

Subject :

The Year 2000 and GPS Rollover
Problem (Part 4)

NKTECHNICAL INFORMATION

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To shipowners and shipbuilders concerned,

This must be a challenging time for all concerned as you continue to carry out examinations and tests of shipboard systems, machinery and equipment, prepare Contingency Preparedness Manuals, and engage in various other activities related to addressing potential Y2K and GPS rollover problems onboard ship as well as on shore. Background information regarding the Y2K and GPS rollover problems has already been provided in Technical Information Nos. 277 (Part 1), 278 (Part 2), and 279 (Part 3). This fourth part of the Technical Information series focuses on examples of concrete preventive measures being taken regarding the Y2K and GPS rollover problems by ship operators considering the direction of related trends since the release of these earlier Technical Information bulletins. It also presents information on the latest results of survey questionnaires carried out concerning the Y2K and GPS Rollover Problem.

1. Preventive Measures regarding the Year 2000 and GPS Rollover Problem

1.1 Examples of Concrete Preventive Measures

Companies owning or managing ships are strongly encouraged to implement the following precautionary steps without fail in order to minimize Y2K and GPS rollover related risks.

- 1 A team is to be formed to address Y2K and GPS rollover related matters. This team is to identify Y2K and GPS rollover problem areas, set policy for the company as a whole for addressing these problems, notify everyone concerned of all plans and measures to be carried out and implement them accordingly.
- 2 Information is to be obtained regarding Y2K and GPS rollover problem areas. All equipment and systems containing computer devices and/or embedded chips onboard each ship under management are to be identified.
- 3 Pertinent equipment or machinery manufacturers are to be contacted to determine whether or not computing devices, embedded chips or software applications contained in identified equipment or machinery handle date related data. If they do handle date data, they are to be checked to determine whether or not they are affected by Y2K and GPS rollover related problems. If found to be so affected, the scope or extent of such effect is to be specified, and a list of non-compliant machinery and equipment prepared, accordingly. Further, the degree of priority of the measures to be taken for each affected piece of machinery and equipment is to be determined with respect to its operation, safety, potential for causing marine pollution, etc.
- 4 Information regarding the measures to be taken for non-compliant equipment or

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machinery is to be obtained from the manufacturer of each respective piece of affected equipment or machinery. Suitable measures are then to be implemented based on this information. The fact that the measures have actually been carried out is to be confirmed and a record kept thereof.

- 5 To the extent possible, information is to be obtained from the manufacturers of all hardware and software which handle dates on date change tests in order to verify that all such hardware and software are Y2K and GPS rollover compliant. All hardware and software are to be verified in accordance with the test scheme of the manufacturer using mock data. In addition, in those cases where pertinent machinery and equipment is connected to a network, it is also necessary to verify that companion devices also function properly.
- 6 All companies are to prepare Contingency Preparedness Manuals and address any emergencies or critical problems. Contingency Preparedness Manuals are to be prepared for use by the company and for each ship. Details are given in Part 3 of this series (Technical Information No. 279).
- 7 The operation of all shipboard machinery and equipment is to be verified and training drills are to be carried out in accordance with the shipboard Contingency Preparedness Manual.
- 8 The measures implemented are to be evaluated as to their effectiveness with the period of implementation and the status of the subject vessels verified.

1.2 Method of Conducting Shipboard Date Change Tests

The tests referred to in item 1.1.5 above are to be conducted in accordance with the test scheme prepared by the manufacturer which supposes that an impact may be possible with a given change in date. Tests are to be carried out by setting each particular designated shipboard device, machinery or equipment item to the date in question (target date) and observe how the device, etc. responds as it passes through the date and time being tested. Care is to be taken to determine whether the function of the device, etc. ceases, is adversely affected, or whether any errors in operation occur with the passage of time (before, during and after the changeover in time). Do the clock and calendar of the device continue to flow properly and smoothly or do they indicate any discontinuity in date or time? It is essential that tests be carried out for each respective target date recommended by the manufacturer of each respective shipboard device. When it is not possible to obtain advice from the manufacturer regarding specific dates to be tested, the dates recommended by the British Standards Institute (BSI) listed below are to be tested as a minimum.

1) 21 August 1999 (date of GPS rollover)

This date applies to GPS equipment as the target equipment to be tested. Please note that it may not be possible to test the rollover of shipboard GPS receivers without a test simulator.

2) 31 December 1999 (recognition of the date 1 January 2000)

3) 28 February 2000 (recognition of the date 29 February 2000)

4) 29 February 2000 (recognition of the date 1 March 2000)

5) 8 September 1999 (recognition of the date 9 September 1999)

When setting target dates and times, it may be necessary to check the user's manual of the particular device, etc. being tested to determine what time is used in running the device, etc. (Local Mean Time [LMT], Ship's Mean Time [SMT], or Coordinated Universal Time [UTC]), and to obtain the approval of the person in charge of the device, etc. onboard ship regarding the timing of the change in the date.

Please also note that there are instances where if the power to machinery and equipment which use a PC is shut off when the state of the system is set to a date beyond the year 2000, the year indicated when the system is restarted will be incorrect.

1.3 Verification of shipboard operations

It is recommended that the following items be done when carrying out the verifications and operations described in item 1.1-7 above. The operation of all essential machinery and equipment (remote control equipment, steering equipment, navigating equipment, power generators, etc.) is to be verified and recorded prior to entering or leaving port or prior to navigating any narrow waterway or strait.

Moreover, the same types of operational checks are also to be carried out and recorded on the days prior to and after the target date.

The operational checks are to consist of the following items:

- 1) Operational tests of machinery and equipment
- 2) Verification of operational and warning indicators, etc.
- 3) Tests of switchover between automatic and manual operation
- 4) Verification of switchover to stand-by machinery and equipment

1.4 Examples of documentation relating to preventive measures to be kept onboard ship

Examples of documentation which should be placed onboard ship when implementing the precautionary steps described in 1.1 above are indicated below.

- 1 Commonly available information, reference materials, company information and the like regarding the Y2K and GPS rollover problems
Reference materials: MSC/Circ.868, Ship 2000 Web Page, BSI Publication DISC PD2000-1, NK Technical Information & Web Page, as well as instructions, etc. by the company
- 2 A list of all shipboard machinery and equipment, a list of non-compliant machinery and equipment
Prepare lists of all machinery and equipment which is thought to be Y2K and GPS complaint, non-compliant machinery and equipment, as well as machinery and equipment about which there is concern regarding compliance or which cannot be confirmed as being compliant.
- 3 Responses to inquiries sent to manufacturers
- 4 Instructions for replacing or repairing non-compliant or faulty machinery and equipment, results of verification checks and records thereof, including procedures for the crew on recovery methods such as manually resetting faults, etc.
- 5 Procedures for and records of results of date change tests carried out onboard ship for the purpose of verification.
- 6 Shipboard procedures for dealing with Y2K and GPS rollover related problems

- 7 Records of verification tests carried out prior to entering or leaving port or prior to navigating any narrow waterway or strait, records of periodic surveys, and records of crew training, etc.

Reference materials: USCG TITLE 33 CFR part 164/156, TITLE 35 CFR 109.5/103.7/103.2, etc.

2. Survey of Y2K and GPS rollover related problem areas

Some 65% of the companies surveyed by the Society regarding Y2K and GPS rollover related problem areas have responded thus far as of the end of February 1999. Based on these responses, fifty-three different types of devices have been reported as being shipboard machinery and equipment for which the potential for a problem occurring exists, including GPS receivers, GMDSS radio equipment, programmable controllers, control and monitoring equipment, as well as personal computers. You are kindly invited to access the homepage of the Society regarding details of the faults and reported types of devices, machinery and equipment involved.

As indicated in the previous Technical Information, although the survey is intended to cover as broad a scope as possible, it will not be possible to cover everything in it. Judgments regarding any equipment and machinery faults and their impact only reflect the view each respective manufacturer. Questions concerning the detailed content of information or information which is not readily available for public release need to be addressed to the manufacturer concerned directly. Thus, the addresses, telephone and fax numbers of each manufacturer are also included in the information provided.

You are kindly invited to view the homepage web site of the Society on the Internet for further information. Information may be printed from a browser that enables you to view the contents of the site. Specific web page addresses are given for the items listed below which may be seen on our Y2K and GPS Rollover Problems site.

Technical Information No. 277

<http://www.classnk.or.jp/year2000/e277.htm>

Technical Information No. 278

<http://www.classnk.or.jp/year2000/e278.htm>

Technical Information No. 279

<http://www.classnk.or.jp/year2000/e279.htm>

Contents of the Questionnaires

www.classnk.or.jp/year2000/e278-1.htm

Results of Manufacturer Questionnaires and Equipment Affected

<http://www.classnk.or.jp/year2000/e278-2.htm>

Link to Y2K Web Sites

<http://www.classnk.or.jp/year2000/y2klinks.htm>

Guideline for Responding to Year 2000 Related Problems (Example)

<http://www.classnk.or.jp/year2000/e279-1.htm>

Company Contingency Preparedness Procedure for Year 2000 Problem (Example)

<http://www.classnk.or.jp/year2000/e279-2.htm>

Shipboard Contingency Preparedness Procedure for the Year 2000 Problem (Example)

<http://www.classnk.or.jp/year2000/e279-3.htm>

Ship 2000 Home Page

<http://www.ship2000.com>

IACS issued its statement on 16 December 1998 in which it is stated IACS Members advise they do not intend to suspend or withdraw the Class of vessels for failure to achieve or document "Year 2000" compliance. Owners should also be aware of possible requirements from port authorities, marine administrations and insurance companies.

IACS considers that it is the responsibility of ship owners to organise their own compliance programme with the assistance of the equipment manufacturers and the ship builders where possible.

The society is in the same position as IACS regarding Y2K Problem, however, the Society wishes to present continuously our clients very useful and high quality information to cope with Y2K Problem.

Please direct any questions or inquiries to the following address:

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