

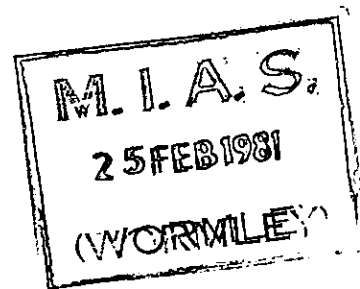
MRS. P. EDWARDS

I.O.S.

R R S DISCOVERY  
CRUISE 108

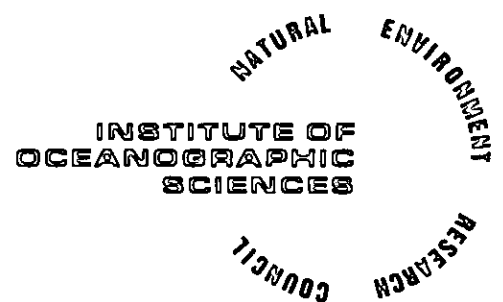
18 FEBRUARY - 3 MARCH 1980

GEOCHEMICAL SAMPLING ON THE  
NARES ABYSSAL PLAIN



CRUISE REPORT NO 99

1980



INSTITUTE OF OCEANOGRAPHIC SCIENCES

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R. R. S. DISCOVERY

CRUISE 108

18 FEBRUARY - 3 MARCH 1980

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Brook Road, Wormley, Godalming,  
Surrey, GU8 5UB, England.

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## ITINERARY

Depart Bridgetown, Barbados 1600 h 18 February 1980.

Arrive San Juan, Puerto Rico 0930 h 3 March 1980.

## SCIENTIFIC PERSONNEL

|                    |                                |
|--------------------|--------------------------------|
| J. D. Burton       | Southampton University         |
| M. S. L. Carpenter | I. O. S.                       |
| Miss H. Coyle      | I. O. S.                       |
| F. Culkin          | I. O. S. (Principal Scientist) |
| E. Darlington      | I. O. S.                       |
| H. Elderfield      | Leeds University               |
| D. J. Hydes        | I. O. S.                       |
| Mrs. H. A. Kennedy | Leeds University               |
| R. Kidd            | I. O. S.                       |
| D. Lewis           | R. V. S.                       |
| M. J. McCartney    | I. O. S.                       |
| R. J. Morris       | I. O. S.                       |
| R. Pagett          | Leeds University               |
| R. Peters          | I. O. S.                       |
| P. Ridout          | I. O. S.                       |
| W. Simpson         | I. O. S.                       |
| P. Statham         | Southampton University         |
| J. Thomson         | I. O. S.                       |
| T. R. S. Wilson    | I. O. S.                       |

## SHIP'S OFFICERS

|                  |                |
|------------------|----------------|
| P. H. P. Maw     | Master         |
| P. J. McDermott  | Chief Officer  |
| M. S. Putman     | 2nd Officer    |
| P. J. Pepler     | 3rd Officer    |
| D. Rowlands      | Chief Engineer |
| T. A. Rees       | 2nd Engineer   |
| D. E. Anderson   | 3rd Engineer   |
| R. G. Whitton )  | 4th Engineers  |
| A. P. Grattidge) |                |

|              |                         |
|--------------|-------------------------|
| R. Cotter    | 5th Engineer            |
| F. P. Sharpe | Electrical Engineer     |
| D. Taylor    | Radio Officer           |
| R. Overton   | Purser/Catering Officer |
| G. A. Carss  | Medical Officer         |

## OBJECTIVES

1. Collection of bottom sediment samples by gravity- and box-coring for geochemical studies.
2. Collection of sediment pore water samples by in situ techniques and by squeezing sediment cores.
3. Collection of large volume water samples for analyses of nutrients, trace elements and dissolved organic carbon.
4. Collection of suspended particulate material from large-volume water samples for geochemical studies.
5. Recovery of moored particle trap deployed during Cruise 107.
6. Collection of surface and near-surface plankton for biochemical and trace element studies.
7. Collection of samples of sea surface films for geochemical and biochemical studies.
8. Implosion test of forged steel sphere.

## NARRATIVE

The start of Cruise 108 was delayed by 5 days because of the late arrival in Bridgetown of the container ship carrying the Chemistry container laboratory and equipment and this made it necessary to alter the original sampling programme considerably. All equipment was on board by 1300 h on Monday 18th February and Discovery went to anchor outside Bridgetown harbour at 1600 h and finally sailed at 2145 h. The echo-sounder fish and 2 kHz profiler were launched and normal watches were started. During passage to the first station 8500 m of the main warp were tensioned.

At the first station (10163), which was reached at 1400 h/21st February, 2 successful hydrocasts were made to provide samples for trace element, nutrient, salinity and suspended particle determinations. After an initial failure, satisfactory core samples were obtained with the IOS box corer and the Kastenlot corer but the IOS in situ pore water sampler was found to be out of balance and failed to take a sample.

After completion of this station Discovery sailed to the northern edge of the abyssal plain to work on a ridge where ferromanganese nodules had been reported. The only ridge located was not very extensive, however, and so coring, pore water and water sampling were carried out in deeper water than had been intended (Station 10164).

Discovery then proceeded south again to the position where a moored particle trap had been deployed during Cruise 107. Although the trap was easily located and accepted the release command, it failed to surface. On this station (10165) 2 hydrographic casts were completed and cores were obtained with the IOS box corer and with the IOS gravity corer fitted with a square cross section barrel. The Kastenlot corer was also used to obtain a core which was preserved intact for work on physical properties. During this operation the wire tension at the lower end of the main warp was measured.

On passage to the next coring station Neuston and Oxfam nets were operated (10166 and 10168) and surface films were collected (10167). A watch was kept for a French ocean-bottom seismograph which had failed to surface during Cruise 107 but no signals were detected.

The final full station (10169) was worked further west. The water column was sampled more intensively with three hydro-casts and the Kastenlot, box and square gravity corers and the pore water sampler were all operated successfully.

With the main programme completed, a box core, free from the grey turbidite material which had been found at the other stations, and pore water samples were taken at a station (10170) 3 miles up the Puerto Rico Outer Ridge and the Neuston net was operated (10171).

Discovery then sailed for the Puerto Rico Trench where, after a brief survey, a station (10172) with a corrected depth of 8340 m was chosen for an implosion test on a forged steel sphere which had been requested by the Ocean Engineering Group. The sphere was lowered on the main warp to a wire depth of 8300 m without any indication of implosion and was recovered, apparently undamaged.

The ship then sailed for San Juan, Puerto Rico and docked at 0930 h/3rd March.

## REPORTS OF PROJECTS

### HIGH RESOLUTION SEISMIC PROFILING

The 2 kHz seismic profiling system proved troublesome at the beginning and end of the cruise, because of earthing problems and a suspected cable break. Over the areas of interest on the Nares Abyssal Plain, however, the system worked perfectly and records were obtained of laterally continuous stratified sediments with sub-bottom penetration ranging between 20 and 80 metres. The profiler records are the equal of any that have been taken in such areas by 3.5 kHz systems and their quality gives confidence that the purchase of a commercial system is unnecessary. Streaming and towing of the array



presented no operational problems on such a station-intensive cruise, although for surveying an area for detailed coring a towing speed of 6 knots would be recommended. On the other hand the electrical problems which were encountered show that the system now required to be developed into a more reliable form (of similar precision to the echo-sounder). This small section array would also benefit from the addition of a small portable winch.

E. Darlington  
R. Kidd

#### HYDROGRAPHIC WORK

Hydrographic casts were made at the stations listed in Table 1, using various combinations of 1 and 7.5L NIO bottles and 30L Niskin bottles. The 1L bottles were fitted with reversing thermometers to provide in situ temperatures and thermometric depths. They were positioned 10 m above each large-volume bottle and at other depths for which values for routine hydrographic parameters were required. Samples from the 1L bottles were taken for the determination on board of salinity, dissolved oxygen, dissolved silicon and reactive phosphate. Dissolved silicon was measured using an Automatic Chemistry Unit (Pye-Unicam AC1) but difficulties were encountered in the use of this instrument for measurement of reactive phosphate which, accordingly, was measured manually. For three stations samples were also subjected to photo-oxidation by irradiation with a 1 kW mercury-arc lamp, and subsequently analysed for reactive phosphate to determine, by difference from the un-irradiated aliquots, the concentration of dissolved organic phosphorus.

Samples of suspended particulate material were obtained by pressure filtration of the bulk of the large volume water samples through 0.4 $\mu$ m Nuclepore membrane filters or glass fibre filters. These will be examined by scanning electron microscopy with simultaneous X-ray analysis to determine the association of minor and trace elements with specific mineral phases (Wormley) and analysed for Mn, Al, Ti, C, N and rare earths (Leeds).

The filtrates were used for the following investigations:-

1) Trace elements were co-precipitated with Pb or Co- APDC. The Pb precipitates will be analysed by neutron activation directly and the Co precipitates by dissolution in organic solvent followed by plasma analysis (Wormley).

2) Aliquots were processed on board to separate and concentrate dissolved Fe and Mn

in a form suitable for storage for subsequent analysis at Southampton. The metals were complexed with a mixture of 1:1 ammonium pyrrolidine dithiocarbamate and diethyl-ammonium dithiocarbamate, the complexes extracted into 1,1,2-trichloro-1,2,2-trifluoroethane, and the metals back-extracted into concentrated nitric acid. The nitric solutions were diluted and stored in polypropylene containers. All operations were carried out in an atmosphere of filtered air using a laminar flow cabinet, in order to minimize contamination from air-borne particles.

3) On representative samples from one profile several alternative treatments were also employed to give information on the chemical forms of the metals. Aliquots were passed through columns of polymeric adsorbent (Amberlite XAD-2) and the adsorbed material eluted with a mixture of methanol and ammonium hydroxide, while further aliquots were analysed after photo-oxidation and after cycling through changes in pH. These approaches should provide information on the occurrence of colloidal and organically associated forms of the metals. Additional samples were frozen for return to Southampton for further analyses of trace metals and for further experiments on speciation.

4) Separate aliquots of water were filtered through pre-combusted glass fibre filters and stored for later analysis, at Southampton and Liverpool Universities, for dissolved organic carbon.

5) Water samples were stored for subsequent analysis, at the Institute of Hydrology, of dissolved iodine species.

6) Additional surface water samples were filtered for subsequent manganese and rare earth element analyses (Leeds).

J. D. Burton  
F. Culkin  
E. Darlington  
M. J. McCartney  
R. Pagett  
W. R. Simpson  
P. J. Statham

#### IMPLOSION TEST ON FORGED SPHERE

At the request of the Ocean Engineering Group an implosion test was carried out in the Puerto Rico Trench on a forged steel sphere. The test incorporated the use of a leak detector to telemeter the water level inside the sphere. The sphere was lowered to a wire depth of 8300 m without any implosion. Unfortunately the telemetry unit itself

sustained a minor leak which caused it to fail at 5400 m during the descent, though no serious damage was done to the electronics or the pressure sensor. The sphere was recovered undamaged and returned to Wormley for examination.

E. Darlington

#### MAIN WARP STRAIN MEASUREMENT

It was possible to attempt only one series of measurements using the main warp strain telemetry unit but the system appeared to work well. Two pulses relating to the strain were produced, one showing the instantaneous average and the other the peak strain. These provided some intriguing data which will have to be carefully analysed. However, it would appear that the experiment could be usefully repeated in the future.

E. Darlington

#### PARTICLE TRAP

The IOS free-fall particle trap was deployed at 23°43.6'N, 61°29.7'W on 28/1/80 during Discovery Cruise 107. It was located on 25/2/80 and acoustic interrogation revealed that the release unit was lying flat on the sea-bed. The release channel was opened with some difficulty because of the unfavourable aspect of the transducer's polar diagram, but when the ship had been manoeuvred into the optimum position the release indicated a successful firing. Since there was no indication of lift-off, however, it must be assumed that the buoyancy unit had failed or come adrift. It is not known when this failure occurred as it was not possible to monitor the mooring all the way to the bottom when it was laid.

E. Darlington  
W. Simpson

#### PORE WATER STUDIES

A total of seven drops were made with the IOS Mk II pore water sampler, and eight cores were subsampled on deck and squeezed, at in situ temperatures in an oxygen-free atmosphere, with two different squeezing systems.

The in situ sampler performance was characterised by teething troubles. Although these could not be rectified completely with the facilities available a very considerable improvement was achieved. The first two drops, at stations 10163 and 10164, were totally unsuccessful. After mechanical and electrical improvements, a drop at 10165 failed only because the bottom detector threshold, a trial and error adjustment, had been set too high. A repeat drop, with the threshold adjusted, tripped correctly and sampled

for 18 minutes in 5800 m. On recovery it was found that only small samples had been taken. A leak in the manifold was located and rectified. Samples were returned successfully at the remaining two stations 10169 (2 drops) and 10170. These were, however, always smaller than expected, reaching a maximum of 45% of design maximum at the last lowering.

The fine sedimentary material of this region is not easily filtered, so that it is a very demanding area for the use of this technique. The superpenetration problem experienced using the IOS Mk I sampler in this type of material has been overcome. Residual operational problems remaining at the end of this cruise were a poor reliability of the sampling period control clock, apparently caused by voltage spikes from the valve control circuits, and a small but significant leak in the manifold which has not yet been traced.

The modified IOS shipboard squeezing unit, which uses hydraulic squeezers, proved very rewarding and gave good-sized samples with no major problems. To assist in understanding the technology of squeezing and sample preservation the University of Leeds squeezer system, incorporating Reeburgh-type squeezers of PVC/PTFE construction, was operated simultaneously on samples from the same cores. Samples from both systems were analysed on board for silicate, phosphate, and alkalinity. Aliquots were also fixed and stored for subsequent analysis for trace metals, nitrate and iodine.

E. Darlington  
H. Elderfield  
D. Hydes  
H. Kennedy  
R. Peters  
P. Ridout  
T. R. S. Wilson

## SEDIMENT SAMPLING

Two corers were used for most of the sediment sampling programme, viz the 30 x 30 cm IOS box corer and a Kastenlot 15 x 15 cm square box gravity corer with a 2 m barrel. Both corers operated satisfactorily, although the softness of the brown and grey clay sediments encountered on the cruise resulted in greater penetration than is customary. The sediment/water interface was well preserved in all the box cores. Cores were also obtained at two stations with a modified IOS gravity corer, using a square cross section barrel fitted with removable panels to facilitate sub-sampling, but in these cores the interface was not well preserved because of the deep penetration.

All the box and gravity cores were sampled for pore water squeezing, the box cores via vertical sub-cores, and the Kastenlot cores via multiple sub-cores at right angles to the barrel. Sediment samples were taken from all core at selected depths for geochemical and physical investigations, at Wormley and Leeds, of the solid phase. Sediment samples and archive sub-cores from box cores were stored frozen as soon as possible. One complete (2 m) Kastenlot core was preserved intact at 4°C for physical property studies. After the first station core descriptions, supported by smear slide microscope analyses, were started on all Kastenlot cores as soon as they were opened.

M. Carpenter  
H. Coyle  
R. Kidd  
R. J. Morris  
R. Peters  
J. Thomson

#### SURFACE FILMS AND PLANKTON

Surface films were sampled at 2 stations and stored for lipid analysis. Plankton hauls were made at 4 stations using surface and sub-surface nets. Samples were washed free of salt and stored frozen for element analysis. Some samples were also preserved in buffered formalin for taxonomic work.

R. J. Morris  
R. Pagett

|       |      |          |          |                 |           |           |                                |      |
|-------|------|----------|----------|-----------------|-----------|-----------|--------------------------------|------|
| 10166 | 27/2 | 23°32.7' | 61°29.3' | N.N(4)          | 0         | 0052-0325 |                                |      |
| 10167 | 27/2 | 22°59.0' | 63°09.9' | S.F.S.          | 0         | 1932-2042 | Surface film and water samples |      |
| 10168 | 28/2 | 23°11.9' | 63°45.0' | N.N.            | 0         | 0027-0121 |                                |      |
|       |      | 23°12.8' | 63°50.5' | O.X.F.          |           |           |                                |      |
| 10169 | 28/2 |          |          |                 |           |           |                                |      |
| # 1   |      | 23°44.9' | 65°11.9' | B.G.C.          | 5760      | 1224-1619 | 129 cm core                    | 5760 |
| # 2   |      | 23°44.7' | 65°12.1' | H.C.            | 1500-5000 | 1632-2048 | Deep cast to 5000 m            | 5760 |
| # 3   |      | 23°44.9' | 65°13.0' | P.W.S.          | 5760      | 2100-0046 | 20% sample                     | 5760 |
| # 4   | 29/2 | 23°44.8' | 65°13.0' | K.C.            | 5760      | 0055-0454 | 215 cm core                    | 5760 |
| # 5   |      | 23°43.6' | 65°12.9' | H.C.            | 0-1250    | 0500-0723 | Shallow cast to 1250 m         | 5760 |
| # 6   |      | 23°41.8' | 65°12.4' | B.C.            | 5760      | 1118-1625 | No core                        | 5760 |
| # 7   |      | 23°42.4' | 65°09.6' | P.W.S.          | 5755      | 1636-2050 | 38% sample                     | 5755 |
| # 8   |      | 23°42.1' | 65°09.9' | H.C.            | 165-1800  | 2107-2257 | Intermediate cast to 1800 m    | 5760 |
| # 9   |      | 23°41.4' | 65°09.0' | B.C.            | 5760      | 2308-0332 | No core                        | 5760 |
| 10170 | 1/3  |          |          |                 |           |           |                                |      |
| # 1   |      | 21°43.6' | 65°30.5' | B.C.            | 5460      | 1500-2045 | 60 cm core                     | 5460 |
| # 2   |      | 21°44.6' | 65°29.9' | P.W.S.          | 5480      | 2132-0117 | 45% sample                     | 5480 |
| 10171 | 2/3  | 21°35.8' | 65°30.9' | N.N.            | 0         | 0252-0424 |                                |      |
| 10172 | 2/3  | 19°53.0' | 65°50.6' | 1 Forged Sphere | 8300      | 1757-2330 | Sphere failed to implode       | 8340 |

Abbreviations

|        |                      |
|--------|----------------------|
| B.C.   | Box corer            |
| B.G.C. | Box gravity corer    |
| H.C.   | Hydrocast            |
| K.C.   | Kastenlot corer      |
| N.B.   | Niskin water bottle  |
| N.N.   | Neuston net          |
| O.X.   | Oxfam net            |
| P.T.   | Particle trap        |
| P.W.S. | Pore water sampler   |
| S.F.S. | Surface film sampler |

| STN.  | DATE<br>(1980) | LAT.(N)  | LONG(W)  | GEAR   | DEPTH (m) | SAMPLING<br>TIME<br>GMT | REMARKS   | MEAN<br>SOUNDING (m) |
|-------|----------------|----------|----------|--------|-----------|-------------------------|---|----------------------|
| 10163 |                |          |          |        |           |                         |   |                      |
| # 1   | 21/2           | 23°37.6' | 59°41.2' | B.C.   | 5880      | 18.10-2149              | Pre-tripped, no sample                            | 5880                 |
| # 2   | 21/2           | 23°40.3' | 59°40.0' | H.C.   | 1500-5000 | 2210-0329               | Deep cast to 5000 m                               | 5850                 |
| # 3   | 22/2           | 23°41.3' | 59°40.9' | B.C.   | 5858      | 0333-0756               | 72 cm core  | 5858                 |
| # 4   | 22/2           | 23°41.1' | 59°41.8' | P.W.S. | 5840      | 0814-1341               | Out of balance, no sample                         | 5840                 |
| # 5   | 22/2           | 23°42.3' | 59°41.5' | H.C.   | 0-1250    | 1350-1552               | Shallow cast to 1250 m                            | 5855                 |
| # 6   | 22/2           | 23°43.5' | 59°41.7' | K.C.   | 5871      | 1609-2003               | 185 cm core Surface water sample                  | 5871                 |
| 10164 |                |          |          |        |           |                         |   |                      |
| # 1   | 23/2           | 26°14.0' | 60°20.7' | K.C.   | 6135      | 1220-1617               | 205 cm core                                       | 6135                 |
| # 2   |                | 26°13.1' | 60°21.0' | H.C.   | 1500-5000 | 1628-1951               | Deep cast to 5000 m                               | 6140                 |
|       |                |          |          | S.F.   | 0         | 1959-2148               |   |                      |
| # 3   |                | 26°12.5' | 60°22.6' | P.W.S. | 6140      | 2210-0200               | No sample   | 6140                 |
| # 4   | 24/2           | 26°12.3' | 60°24.0' | H.C.   | 0-1250    | 0218-0419               | Shallow cast to 1250 m                            | 6140                 |
| # 5   |                | 26°04.9' | 60°24.7' | B.C.   | 5550      | 0749-1244               | 55 cm core  | 5550                 |
| 10165 |                |          |          |        |           |                         |   |                      |
| # 1   | 25/2           | 23°43.8' | 61°29.7' | H.C.   | 1500-5000 | 0505-0855               | Deep cast to 5000 m                               | 5825                 |
| # 2   |                | 23°43.8' | 61°29.4' | B.C.   | 5826      | 0948-1405               | 64.5 cm core                                      | 5826                 |
| # 3   |                | 23°43.5' | 61°30.4' | P.T.   | 5830      | 1421-1642               | Particle trap failed to surface                   | 5830                 |
| # 4   |                | 23°43.7' | 61°29.7' | P.W.S. |           | 1823-2234               | No sample   | 5820                 |
|       |                |          |          | N.W.B. | 0         |                         | Surface water sample                              |                      |
| # 5   |                | 23°43.7' | 61°29.6' | B.G.C. | 5824      | 2258-0237               | 107 cm core                                       | 5824                 |
|       |                | 23°44.7' | 61°28.7' |        |           |                         |   |                      |
| # 6   | 26/2           | 23°44.7' | 61°28.3' | H.C.   | 0-1250    | 0316-0530               | Shallow cast to 1250 m                            | 5825                 |
| # 7   |                | 23°45.4' | 61°28.1' | P.W.S. | 5822      | 0553-0938               | 20% sample  | 5822                 |
| # 8   |                | 23°45.0' | 61°27.5' | B.C.   | 5825      | 1040-1634               | 68 cm core  | 5825                 |
| # 9   |                | 23°45.5' | 61°28.5' | K.C.   | 5825      | 1718-2137               | Core kept intact for study of physical properties | 5825                 |





## CRUISE REPORTS

| <i>RRS "DISCOVERY"</i>   | CRUISE DATES        | REPORT NO.     |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
|--|---------------------|----------------|------------|----|----------------|----|----|----------------|----|----|---------------------|----|---|----------------|------------|-------------------------|----------------|----------------|-----------|----------------|-----------|----------------|----------------|------------|-----------|----------------|----|----|----------------|----|----|----------------|----|----|----------------|----|----|----------------|----|----|----------------|----|----|----------------|----|----|----------------|----|----------|----------------|----|------|----------------|----|----|----------------|----|--|----------------|-----------|---------------------------|----------------|----------|-------------|----------------|-----------|----------|----------------|----------|-----------|----------------|-----------|----------|----------------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|----------------|----|----|----------------|----|----|----------|----|----|----------------|----|----|----------------|----|----|----------------|----|----|----------------|----|----|----------------|----|----|----------|----|----|---------------------|----|----|----------|----|--|----------------|-----------|----------|----------|----------------|----------|-------------------------|-----------|----------------|-----------|----------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|---------------------------|--|----------------|-----------|------------------------|--|----------------|-----------|--------------------|--|----------------|-----------|----------------|-----------|----------------|-----------|----------|-----------|-------------------------|--|----------------|----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------|-----------|----------|-----------|----------------------|--|----------------|-----------|----------|-------------|----------|-------------|--|--|----------------|----------|--|
| <table border="0" style="width: 100%;"> <tr> <th style="text-align: left;">CRUISE NO.</th> <th style="text-align: left;">CRUISE DATES</th> <th style="text-align: center;">REPORT NO.</th> </tr> <tr> <td>1</td> <td>JUN — AUG 1963</td> <td style="text-align: center;">1*</td> </tr> <tr> <td>2</td> <td>AUG — DEC 1963</td> <td style="text-align: center;">2*</td> </tr> <tr> <td>3</td> <td>DEC 1963 — SEP 1964</td> <td style="text-align: center;">3*</td> </tr> </table>   | CRUISE NO.          | CRUISE DATES   | REPORT NO. | 1  | JUN — AUG 1963 | 1* | 2  | AUG — DEC 1963 | 2* | 3  | DEC 1963 — SEP 1964 | 3* | <table border="0" style="width: 100%;"> <tr> <th style="text-align: left;">CRUISE DATES</th> <th style="text-align: center;">REPORT NO.</th> </tr> <tr> <td><i>RRS "CHALLENGER"</i></td> <td></td> </tr> <tr> <td>AUG — SEP 1974</td> <td style="text-align: center;">IOS CR 22</td> </tr> <tr> <td>MAR — APR 1978</td> <td style="text-align: center;">IOS CR 47</td> </tr> <tr> <td>MAR — MAY 1978</td> <td style="text-align: center;">IOS CR 72</td> </tr> <tr> <td>APR — 1979</td> <td style="text-align: center;">IOS CR 81</td> </tr> </table> | CRUISE DATES   | REPORT NO. | <i>RRS "CHALLENGER"</i> |                | AUG — SEP 1974 | IOS CR 22 | MAR — APR 1978 | IOS CR 47 | MAR — MAY 1978 | IOS CR 72      | APR — 1979 | IOS CR 81 |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| CRUISE NO.   | CRUISE DATES        | REPORT NO.     |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 1  | JUN — AUG 1963      | 1*             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 2  | AUG — DEC 1963      | 2*             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 3  | DEC 1963 — SEP 1964 | 3*             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| CRUISE DATES   | REPORT NO.          |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <i>RRS "CHALLENGER"</i>  |                     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| AUG — SEP 1974   | IOS CR 22           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAR — APR 1978   | IOS CR 47           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAR — MAY 1978   | IOS CR 72           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| APR — 1979   | IOS CR 81           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
|  | <b>NIO CR**</b>     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <table border="0" style="width: 100%;"> <tr> <td>4</td> <td>FEB — MAR 1965</td> <td style="text-align: center;">4</td> </tr> <tr> <td>TO</td> <td>TO</td> <td style="text-align: center;">TO</td> </tr> <tr> <td>37</td> <td>NOV — DEC 1970</td> <td style="text-align: center;">37</td> </tr> <tr> <td>38</td> <td>JAN — APR 1971</td> <td style="text-align: center;">41</td> </tr> <tr> <td>39</td> <td>APR — JUN 1971</td> <td style="text-align: center;">40</td> </tr> <tr> <td>40</td> <td>JUN — JUL 1971</td> <td style="text-align: center;">48</td> </tr> <tr> <td>41</td> <td>AUG — SEP 1971</td> <td style="text-align: center;">45</td> </tr> <tr> <td>42</td> <td>SEP 1971</td> <td style="text-align: center;">49</td> </tr> <tr> <td>43</td> <td>OCT — NOV 1971</td> <td style="text-align: center;">47</td> </tr> <tr> <td>44</td> <td>DEC 1971</td> <td style="text-align: center;">46</td> </tr> <tr> <td>45</td> <td>FEB — APR 1972</td> <td style="text-align: center;">50</td> </tr> <tr> <td>46</td> <td>APR — MAY 1972</td> <td style="text-align: center;">55</td> </tr> <tr> <td>47</td> <td>JUN — JUL 1972</td> <td style="text-align: center;">52</td> </tr> <tr> <td>48</td> <td>JUL — AUG 1972</td> <td style="text-align: center;">53</td> </tr> <tr> <td>49</td> <td>AUG — OCT 1972</td> <td style="text-align: center;">57</td> </tr> <tr> <td>50</td> <td>OCT 1972</td> <td style="text-align: center;">56</td> </tr> <tr> <td>51</td> <td>NOV — DEC 1972</td> <td style="text-align: center;">54</td> </tr> <tr> <td>52</td> <td>FEB — MAR 1973</td> <td style="text-align: center;">59</td> </tr> <tr> <td>53</td> <td>APR — JUN 1973</td> <td style="text-align: center;">58</td> </tr> </table>  | 4                   | FEB — MAR 1965 | 4          | TO | TO             | TO | 37 | NOV — DEC 1970 | 37 | 38 | JAN — APR 1971      | 41 | 39  | APR — JUN 1971 | 40         | 40                      | JUN — JUL 1971 | 48             | 41        | AUG — SEP 1971 | 45        | 42             | SEP 1971       | 49         | 43        | OCT — NOV 1971 | 47 | 44 | DEC 1971       | 46 | 45 | FEB — APR 1972 | 50 | 46 | APR — MAY 1972 | 55 | 47 | JUN — JUL 1972 | 52 | 48 | JUL — AUG 1972 | 53 | 49 | AUG — OCT 1972 | 57 | 50 | OCT 1972       | 56 | 51       | NOV — DEC 1972 | 54 | 52   | FEB — MAR 1973 | 59 | 53 | APR — JUN 1973 | 58 | <table border="0" style="width: 100%;"> <tr> <td>NOV — DEC 1978</td> <td style="text-align: center;">IOS CR 73</td> </tr> <tr> <td><i>RV "EDWARD FORBES"</i></td> <td></td> </tr> <tr> <td>OCT 1974</td> <td style="text-align: center;">IOS CR 15 X</td> </tr> <tr> <td>JAN — FEB 1975</td> <td style="text-align: center;">IOS CR 19</td> </tr> <tr> <td>APR 1975</td> <td style="text-align: center;">IOS CR 23</td> </tr> <tr> <td>MAY 1975</td> <td style="text-align: center;">IOS CR 32</td> </tr> <tr> <td>MAY — JUN 1975</td> <td style="text-align: center;">IOS CR 28</td> </tr> <tr> <td>JUL 1975</td> <td style="text-align: center;">IOS CR 31</td> </tr> <tr> <td>JUL — AUG 1975</td> <td style="text-align: center;">IOS CR 36</td> </tr> <tr> <td>AUG — SEP 1975</td> <td style="text-align: center;">IOS CR 41</td> </tr> <tr> <td>FEB — APR 1976</td> <td style="text-align: center;">IOS CR 48</td> </tr> <tr> <td>APR — JUN 1976</td> <td style="text-align: center;">IOS CR 50</td> </tr> <tr> <td>MAY 1976</td> <td style="text-align: center;">IOS CR 53</td> </tr> <tr> <td>AUG — SEP 1977</td> <td style="text-align: center;">IOS CR 64</td> </tr> </table> | NOV — DEC 1978 | IOS CR 73 | <i>RV "EDWARD FORBES"</i> |                | OCT 1974 | IOS CR 15 X | JAN — FEB 1975 | IOS CR 19 | APR 1975 | IOS CR 23      | MAY 1975 | IOS CR 32 | MAY — JUN 1975 | IOS CR 28 | JUL 1975 | IOS CR 31      | JUL — AUG 1975 | IOS CR 36 | AUG — SEP 1975 | IOS CR 41 | FEB — APR 1976 | IOS CR 48 | APR — JUN 1976 | IOS CR 50 | MAY 1976       | IOS CR 53 | AUG — SEP 1977 | IOS CR 64      |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 4  | FEB — MAR 1965      | 4              |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| TO   | TO                  | TO             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 37   | NOV — DEC 1970      | 37             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 38   | JAN — APR 1971      | 41             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 39   | APR — JUN 1971      | 40             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 40   | JUN — JUL 1971      | 48             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 41   | AUG — SEP 1971      | 45             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 42   | SEP 1971            | 49             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 43   | OCT — NOV 1971      | 47             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 44   | DEC 1971            | 46             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 45   | FEB — APR 1972      | 50             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 46   | APR — MAY 1972      | 55             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 47   | JUN — JUL 1972      | 52             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 48   | JUL — AUG 1972      | 53             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 49   | AUG — OCT 1972      | 57             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 50   | OCT 1972            | 56             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 51   | NOV — DEC 1972      | 54             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 52   | FEB — MAR 1973      | 59             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 53   | APR — JUN 1973      | 58             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| NOV — DEC 1978   | IOS CR 73           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <i>RV "EDWARD FORBES"</i>  |                     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| OCT 1974   | IOS CR 15 X         |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JAN — FEB 1975   | IOS CR 19           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| APR 1975   | IOS CR 23           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAY 1975   | IOS CR 32           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAY — JUN 1975   | IOS CR 28           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUL 1975   | IOS CR 31           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUL — AUG 1975   | IOS CR 36           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| AUG — SEP 1975   | IOS CR 41           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| FEB — APR 1976   | IOS CR 48           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| APR — JUN 1976   | IOS CR 50           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAY 1976   | IOS CR 53           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| AUG — SEP 1977   | IOS CR 64           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
|  | <b>IOS CR***</b>    |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <table border="0" style="width: 100%;"> <tr> <td>54</td> <td>JUN — AUG 1973</td> <td style="text-align: center;">2</td> </tr> <tr> <td>55</td> <td>SEP — OCT 1973</td> <td style="text-align: center;">5</td> </tr> <tr> <td>56</td> <td>OCT — NOV 1973</td> <td style="text-align: center;">4</td> </tr> <tr> <td>57</td> <td>NOV — DEC 1973</td> <td style="text-align: center;">6</td> </tr> <tr> <td>58</td> <td>DEC 1973</td> <td style="text-align: center;">4</td> </tr> <tr> <td>59</td> <td>FEB 1974</td> <td style="text-align: center;">14</td> </tr> <tr> <td>60</td> <td>FEB — MAR 1974</td> <td style="text-align: center;">8</td> </tr> <tr> <td>61</td> <td>MAR — MAY 1974</td> <td style="text-align: center;">10</td> </tr> <tr> <td>62</td> <td>MAY — JUN 1974</td> <td style="text-align: center;">11</td> </tr> <tr> <td>63</td> <td>JUN — JUL 1974</td> <td style="text-align: center;">12</td> </tr> <tr> <td>64</td> <td>JUL — AUG 1974</td> <td style="text-align: center;">13</td> </tr> <tr> <td>65</td> <td>AUG 1974</td> <td style="text-align: center;">17</td> </tr> <tr> <td>66</td> <td>AUG — SEP 1974</td> <td style="text-align: center;">20</td> </tr> <tr> <td>68</td> <td>NOV — DEC 1974</td> <td style="text-align: center;">16</td> </tr> <tr> <td>69</td> <td>JAN — MAR 1975</td> <td style="text-align: center;">51</td> </tr> <tr> <td>73</td> <td>JUL — AUG 1975</td> <td style="text-align: center;">34</td> </tr> <tr> <td>74/1 + 3</td> <td>SEP — OCT 1975</td> <td style="text-align: center;">35</td> </tr> <tr> <td>74/2</td> <td>SEP 1975</td> <td style="text-align: center;">33</td> </tr> <tr> <td>75</td> <td>OCT — NOV 1975</td> <td style="text-align: center;">43</td> </tr> <tr> <td>77</td> <td>JUL — AUG 1976</td> <td style="text-align: center;">46</td> </tr> <tr> <td>78</td> <td>SEP — OCT 1976</td> <td style="text-align: center;">52</td> </tr> <tr> <td>79</td> <td>OCT — NOV 1976</td> <td style="text-align: center;">54</td> </tr> <tr> <td>82</td> <td>MAR — MAY 1977</td> <td style="text-align: center;">59</td> </tr> <tr> <td>83</td> <td>MAY — JUN 1977</td> <td style="text-align: center;">61</td> </tr> <tr> <td>84</td> <td>JUN — JUL 1977</td> <td style="text-align: center;">60</td> </tr> <tr> <td>86</td> <td>SEP 1977</td> <td style="text-align: center;">57</td> </tr> <tr> <td>87</td> <td>OCT 1977</td> <td style="text-align: center;">58</td> </tr> <tr> <td>88</td> <td>OCT — NOV 1977</td> <td style="text-align: center;">65</td> </tr> <tr> <td>89</td> <td>NOV — DEC 1977</td> <td style="text-align: center;">67</td> </tr> <tr> <td>90</td> <td>JAN — MAR 1978</td> <td style="text-align: center;">68</td> </tr> <tr> <td>91</td> <td>MAR 1978</td> <td style="text-align: center;">69</td> </tr> <tr> <td>92</td> <td>APR — MAY 1978</td> <td style="text-align: center;">70</td> </tr> <tr> <td>93</td> <td>MAY — JUL 1978</td> <td style="text-align: center;">71</td> </tr> <tr> <td>94</td> <td>JUL — SEP 1978</td> <td style="text-align: center;">74</td> </tr> <tr> <td>95</td> <td>OCT — NOV 1978</td> <td style="text-align: center;">77</td> </tr> <tr> <td>96</td> <td>NOV — DEC 1978</td> <td style="text-align: center;">79</td> </tr> <tr> <td>97</td> <td>DEC 1978</td> <td style="text-align: center;">77</td> </tr> <tr> <td>98</td> <td>DEC 1978 — JAN 1979</td> <td style="text-align: center;">75</td> </tr> <tr> <td>99</td> <td>JAN 1979</td> <td style="text-align: center;">78</td> </tr> </table> | 54                  | JUN — AUG 1973 | 2          | 55 | SEP — OCT 1973 | 5  | 56 | OCT — NOV 1973 | 4  | 57 | NOV — DEC 1973      | 6  | 58  | DEC 1973       | 4          | 59                      | FEB 1974       | 14             | 60        | FEB — MAR 1974 | 8         | 61             | MAR — MAY 1974 | 10         | 62        | MAY — JUN 1974 | 11 | 63 | JUN — JUL 1974 | 12 | 64 | JUL — AUG 1974 | 13 | 65 | AUG 1974       | 17 | 66 | AUG — SEP 1974 | 20 | 68 | NOV — DEC 1974 | 16 | 69 | JAN — MAR 1975 | 51 | 73 | JUL — AUG 1975 | 34 | 74/1 + 3 | SEP — OCT 1975 | 35 | 74/2 | SEP 1975       | 33 | 75 | OCT — NOV 1975 | 43 | 77   | JUL — AUG 1976 | 46        | 78                        | SEP — OCT 1976 | 52       | 79          | OCT — NOV 1976 | 54        | 82       | MAR — MAY 1977 | 59       | 83        | MAY — JUN 1977 | 61        | 84       | JUN — JUL 1977 | 60             | 86        | SEP 1977       | 57        | 87             | OCT 1977  | 58             | 88        | OCT — NOV 1977 | 65        | 89             | NOV — DEC 1977 | 67 | 90 | JAN — MAR 1978 | 68 | 91 | MAR 1978 | 69 | 92 | APR — MAY 1978 | 70 | 93 | MAY — JUL 1978 | 71 | 94 | JUL — SEP 1978 | 74 | 95 | OCT — NOV 1978 | 77 | 96 | NOV — DEC 1978 | 79 | 97 | DEC 1978 | 77 | 98 | DEC 1978 — JAN 1979 | 75 | 99 | JAN 1979 | 78 | <table border="0" style="width: 100%;"> <tr> <td>APR — MAY 1972</td> <td style="text-align: center;">NIO CR 51</td> </tr> <tr> <td>SEP 1973</td> <td style="text-align: center;">IOS CR 7</td> </tr> <tr> <td>MAY — APR 1974</td> <td style="text-align: center;">IOS CR 9</td> </tr> <tr> <td>OCT — NOV<br/>&amp; DEC 1974</td> <td style="text-align: center;">IOS CR 21</td> </tr> <tr> <td>APR — MAY 1975</td> <td style="text-align: center;">IOS CR 25</td> </tr> <tr> <td>APR 1975</td> <td style="text-align: center;">IOS CR 39</td> </tr> <tr> <td>OCT — NOV 1975</td> <td style="text-align: center;">IOS CR 40</td> </tr> <tr> <td>AUG — OCT 1975</td> <td style="text-align: center;">IOS CR 42</td> </tr> <tr> <td>OCT — NOV 1976</td> <td style="text-align: center;">IOS CR 53</td> </tr> <tr> <td>MAR — APR 1977</td> <td style="text-align: center;">IOS CR 66</td> </tr> <tr> <td>JUL — SEP 1978</td> <td style="text-align: center;">IOS CR 76</td> </tr> <tr> <td><i>NC "MARCEL BAYARD"</i></td> <td></td> </tr> <tr> <td>FEB — APR 1971</td> <td style="text-align: center;">NIO CR 44</td> </tr> <tr> <td><i>MV "RESEARCHER"</i></td> <td></td> </tr> <tr> <td>AUG — SEP 1972</td> <td style="text-align: center;">NIO CR 60</td> </tr> <tr> <td><i>RV "SARSIA"</i></td> <td></td> </tr> <tr> <td>MAY — JUN 1975</td> <td style="text-align: center;">IOS CR 30</td> </tr> <tr> <td>AUG — SEP 1975</td> <td style="text-align: center;">IOS CR 38</td> </tr> <tr> <td>MAR — APR 1976</td> <td style="text-align: center;">IOS CR 44</td> </tr> <tr> <td>MAR 1977</td> <td style="text-align: center;">IOS CR 63</td> </tr> <tr> <td><i>RRS "SHACKLETON"</i></td> <td></td> </tr> <tr> <td>AUG — SEP 1973</td> <td style="text-align: center;">IOS CR 3</td> </tr> <tr> <td>JAN — FEB 1975</td> <td style="text-align: center;">IOS CR 18</td> </tr> <tr> <td>MAR — MAY 1975</td> <td style="text-align: center;">IOS CR 24</td> </tr> <tr> <td>FEB — MAR 1975</td> <td style="text-align: center;">IOS CR 29</td> </tr> <tr> <td>JUL — AUG 1975</td> <td style="text-align: center;">IOS CR 37</td> </tr> <tr> <td>JUN — JUL 1976</td> <td style="text-align: center;">IOS CR 45</td> </tr> <tr> <td>OCT — NOV 1976</td> <td style="text-align: center;">IOS CR 49</td> </tr> <tr> <td>JUL 1977</td> <td style="text-align: center;">IOS CR 62</td> </tr> <tr> <td>JUL 1979</td> <td style="text-align: center;">IOS CR 80</td> </tr> <tr> <td><i>MV "SURVEYOR"</i></td> <td></td> </tr> <tr> <td>FEB — APR 1971</td> <td style="text-align: center;">NIO CR 38</td> </tr> <tr> <td>JUN 1971</td> <td style="text-align: center;">NIO CR 39 X</td> </tr> <tr> <td>AUG 1971</td> <td style="text-align: center;">NIO CR 42 X</td> </tr> <tr> <td><i>DE "VICKERS VOYAGER" AND "PISCES III"</i></td> <td></td> </tr> <tr> <td>JUN — JUL 1973</td> <td style="text-align: center;">IOS CR 1</td> </tr> </table> | APR — MAY 1972 | NIO CR 51 | SEP 1973 | IOS CR 7 | MAY — APR 1974 | IOS CR 9 | OCT — NOV<br>& DEC 1974 | IOS CR 21 | APR — MAY 1975 | IOS CR 25 | APR 1975 | IOS CR 39 | OCT — NOV 1975 | IOS CR 40 | AUG — OCT 1975 | IOS CR 42 | OCT — NOV 1976 | IOS CR 53 | MAR — APR 1977 | IOS CR 66 | JUL — SEP 1978 | IOS CR 76 | <i>NC "MARCEL BAYARD"</i> |  | FEB — APR 1971 | NIO CR 44 | <i>MV "RESEARCHER"</i> |  | AUG — SEP 1972 | NIO CR 60 | <i>RV "SARSIA"</i> |  | MAY — JUN 1975 | IOS CR 30 | AUG — SEP 1975 | IOS CR 38 | MAR — APR 1976 | IOS CR 44 | MAR 1977 | IOS CR 63 | <i>RRS "SHACKLETON"</i> |  | AUG — SEP 1973 | IOS CR 3 | JAN — FEB 1975 | IOS CR 18 | MAR — MAY 1975 | IOS CR 24 | FEB — MAR 1975 | IOS CR 29 | JUL — AUG 1975 | IOS CR 37 | JUN — JUL 1976 | IOS CR 45 | OCT — NOV 1976 | IOS CR 49 | JUL 1977 | IOS CR 62 | JUL 1979 | IOS CR 80 | <i>MV "SURVEYOR"</i> |  | FEB — APR 1971 | NIO CR 38 | JUN 1971 | NIO CR 39 X | AUG 1971 | NIO CR 42 X | <i>DE "VICKERS VOYAGER" AND "PISCES III"</i> |  | JUN — JUL 1973 | IOS CR 1 |  |
| 54   | JUN — AUG 1973      | 2              |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 55   | SEP — OCT 1973      | 5              |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 56   | OCT — NOV 1973      | 4              |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 57   | NOV — DEC 1973      | 6              |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 58   | DEC 1973            | 4              |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 59   | FEB 1974            | 14             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 60   | FEB — MAR 1974      | 8              |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 61   | MAR — MAY 1974      | 10             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 62   | MAY — JUN 1974      | 11             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 63   | JUN — JUL 1974      | 12             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 64   | JUL — AUG 1974      | 13             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 65   | AUG 1974            | 17             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 66   | AUG — SEP 1974      | 20             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 68   | NOV — DEC 1974      | 16             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 69   | JAN — MAR 1975      | 51             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 73   | JUL — AUG 1975      | 34             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 74/1 + 3   | SEP — OCT 1975      | 35             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 74/2   | SEP 1975            | 33             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 75   | OCT — NOV 1975      | 43             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 77   | JUL — AUG 1976      | 46             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 78   | SEP — OCT 1976      | 52             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 79   | OCT — NOV 1976      | 54             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 82   | MAR — MAY 1977      | 59             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 83   | MAY — JUN 1977      | 61             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 84   | JUN — JUL 1977      | 60             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 86   | SEP 1977            | 57             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 87   | OCT 1977            | 58             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 88   | OCT — NOV 1977      | 65             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 89   | NOV — DEC 1977      | 67             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 90   | JAN — MAR 1978      | 68             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 91   | MAR 1978            | 69             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 92   | APR — MAY 1978      | 70             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 93   | MAY — JUL 1978      | 71             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 94   | JUL — SEP 1978      | 74             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 95   | OCT — NOV 1978      | 77             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 96   | NOV — DEC 1978      | 79             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 97   | DEC 1978            | 77             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 98   | DEC 1978 — JAN 1979 | 75             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| 99   | JAN 1979            | 78             |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| APR — MAY 1972   | NIO CR 51           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| SEP 1973   | IOS CR 7            |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAY — APR 1974   | IOS CR 9            |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| OCT — NOV<br>& DEC 1974  | IOS CR 21           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| APR — MAY 1975   | IOS CR 25           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| APR 1975   | IOS CR 39           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| OCT — NOV 1975   | IOS CR 40           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| AUG — OCT 1975   | IOS CR 42           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| OCT — NOV 1976   | IOS CR 53           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAR — APR 1977   | IOS CR 66           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUL — SEP 1978   | IOS CR 76           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <i>NC "MARCEL BAYARD"</i>  |                     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| FEB — APR 1971   | NIO CR 44           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <i>MV "RESEARCHER"</i>   |                     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| AUG — SEP 1972   | NIO CR 60           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <i>RV "SARSIA"</i>   |                     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAY — JUN 1975   | IOS CR 30           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| AUG — SEP 1975   | IOS CR 38           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAR — APR 1976   | IOS CR 44           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAR 1977   | IOS CR 63           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <i>RRS "SHACKLETON"</i>  |                     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| AUG — SEP 1973   | IOS CR 3            |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JAN — FEB 1975   | IOS CR 18           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| MAR — MAY 1975   | IOS CR 24           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| FEB — MAR 1975   | IOS CR 29           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUL — AUG 1975   | IOS CR 37           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUN — JUL 1976   | IOS CR 45           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| OCT — NOV 1976   | IOS CR 49           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUL 1977   | IOS CR 62           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUL 1979   | IOS CR 80           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <i>MV "SURVEYOR"</i>   |                     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| FEB — APR 1971   | NIO CR 38           |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUN 1971   | NIO CR 39 X         |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| AUG 1971   | NIO CR 42 X         |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| <i>DE "VICKERS VOYAGER" AND "PISCES III"</i>   |                     |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |
| JUN — JUL 1973   | IOS CR 1            |                |            |    |                |    |    |                |    |    |                     |    |   |                |            |                         |                |                |           |                |           |                |                |            |           |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |          |                |    |      |                |    |    |                |    |  |                |           |                           |                |          |             |                |           |          |                |          |           |                |           |          |                |                |           |                |           |                |           |                |           |                |           |                |                |    |    |                |    |    |          |    |    |                |    |    |                |    |    |                |    |    |                |    |    |                |    |    |          |    |    |                     |    |    |          |    |  |                |           |          |          |                |          |                         |           |                |           |          |           |                |           |                |           |                |           |                |           |                |           |                           |  |                |           |                        |  |                |           |                    |  |                |           |                |           |                |           |          |           |                         |  |                |          |                |           |                |           |                |           |                |           |                |           |                |           |          |           |          |           |                      |  |                |           |          |             |          |             |  |  |                |          |  |

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\*\* NIO CR: National Institute of Oceanography, Cruise Report.

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