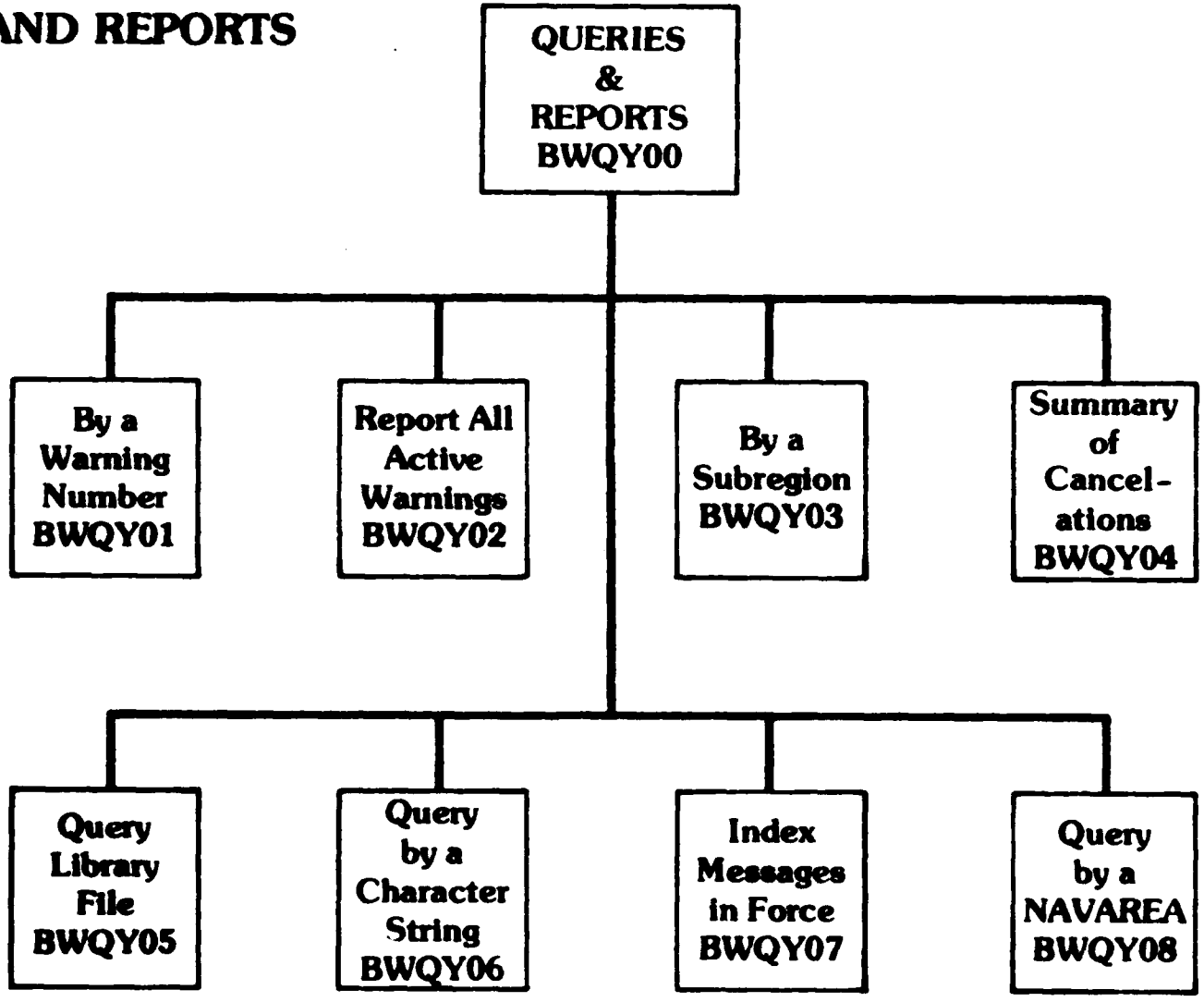


FIGURE 6

FLOW CHART FOR MAINTENANCE UTILITIES

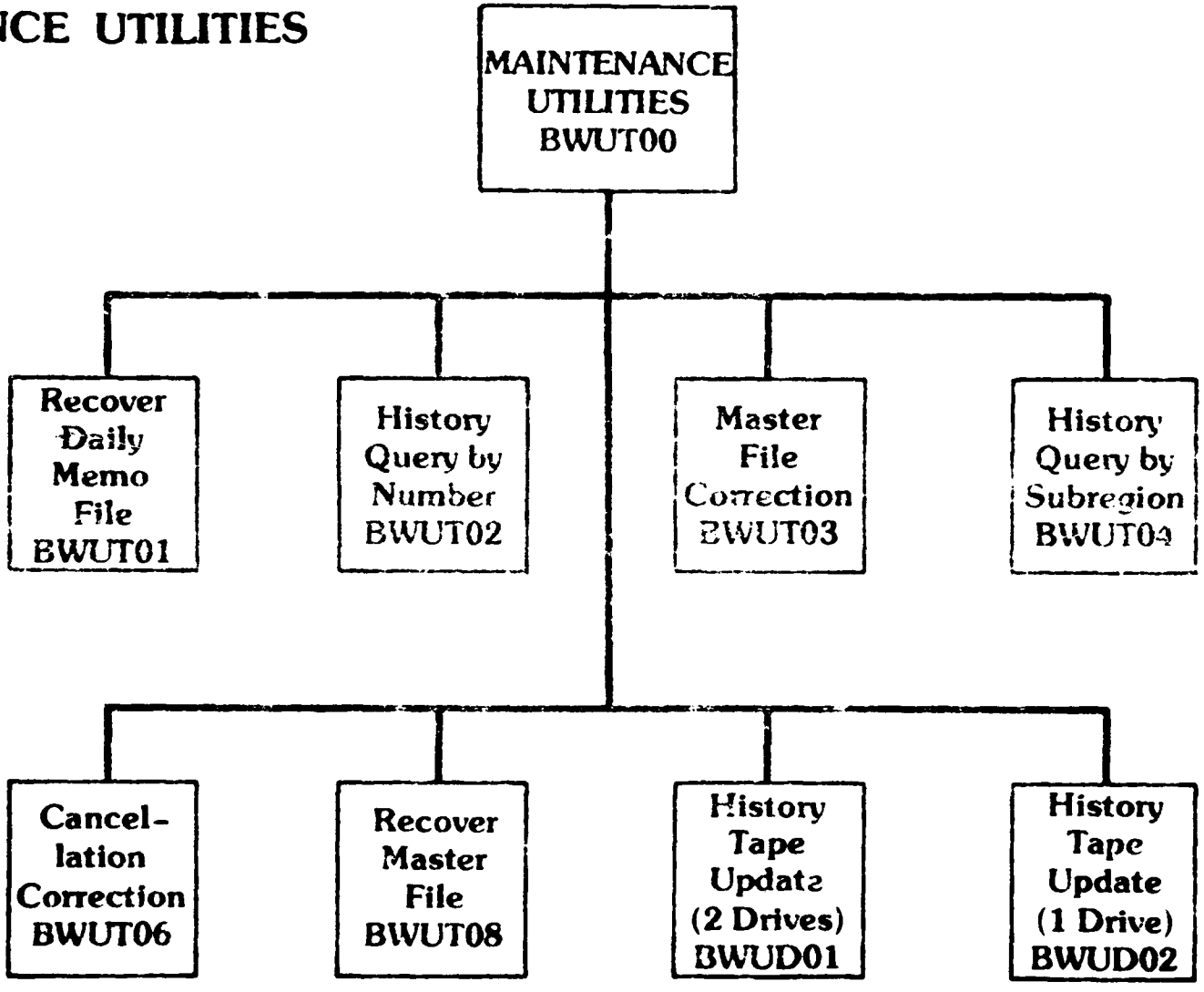


Figure 7

Broadcast Warnings Subsystem QB11 (From Telephone Query)

```
LOGIN PLEASE
KR: LOGIN ANMS

PRIMOS Version 18.2
ANMS    (8) LOGGED IN AT  18:00 040682

Please Enter  our User Identification
872

WELCOME TO THE AUTOMATED NOTICE TO MARINERS SYSTEM

OK, 5 *ANMS

ENTER JOB TO RUN OR MENU TO DISPLAY PROGRAM MENU
QB11

EXTRACT EFFECTIVE BROADCAST WARNINGS BY SUBREGION

Please Enter Subregion Number
1
OPTIONS:
    1.  All Effective Warnings
    2.  All Effective Warnings from a Selected Date

Please Enter Option Number (1 or 2)
2

Enter Starting Date as:
DD MONTH YEAR  (EX: 5 JUNE 1982)
25 MARCH 1982

*****************************************************************************

                    AUTOMATED NOTICE TO MARINER                    4/06/82
                   BROADCAST WARNING QUERY SYSTEM
      EXTRACT ALL EFFECTIVE BROADCAST WARNINGS FOR SUBREGION 1
                      FROM 25 MARCH 1982

NAVAREA IV

 879/82(GEN).      OMEGA.
  Polar cap anomaly, PCA, in progress since 300800Z March.
  (COGARD ONSOD 301415Z MAR 82)                          ( 30 Mar 1982)

 902/82(12).      VIRGINIA.  GUNNERY.
  1.  Gunnery/pyrotechnic exercises 0100Z to 0400Z daily 6 to 12
  April in area bound by:
     37-15N. 75-30W., 37-15N. 75-00W., 37-03N. 75-00W.,
     37-02N. 75-08W., 37-04N. 75-26W., 37-08N. 75-30W.
  2.  Cancel this message 120500Z April.
  (FACSFAC VACAPES 011945Z APR 82)                       ( 1 Apr 1982)

 903/82(12).      VIRGINIA.  GUNNERY.
  1.  Gunnery exercises 1540Z to 0540Z daily 7 and 8 April in area
  bound by:
     36-48N. 75-30W., 36-47N. 74-30W., 35-30N. 74-30W.,
     35-30N. 74-57W.  35-54N. 75-30W.
  2.  Cancel this message 080640Z April.
  (FACSFAC VACAPES 011945Z APR 82)                       ( 1 Apr 1982)


*****END OF JOB*****
ENTER JOB TO RUN: MENU TO RE-DISPLAY MENU
        OR SIGN OFF TO TERMINATE PROGRAM
SIGN OFF
OK, LO
ANMS    (8) LOGGED OUT AT  18:03 040682
TIME USED=  0:03   0:36   0:26
OK.
```

Underlined entries are typed in by users. Refer to text for instructions.

Figure 8

AUTOMATED NOTICE TO MARINER 14 [illegible]
BROADCAST WARNING CLEAR SYSTEM
EXTRACT ALL EFFECTIVE BROADCAST WARNINGS FOR HYDROLANT
FROM 12 MAR [illegible]

403/83(54). ADRIATIC SEA.
CHART 54161.
1. PORTO DI MALAMOCCO OUTER LANDFALL LIGHT [illegible] MISSING.
2. CANCEL HYDROLANT [illegible] AND THIS PARAGRAPH UPON RECEIPT. WORKS COMPLETED.
(NAVAREA III 107/83, 108/83) (12 MAR 1983)

404/83(37). ENGLISH CHANNEL. POOLE BAY.
1. DRILL RIG APOLLO II TO 50-[illegible]N. [illegible].
2. CANCEL THE FOLLOWING HYDROLANT MESSAGES AND THIS PARAGRAPH UPON RECEIPT.
A. 120/83.
B. 39/83.
(NAVAREA ONE 64 [illegible])
(WZ 196/83) (12 MAR 1983)

405/83(54). ADRIATIC SEA.
1. DRILL RIG PERRO NEGRO TO 44-[illegible]N. [illegible]E.
2. CANCEL HYDROLANT [illegible] AND THIS PARAGRAPH UPON RECEIPT.
(MARIDIPART ANCONA [illegible]) (12 MAR 1983)

406/83(37). NORTH SEA.
1. DRILL RIG PACESETTER II TO 57-[illegible]N. [illegible]-17.6E.
2. CANCEL HYDROLANT [illegible] AND THIS PARAGRAPH UPON RECEIPT.
(NAVAREA ONE 65/83) (12 MAR 19[illegible])

407/83(53). ITALY. TYRRHENIAN SEA.
1. BUOY EQUIPPED WITH RADAR REFLECTOR AND FL W LIGHT WILL BE MOORED IN POSITION [illegible]N. 10-[illegible]E. FROM [illegible] TO 2300Z 12 TO [illegible] MARCH. DURING THIS SAME PERIOD AND IN THIS SAME VICINITY R/V MARIA PAOLINA WILL CARRY OUT TRIALS WITH EXPERIMENTAL ACOUSTIC EQUIPMENT TOWING A 1150 METER LONG CABLE AT A DEPTH OF 150 METERS.
2. CANCEL THIS MESSAGE [illegible] MARCH.
(MARIDIPART NAPOLI [illegible]) (12 MAR 19[illegible])

408/83(54). ADRIATIC SEA.
1. DRILL RIG MISTER [illegible] TO 4[illegible]-54.[illegible]N. 14-[illegible].2E. BY 19 MARCH.
2. CANCEL THE FOLLOWING HYDROLANTS AND THIS PARAGRAPH UPON RECEIPT.
A. 299/83(54).
B. 396/83(52).
(NAVAREA III 104, 108/83) (12 MAR 1983)

-----END OF JOB-----

MILESTONES IN MARINE COMMUNICATIONS

1899 The American liner, ST. PAUL, was the first vessel to receive a wireless message.

1906 The radio telegraph distress signal, SOS, was adopted as the international call for help at sea.

1908 Hydrographic Office began issuance of hydrographic warnings three times daily from eight stations on the Atlantic coast and seven stations on the Pacific coast (one of these being in Alaska).

1912 The luxury liner, TITANIC, sank with a loss of 1,503 lives, and the TITANIC tragedy inspired regulations requiring increased radio transmitting power as well as 24-hour manning of radio rooms for passenger ships.

1922 First ship-to-shore, two-way voice communications took place between a shore station in New Jersey and the SS AMERICA, while it was 400 miles at sea.

1929 High seas radio telephone service became available for public use.

1965 First commercial communications satellite, Early Bird, was placed in operation.

1981 Exxon tanker, ESSO KAGOSHIMA (6ZWE), was the first ship to make an at-sea query via Marisat to Defense Mapping Agency (DMA) Automated Notice to Mariners (ANMS) computer for Chart Corrections information.

1982 On January 21, DMA Broadcast Warnings were added to DMA's computer data base for use of ships at sea via satellite communications. Inmarsat began operations on February 1, and they initiated operation by leasing commerical capacity on existing Marisat satellites.

FIGURE 9