

**UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM**

# **UNOLS SCHEDULE REVIEW**

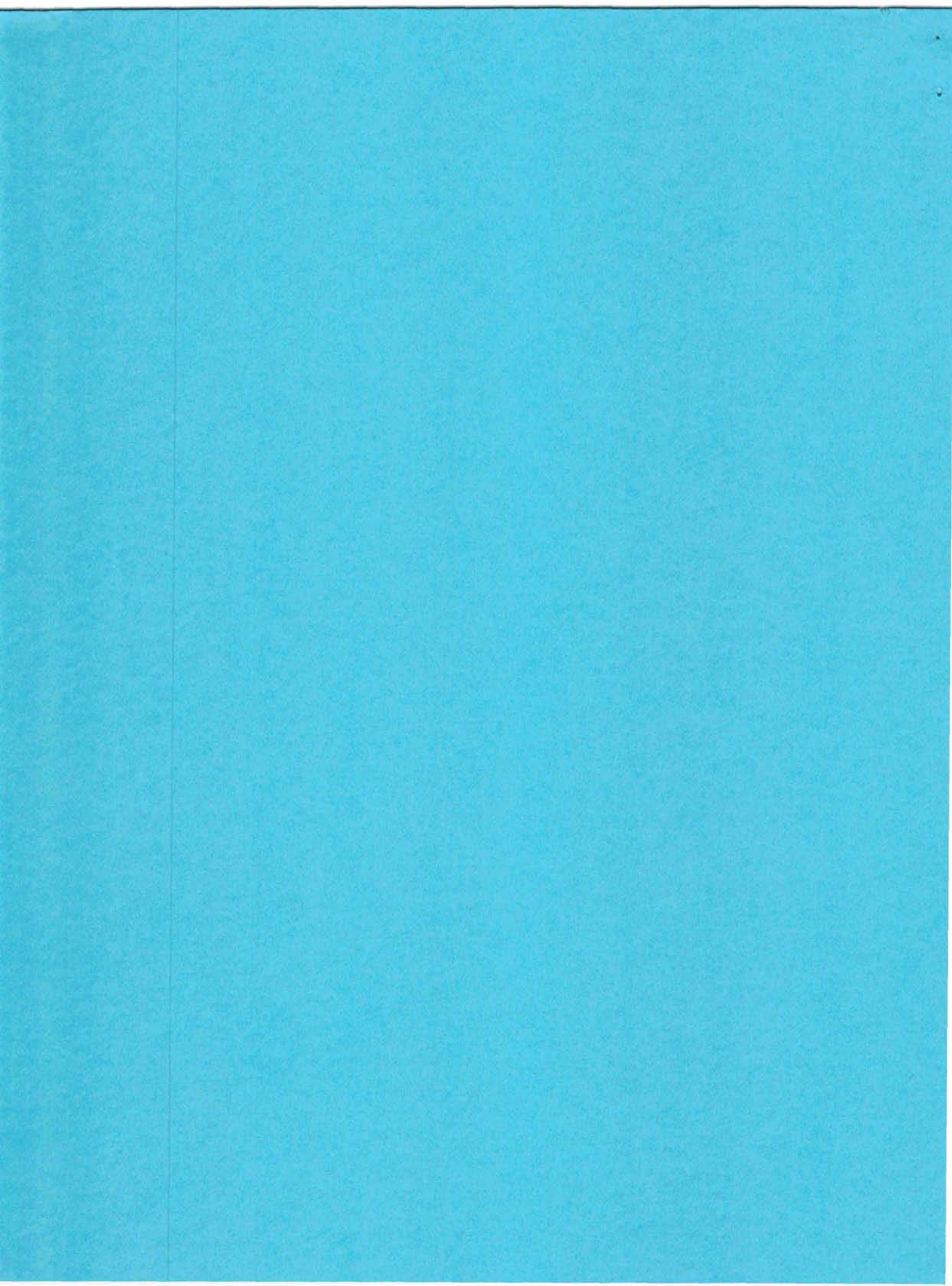
**Report of Meeting**

**23 June 1994**

**National Science Foundation  
4201 Wilson Boulevard  
Arlington, VA**







# UNOLS SCHEDULE REVIEW

## Report of Meeting

June 23, 1994

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### *Appendices*

- I. Attendance List
- II. NSF FY 95 Budget Request
- III. Ship Use and Cost Summary for 1994 and 1995
- IV. Inventory of 1995 Ship Time Requests
- V. 1995 Cruise Tracks

### **INTRODUCTION:**

The scheduling process for 1995 did not follow the regular June scheduling meeting format with all schedulers in attendance. The UNOLS Office electronically collected the scheduling information and the Scheduling Review Group convened to review this information. This group consists of the Chair and Vice Chair of the Scheduling Committee, representatives from NSF, ONR and NOAA and the Executive Secretary of UNOLS. Attached, as APPENDIX I, is the list of attendees. The Review Group evaluated all schedules received over OMNET and the track charts that were provided. The purpose of the review was to eliminate double bookings, reduce transit times and to maximize the efficiency of the proposed schedules.

The meeting was called to order at 0845 by the Scheduling Committee Chair, Ken Palfrey. Ken asked the federal representatives to provide funding information for the 1995 operating year.



## **FEDERAL AGENCY REPORTS:**

**National Science Foundation** - Dolly Dieter provided a brief summary of the NSF funding outlook. NSF is requesting a 14% budget increase for Ocean Science Research Support in 1995. Although the budget has not gone through Congress it is believed that level funding or possibly a 2% increase is the best they can plan for. The year of 1995 will be particularly expensive since three large ships will be in the Indian Ocean and will need support for essentially the entire year. This is a break from the normal 300 day operating cap. To add to the funding gloom, NSF has had to spend nearly \$1 million on unplanned ship operations in 1994 in response to the OCEANUS class admeasurement problem and the gear trouble on THOMPSON.

**Office of Naval Research** - The ONR report was provided by Keith Kaulum. Keith reported the personnel changes that are taking place at ONR. June Keller will be leaving 24 June and Keith will be retiring by the end of August. Annette DeSilva will be filling in for six months. In addition, ONR continues to reorganize tying basic and applied research closer together.

Keith reported that the ship support budget for ONR would remain about steady. He is concerned with the heavy operating schedules for the ships KNORR, THOMPSON and MELVILLE. He pointed out that there is no contingency time in their schedules and if maintenance problems develop science will be lost. Keith recommends that the WOCE and JGOFS science committees evaluate alternatives for these potential events.

**National Oceanic and Atmospheric Administration** - NOAA was represented by Scott McKellar. Scott reported that very little UNOLS time would be chartered in 1995. NOAA ships DELAWARE II and TOWNSEND CROMWELL will be undergoing overhauls in 1995 and non-UNOLS charters will be needed to complete their work. SURVEYOR is scheduled to go out of commission when NOAA's Navy T-AGOS, TITAN completes the overhaul conversion work. NOAA will be an active player in GLOBEC, however, several funding issues need to be resolved.

## **SCHEDULING REVIEW GROUP ACTION:**

The following is a result of the Scheduling Group deliberations held at NSF on 23 June 1994. This was the first time the June scheduling meeting did not include all schedulers and relied on electronic input. All schedules were received, though some quite late. Track charts supporting the schedules surprisingly were missing from several major institutions, namely Scripps and LDEO. Funding information was less than satisfactory from BBSR, LDEO, TAMU and Scripps. These oversights made preparation for the meeting very difficult and led to incomplete presentations during the meeting. More effective and timely cooperation will be necessary if we are to continue with such type meetings which are cost saving and should be successful. We need to try harder.

**MOANA WAVE** - A large number of days are pending panel recommendations and program funding decisions. Long transits are a concern. A 325 day schedule is probably not affordable or desirable. A 250-275 day schedule is probably more realistic for MOANA WAVE. The Childress work from NEW HORIZON & HOTS should be considered if presently scheduled cruises do not materialize.

**ALPHA HELIX** - The 207 day regional schedule presented is typical and realistic. We note a number of project funding decisions are pending.

**THOMPSON** - The 326 day schedule of JGOFS work is necessary and at this point fully funded.

**BARNES** - A light but typical regional schedule.

**WECOMA** - A light 187 day schedule with considerable open time in the fall. The Cowles work has been declined. The Wilcock work may not be possible in 1995 due to instrument unavailability.

**POINT SUR** - A solid 190 day schedule has been presented. Dugdale work (CO-OP) is funded. The Ward and some pending unscheduled work (Lipschultz, Altabet) should be considered for NEW HORIZON. We note pending unscheduled requests by Bruland and Welchmeyer.

**MELVILLE** - The 336 day schedule presented is longer than desirable however is fully funded. The transits from Hobart to Papeete and the Fitzwater work will be jointly and equally funded by NSF and ONR. Consideration should be given to combining the Cande and Speiss work on Juan de Fuca Ridge with a possible combined reduction of days. Consideration should also be given to scheduling Sempere out of Australia at the end of the year. The Madsen work should be considered for KNORR's 1996 schedule.

**NEW HORIZON** - A full 263 day schedule was presented. The pending Childress work out of Honolulu should be considered for MOANA WAVE. Consideration should also be given to the Ward and other unscheduled POINT SUR work. The several Hildebrand cruises need to be sorted out. We note an unscheduled ONR funded 5-day ship time request by Hildebrand.

**SPROUL** - A good scheduled for which many funding decisions are pending. We note an unlisted ship time request for Yayanos. The Felbeck work is funded.

**LAURENTIAN** - The schedule of LAURENTIAN will be dependent on the NSF panel recommendations and program funding decisions. No other comments from the Scheduling Review Group.

**LONGHORN** - Three out of four non-state funded cruises aboard LONGHORN are pending NSF funding which will be decided after panel action and program funding decisions.



**PELICAN** - PELICAN still has 137 day of pending cruises that will be decided after the NSF panel recommendations and program funding decisions. The NRL cruise of Richardson should read 33 days vice the 45 days on the schedule.

**CALANUS** - No cruises have been proposed or funded for CALANUS.

**SEWARD JOHNSON - EDWIN LINK - SEA DIVER** - The schedules proposed for the three Harbor Branch ships stand as submitted pending NSF funding for PIs Littler and Martin.

**BLUE FIN** - All NSF cruises scheduled for BLUE FIN are pending panel recommendations and program manager decisions for funding.

**CAPE HENLOPEN** - The Boynton cruises listed as pending are funded by NSF. ONR will be funding the two Blough cruises. All other pending cruises aboard CAPE HENLOPEN will need to await the NSF panel recommendations and program manager decisions.

**MAURICE EWING** - The multi-option schedule for EWING will not be resolved until after the NSF panel reviews and program manager decisions. The cruise of Michael in the South Atlantic is being planned for KNORR in '96. The cruise of Mann will probably be scheduled on an Australian ship.

**WEATHERBIRD II** - The schedule of WEATHERBIRD II will need to be reevaluated after the NSF panels. Two pending programs, Echelbarger, 24 days and Dickey, ? days should be considered. The ship's repair period should be identified and those cruises affected should be made known to the East coast schedulers to determine how they can be accommodated.

**ATLANTIS II** - The schedule of ATLANTIS II has already been set by the funded cruises. Adjustments to the schedule should be made where possible, to reduce transits.

**KNORR** - The schedule of KNORR is very heavy and leaves little room for maintenance, however no alternative is suggested. The WOCE steering Committee should be asked to look at a cruise strategy in the event maintenance problems disrupt a portion of this busy schedule. The South Atlantic work of Michael, presently scheduled for EWING, will be considered for KNORR in '96 enroute to Woods Hole.

**OCEANUS/ENDEAVOR/CAPE HATTERAS/COLUMBUS ISELIN/GYRE** - The four intermediate ships of the East coast plus HATTERAS will need to make major revisions to their schedules. The NOAA level of funding for GLOBEC is still unresolved. In addition, there are many pending NSF cruises. The following guidance is offered.

COLUMBUS ISELIN should plan to lay up for the year of 1995. ENDEAVOR should build it's schedule around GLOBEC and will be the only UNOLS GLOBEC ship unless additional NOAA funding becomes available. OCEANUS should plan on working south for the Caribbean and Equator work. CAPE HATTERAS should not schedule the Gulf of Maine work in the January - March period. This work should be scheduled aboard ENDEAVOR or

OCEANUS as possible. The Droxler and Locker work is still pending but should be considered for OCEANUS or GYRE. HATTERAS should work with WEATHERBIRD II to fill in during that ship's shipyard period. A Sombretta cruise of 11 days should be considered for HATTERAS. GYRE should plan for all funded work in the Gulf of Mexico and be ready to pick up funded work not accommodated by OCEANUS in the waters south of 35° N latitude. This could include the Capone work if funded. All funded ONR work should be accommodated on one of these four ships if possible. OCEANUS/ENDEAVOR/HATTERAS & GYRE schedules should be resubmitted within two weeks after the NOAA funding decisions for GLOBEC are known.

# APPENDIX I



## Appendix I

### List of Attendees

|               |          |
|---------------|----------|
| J. Bash       | UNOLS    |
| N. Cherkis    | NRL      |
| M. D'Andrea   | UNOLS    |
| P. Dennis     | JOI/Navy |
| A. DeSilva    | UNOLS    |
| D. Dieter     | NSF      |
| R. Hutchinson | RSMAS    |
| K. Kaulum     | ONR      |
| R. Lambert    | NSF      |
| B. Malfait    | NSF/ODP  |
| S. McKellar   | NOAA     |
| R. Moll       | NSF      |
| K. Palfrey    | OSU      |
| A. Shor       | NSF/ODP  |

## **APPENDIX II**



## OCEAN SCIENCES DIVISION

|                          | <u>FY 1992</u> | <u>FY 1993</u> | <u>Estimated<br/>FY 1994</u> |
|--------------------------|----------------|----------------|------------------------------|
| Ocean Sciences Division  | \$177.5 M      | \$177.7 M      | \$ 188.9 M                   |
| Ocean Sciences Research  | 90.0 M         | 92.5 M         | 100.0 M                      |
| Ocean Drilling Program   | 36.3 M         | 36.0 M         | 38.7 M                       |
| Oceanographic Facilities | 51.2 M         | 49.2 M         | 50.2 M                       |

## OCEANOGRAPHIC FACILITIES DETAIL

|                               |           |           |           |
|-------------------------------|-----------|-----------|-----------|
| Operations                    |           |           |           |
| Ship Operations               | 31.1 M*   | 29.4 M*   | 31.6 M*   |
| ALVIN, Aircraft, etc.         | 0.9 M     | 1.4 M     | 2.2 M     |
| Marine Techs                  | 4.3 M     | 4.2 M     | 4.2 M     |
|                               | \$ 36.3 M | \$ 35.0 M | \$ 38.0 M |
| Infrastructure                |           |           |           |
| Science Instruments           | 1.7 M     | 1.3 M     | 2.5 M     |
| Shipboard Equipment           | 2.8 M     | 2.1 M     | 2.5 M     |
| Ships, Upgrades               | 2.9 M     | 7.2 M     | 2.3 M     |
| UNOLS, Misc.                  | 0.6 M     | 0.5 M     | 0.7 M     |
|                               | \$ 8.0 M  | \$ 11.1 M | \$ 8.0 M  |
| Technology, Centers, Reserves |           |           |           |
| Technology Development        | 4.4 M     | 1.0 M     | 1.5 M     |
| AMS Center                    | 1.2 M     | 2.1 M     | 2.7 M     |
| Cross Directorate/Reserves    | 1.3 M     | 3.1 M     | 4.2 M     |
|                               | \$ 6.9 M  | \$ 6.2 M  | \$ 8.4 M  |

\* Plus \$1.6 M from ODP (1992 and 1993), \$1.5 M (1994)

## NSF FY 1995 BUDGET REQUEST

### Ocean Sciences

- Total Request is \$207.9 million
- Increase of \$19.0 million or 10.1%

|   | <u>Total</u> | <u>Increases</u>     |
|---|--------------|----------------------|
| Ocean Science Research Support (OSRS)     | \$114.0M     | \$14.0M or 14.0%     |
| Oceanographic Centers & Facilities (OCFS) | 53.9M        | 3.7M or 7.3%         |
| Ocean Drilling Program (ODP)              | 40.0M        | 1.3M or 3.4%         |
|   |              |                      |
| • Major Research Initiatives              |              |                      |
| Global Change Programs                    | 71.4M        | 17.8M or 33.2%       |
| Biotechnology                             | 3.6M         | -0.4M or -10.0%      |
| High Performance Computing                | 1.6M         | 1.2M or 300.0%       |
| Environmental Research                    | <u>2.5M</u>  | <u>0.5M or 25.0%</u> |
|   | \$79.1M      | \$19.1M or 31.8%     |
|   |              |                      |
| • Other Research activities               | \$128.8M     | -\$0.1M or 0.0%      |



# **APPENDIX III**

**SUMMARY OF SHIP USE AND COSTS**  
**YEAR: 1994**

| SHIP/CLASS        | NSF   |        | NAVY |       | OTHER |       | TOTAL |        | DAILY RATE |
|-------------------|-------|--------|------|-------|-------|-------|-------|--------|------------|
|                   | DAY   | \$     | DAY  | \$    | DAY   | \$    | DAY   | \$     |            |
| MELVILLE          | 302   | 4,332  | 0    | 0     | 1     | 14    | 303   | 4,347  | 14,346     |
| KNORR             | 215   | 3,686  | 35   | 600   | 0     | 0     | 250   | 4,286  | 17,144     |
| ATLANTIS II       | 253   | 3,409  | 29   | 391   | 24    | 323   | 306   | 4,123  | 13,474     |
| EWING             | 292   | 4,300  | 10   | 147   | 6     | 88    | 308   | 4,536  | 14,726     |
| T.G. THOMPSON     | 153   | 2,402  | 48   | 754   | 71    | 1,115 | 272   | 4,271  | 15,702     |
| MOANA WAVE        | 136   | 1,727  | 27   | 343   | 40    | 507   | 203   | 2,577  | 12,695     |
| CLASS II - TOTAL  | 1,351 | 19,856 | 149  | 2,235 | 142   | 2,048 | 1,642 | 24,139 | --         |
| AVE: (6)          | 225   | 3,309  | 25   | 373   | 24    | 341   | 274   | 4,023  | --         |
| EDWIN LINK        | 51    | 408    | 9    | 72    | 155   | 1,240 | 215   | 1,720  | 8,000      |
| ENDEAVOR          | 131   | 1,650  | 0    | 0.0   | 5     | 54    | 136   | 1,704  | 12,529     |
| OCEANUS           | 0     | 1,000  | 0    | 0     | 0     | 0     | 0     | 1,000  | 0          |
| GYRE              | 49    | 441    | 0    | 0     | 81    | 729   | 130   | 1,170  | 9,000      |
| ISELIN            | 106   | 1,113  | 53   | 557   | 49    | 515   | 208   | 2,184  | 10,502     |
| NEW HORIZON       | 181   | 1,498  | 10   | 83    | 45    | 373   | 236   | 1,954  | 8,279      |
| SEWARD JOHNSON    | 0     | 0      | 0    | 0     | 70    | 560   | 70    | 560    | 8,000      |
| WECOMA            | 78    | 1,500  | 10   | 192   | 1     | 0     | 89    | 1,692  | 19,011     |
| CLASS III - TOTAL | 596   | 7,611  | 0    | 82    | 903   | 0     | 406   | 3,470  | 0          |
| AVE: (8)          | 75    | 951    | 0    | 10    | 113   | 0     | 51    | 434    | 0          |
| PELICAN *         | 46    | 184    | 0    | 0     | 75    | 300   | 121   | 484    | 4,000      |
| LONGHORN *        | 37    | 148    | 0    | 0     | 40    | 160   | 77    | 308    | 4,000      |
| POINT SUR         | 124   | 735    | 51   | 302   | 24    | 142   | 199   | 1,179  | 5,925      |
| CAPE HATTERAS     | 157   | 1,004  | 30   | 203   | 13    | 90    | 200   | 1,297  | 6,485      |
| ALPHA HELIX       | 145   | 1,256  | 0    | 0     | 18    | 181   | 163   | 1,437  | 8,813      |
| R. SPROUL         | 108   | 485    | 21   | 94    | 32    | 144   | 161   | 724    | 4,494      |
| CAPE HENLOPEN     | 131   | 816    | 39   | 243   | 0     | 0     | 170   | 1,059  | 6,229      |
| WEATHERBIRD II    | 153   | 1,100  | 0    | 0.0   | 0     | 0.0   | 153   | 1,100  | 7,190      |
| SEA DIVER         | 8     | 30     | 60   | 228.0 | 56    | 212.8 | 124   | 471    | 3,800      |
| CLASS IV - TOTAL  | 909   | 5,759  | 0    | 201   | 1,070 | 0     | 258   | 1,229  | 0          |
| AVE: (9)          | 101   | 640    | 0    | 22    | 119   | 0     | 29    | 137    | 0          |
| BLUE FIN *        | 60    | 114    | 0    | 0     | 45    | 86    | 105   | 200    | 1,900      |
| LAURENTIAN        | 71    | 305    | 0    | 0     | 11    | 47    | 82    | 353    | 4,300      |
| BARNES            | 56    | 78     | 16   | 21    | 18    | 25    | 90    | 125    | 1,389      |
| CALANUS *         | 30    | 63     | 2    | 4     | 10    | 21    | 42    | 88     | 2,100      |
| CLASS IV TOTAL    | 217   | 560    | 18   | 25    | 84    | 179   | 319   | 765    | --         |
| AVE: (4)          | 54    | 140    | 5    | 6     | 21    | 45    | 80    | 191    | --         |
| Fleet Total       | 3,073 | 33,786 | 450  | 4,234 | 890   | 6,926 | 4,413 | 44,947 | --         |
| AVE: (27)         | 114   | 1,251  | 0    | 17    | 157   | 0     | 33    | 257    | 0          |

NOTES: a. NSF support for lay-up expenses.  
b. NPS (CNOC) days only  
\* Not updated since the last scheduling meeting.



## SUMMARY OF SHIP USE AND COSTS

### YEAR: 1995

| SHIP/CLASS                     | NSF   |        | NAVY |                  | OTHER |       | TOTAL |        | DAILY RATE |       |        |    |
|--------------------------------|-------|--------|------|------------------|-------|-------|-------|--------|------------|-------|--------|----|
|                                | DAY   | \$     | DAY  | \$               | DAY   | \$    | DAY   | \$     |            |       |        |    |
| MELVILLE                       | 336   | 5,110  | 0    | 0                | 0     | 0     | 336   | 5,110  | 15,207     |       |        |    |
| KNORR                          | 349   | 4,915  | 0    | 0                | 0     | 0     | 349   | 4,915  | 14,083     |       |        |    |
| ATLANTIS II                    | 304   | 4,183  | 0    | 0                | 0     | 0     | 304   | 4,183  | 13,760     |       |        |    |
| EWING - OPTION A               | 264   | 4,158  | 34   | 536              | 2     | 32    | 300   | 4,726  | 15,753     |       |        |    |
| EWING - OPTION B               | 294   | 4,675  | 4    | 64               | 2     | 32    | 300   | 4,771  | 15,903     |       |        |    |
| T.G. THOMPSON                  | 217   | 3,081  | 32   | 454              | 77    | 1,093 | 326   | 4,628  | 14,196     |       |        |    |
| MOANA WAVE                     | 266   | 3,126  | 20   | 235              | 39    | 458   | 325   | 3,819  | 11,751     |       |        |    |
| CLASS II - TOTAL A             | 1,736 | 24,573 | 0    | 86               | 1,225 | 0     | 118   | 1,583  | 0          | 1,940 | 27,381 | -- |
| AVE: (6) - OPTION A            | 289   | 4,095  | 0    | 14               | 204   | 0     | 20    | 264    | 0          | 323   | 4,563  | -- |
| CLASS II - TOTAL B             | 1,766 | 25,090 | 0    | 56               | 753   | 0     | 118   | 1,583  | 0          | 1,940 | 27,426 | -- |
| AVE: (6) - OPTION B            | 294   | 4,182  | 0    | 9                | 126   | 0     | 20    | 264    | 0          | 323   | 4,571  | -- |
|                                |       |        |      |                  |       |       |       |        |            |       |        |    |
| EDWIN LINK                     | 12    | 96     | 0    | 0                | 30    | 240   | 42    | 336    | 8,000      |       |        |    |
| ENDEAVOR                       | 251   | 2,385  | 14   | 133              | 0     | 0     | 265   | 2,518  | 9,502      |       |        |    |
| OCEANUS                        | 270   | 2,485  | 14   | 129              | 0     | 0     | 284   | 2,614  | 9,204      |       |        |    |
| GYRE - OPTION A                | 122   | 1,098  | 0    | 0                | 8     | 72    | 130   | 1,170  | 9,000      |       |        |    |
| GYRE - OPTION B                | 147   | 1,103  | 0    | 0                | 8     | 60    | 155   | 1,163  | 7,500      |       |        |    |
| ISELIN                         | 290   | 2,315  | 36   | 287              | 0     | 0     | 326   | 2,602  | 7,981      |       |        |    |
| NEW HORIZON                    | 214   | 1,878  | 12   | 105              | 32    | 281   | 258   | 2,264  | 8,776      |       |        |    |
| SEWARD JOHNSON                 | 10    | 80     | 0    | 0                | 100   | 800   | 110   | 880    | 8,000      |       |        |    |
| WECOMA                         | 121   | 1,585  | 66   | 865              | 0     | 0     | 187   | 2,450  | 13,102     |       |        |    |
| CLASS III - TOTAL A            | 1,290 | 11,922 | 0    | 142              | 1,520 | 0     | 170   | 1,393  | 0          | 1,602 | 14,834 | -- |
| AVE: (8) - OPTION A            | 161   | 1,490  | 0    | 18               | 190   | 0     | 21    | 174    | 0          | 200   | 1,854  | -- |
| CLASS III - TOTAL B            | 1,315 | 11,926 | 0    | 142              | 1,520 | 0     | 170   | 1,381  | 0          | 1,627 | 14,826 | -- |
| AVE: (8) - OPTION B            | 164   | 1,491  | 0    | 18               | 190   | 0     | 21    | 173    | 0          | 203   | 1,853  | -- |
|                                |       |        |      |                  |       |       |       |        |            |       |        |    |
| PELICAN                        | 137   | 520    | 45   | 171              | 34    | 129   | 216   | 820    | 3,796      |       |        |    |
| LONGHORN                       | 39    | 156    | 0    | 0                | 36    | 144   | 75    | 300    | 4,000      |       |        |    |
| POINT SUR                      | 110   | 696    | 51   | 323 <sup>a</sup> | 29    | 183   | 190   | 1,202  | 6,326      |       |        |    |
| CAPE HATTERAS                  | 218   | 1,218  | 39   | 218              | 15    | 84    | 272   | 1,520  | 5,588      |       |        |    |
| ALPHA HELIX                    | 166   | 1,315  | 14   | 111              | 25    | 198   | 205   | 1,624  | 7,923      |       |        |    |
| R. SPROUL                      | 95    | 471    | 22   | 109              | 15    | 74    | 132   | 654    | 4,952      |       |        |    |
| CAPE HENLOPEN                  | 188   | 955    | 31   | 157              | 0     | 0     | 219   | 1,112  | 5,078      |       |        |    |
| WEATHERBIRD II                 | 248   | 1,200  | 0    | 0                | 0     | 0     | 248   | 1,200  | 4,839      |       |        |    |
| SEA DIVER                      | 33    | 125    | 0    | 0                | 0     | 0     | 33    | 125    | 3,800      |       |        |    |
| CLASS IV - TOTAL               | 1,234 | 6,656  | 0    | 202              | 1,089 | 0     | 154   | 812    | 0          | 1,590 | 8,557  | -- |
| AVE: (9)                       | 137   | 740    | 0    | 22               | 121   | 0     | 17    | 90     | 0          | 177   | 951    | -- |
|                                |       |        |      |                  |       |       |       |        |            |       |        |    |
| BLUE FIN                       | 109   | 194    | 0    | 0                | 12    | 21    | 121   | 215    | 1,779      |       |        |    |
| LAURENTIAN                     | 93    | 400    | 0    | 0                | 0     | 0     | 93    | 400    | 4,300      |       |        |    |
| BARNES                         | 107   | 137    | 0    | 0                | 18    | 23    | 125   | 160    | 1,280      |       |        |    |
| CALANUS                        | 0     | 0      | 0    | 0                | 0     | 0     | 0     | 0      | --         |       |        |    |
| CLASS IV TOTAL                 | 309   | 731    | 0    | 0                | 30    | 44    | 339   | 775    | --         |       |        |    |
| AVE: (4)                       | 77    | 183    | 0    | 0                | 8     | 11    | 85    | 194    | --         |       |        |    |
|                                |       |        |      |                  |       |       |       |        |            |       |        |    |
| Fleet Total - Opt. A           | 4,569 | 43,881 | 430  | 3,833            | 472   | 3,832 | 5,471 | 51,547 | --         |       |        |    |
| AVE: (27) - OPT                | 169   | 1,625  | 0    | 16               | 142   | 0     | 17    | 142    | 0          | 203   | 1,909  | -- |
| Fleet Total - Opt. B           | 4,624 | 44,403 | 400  | 3,361            | 472   | 3,820 | 5,496 | 51,584 | --         |       |        |    |
| AVE: (27) - OPT                | 171   | 1,645  | 0    | 15               | 124   | 0     | 17    | 141    | 0          | 204   | 1,911  | -- |
| NOTES: a. NPS (CNOC) days only |       |        |      |                  |       |       |       |        |            |       |        |    |

## **APPENDIX IV**



## 1995 SHIPTIME REQUESTS

20 JUN 94

\* THE ASTERISK INDICATES CURRENTLY SCHEDULED

| <u>PI</u>      | <u>INSTITUTION</u> | <u>AREA</u> | <u>SHIP REQUESTED</u> | <u>OPTIMUM 1995 DATES</u> | <u>SOURCE/FUNDING</u> | <u>DAYS</u> |
|----------------|--------------------|-------------|-----------------------|---------------------------|-----------------------|-------------|
| Allдрidge, A   | UCSB               | NP9         | POINT SUR*            | APR/MAY                   | NSF/BIO               | 8           |
| Altabet, M     | WHOI               | NP13        | POINT SUR/MEL         | JUN                       | NSF/CHEM              | 16          |
| Ammerman, J    | TAMU               | NA6         | WEATHERBIRDII*        | AUG                       | NSF/CHE               | 4           |
| Ashjian, C     | MIAMI              | NA6         | ENDEAVOR/OCEAN        | APR/SEP                   | NSF/BIO               | 2           |
| Balch, W       | MIAMI              | IN1         | THOMPSON*             | NOV                       | NSF/BIO               | 17          |
| Banse, K       | UW                 | NP9         | BARNES                | SEP-OCT                   | NSF/BIO               | 20          |
| Barber/Johnson | DUKE/MLML          | SP3         | THOMPSON*             | MAY                       | NSF/ONR               | 45          |
| Barth, J       | OSU                | NP9         | WECOMA*               | MAY/AUG                   | NSF/PHY               | 20          |
| Beardsley, R   | WHOI               | NA10        | OCEANUS*              | JUL/AUG/OCT               | NSF/OSR               | 90          |
| Becker, K      | MIAMI              | NA10        | ATLANTIS II           | SPRING/SUM                | NSF/ODP               | 3           |
| Becker, K      | MIAMI              | NA6/9       | ATLANTIS II           | SPRING                    | NSF/ODP               | 2           |
| Behrens, W     | UT                 | NA9         | GYRE*                 | MAY                       | NSF/MGG               | 16          |
| Benner, R      | UT                 | NA9         | LONGHORN              | AUG                       | NSF/CHEM              | 12          |
| Bernhard, J    | WADSWORTH          | NP9         | SPROUL*               | FEB                       | NSF/BIO               | 2           |
| Bernhard, J    | WADSWORTH          | NP9         | SPROUL*               | FEP                       | NSF/BIO               | 2           |
| Biesiot, P     | U SO MISS          | NA6         | PELICAN               | MAY                       | NSF/BIO               | 3           |
| Blair, N       | NCSU               | NA6         | SEA LINK              | JUL                       | NSF/CHEM              | 4           |
| Blough, N      | WHOI               | NA6         | CAPE HENLOPEN*        | JUN/SEP                   | ONR/CHEM              | 8           |
| Bock, E        | WHOI               | NA6         | NEW HORIZON*          | APR                       | NSF/COOP              | 20          |
| Boynton, W     | U MD               | NA6         | CAPE HENLOPEN*        | APR/JUL/OCT               | NSF/LMER              | 40          |
| Bradley/Walden | WHOI               | ANY         | ATLANTIS II           | ANY                       | NSF                   | 5           |
| Brown, K       | SCRIPPS            | NA9         | GYRE*                 | ??                        | NSF/MGG               | 27          |
| Brown, K       | SCRIPPS            | NP9         | SPROUL*               | SUMMER                    | NSF/MGG               | 6           |
| Buffler, R     | UT                 | NA9         | LONGHORN              | JUN                       | NSF/MGG               | 15          |
| Buffler, R     | UT                 | IN5         | MELVILLE              | APR/MAY                   | NSF/MGG               | 37          |
| Burdige, D     | ODU                | NA6         | CAPE HENLOPEN*        | APR/JUL/OCT               | NSF/CHEM              | 12          |
| Burdige, D     | ODU                | NP6         | NEW HORIZON*          | ANY                       | NSF/CHEM              | 3           |
| Butler/Watts   | IRIS/URI           | NA6         | WEATHERBIRD II        | MAY & AUG                 | NSF/INST              | 2           |
| Campbell, L    | HAWAII             | NP8/11      | MOANA WAVE/A H        | JAN/FEB                   | NSF/BIO               | 4           |
| Cande, S       | SCRIPPS            | NP9/SP3     | MELVILLE*             | JAN                       | NSF/MGG               | 34          |
| Capone, D      | U OF MD            | NA9         | ISELIN*               | OCT-DEC                   | NSF/BIO               | 30          |
| Caron, D       | WHOI               | IN1         | LARGE                 | FEB                       | NSF/JGOFs             | ??          |
| Caron, D       | WHOI               | NA6         | WEATHERBIRDII*        | JUL/AUG                   | NSF/BIO               | 21          |
| Chave, A       | WHOI               | NP6         | ATLANTIS II           | JUL                       | NSF/IDP               | 10          |
| Childress, J   | UCSB               | NP9         | POINT SUR*            | WINTER                    | NSF/BIO               | 12          |
| Childress, J   | UCSB               | NP8         | NEW HORIZON*          | JUL                       | NSF/BIO               | 21          |
| Childress, J   | UCSB               | NP8         | SPROUL*               | SUMMER                    | NSF/BIO               | 4           |
| Chisholm, S    | MIT                | NA6         | OCEANUS               | JUN                       | NSF/BIO               | 10          |
| Christensen, J | BIGELOW            | NA6         | CAPE HATTERAS*        | JUL/AUG                   | NSF/CHEM              | 30          |
| Christie, D    | OSU                | NP13        | MELVILE/EWNG**        | ANY                       | NSF/ODP               | 23          |
| Cifuentes, L   | TAMU               | NA9         | GYRE*                 | MAY                       | NSF/BIO               | 10          |
| Coats, W       | SMITHSONIAN        | NA6         | CAPE HENLOPEN*        | MAY/OCT                   | NSF/BIO               | 30          |
| Cochran, K     | LDEO               | NP11        | MOANA WAVE            | MONTHLY                   | NSF/CHEM              | ANC         |
| Cochran/et al  | LDEO               | NA8         | EWING                 | JAN/DEC                   | NSF/MGG               | 35          |



|              |             |           |                |             |           |     |
|--------------|-------------|-----------|----------------|-------------|-----------|-----|
| Coffin, M    | UT          | SP1/NP11  | EWING*         | JUL/AUG     | NSF/ODP   | 32  |
| Coffin, M    | UT          | AN2/3/IN9 | PALMER         | FEB/MAR     | NSF/ODP   | 52  |
| Collier, R   | OSU         | IN7/IN11  | KNORR/MELVILLE | AUSTRAL SUM | NSF/MGG   | 43  |
| Constable, S | SCRIPPS     | NP9       | NEW HORIZON*   | EARLY95     | NSF/RIDGE | 47  |
| Cook, S      | HBOI        | NA9       | SEWARD JOHNSON | JUL         | HBOI      | 3   |
| Cowan, E     | APPALACHIAN | NP6       | ALPHA HELIX    | AUG         | NSF/GLA   | 17  |
| Cowen, R     | STONY BROOK | NA9       | C I/OCE/END*** | OCT         | NSF/BIO   | 10  |
| Cowen, R     | STONY BROOK | NA9       | COL IS/OCE**   | JAN         | NSF/BIO   | 10  |
| Cowen, R     | STONY BROOK | NA9       | COL IS/OCE**   | APR/MAY     | NSF/BIO   | 25  |
| Cowen, R     | STONY BROOK | NA9       | ENDEAVOR       | APR/MAY96   | NSF/BIO   | 25  |
| Cowles, T    | OSU         | NP9       | WECOMA*        | APR/MAY     | NSF/BIO   | 24  |
| Cowles/Moum  | OSU         | NP9/      | WECOMA         | ANY         | NSF/BIO   | 5   |
| Cowles/Moum  | OSU         | NP12      | WECOMA*        | ANY         | NSF/BIO   | 5   |
| Craig, H     | SCRIPPS     | SP1/2     | MELVILLE       | AUG         | NSF/MGG   | 36  |
| Cutter, G    | ODU         | NA6       | ENDEAVOR       | APR         | NSF/CHEM  | 24  |
| D'Asaro, E   | APL,WA      | NP9       | WECOMA         | JAN/FEB     | NSF/      | 27  |
| Dacey, J     | WHOI        | NA9       | WEATHERBIRDII* | APR/SEP/NOV | NSF/COOP  | 20  |
| Dagg, M      | LUMCON      | NA9       | PELICAN*       | AUG         | NSF/BIO   | 10  |
| Dagg, M      | LUMCON      | NA9       | PELICAN*       | JUL         | NSF/YSCHO | 10  |
| Davidson, K  | NPG         | NP9       | POINT SUR      | ANY         | NRAD      | 10  |
| Delaney, J   | UW          | NP9       | ATLANTIS II    | JUN/JUL     | NSF/MGG   | 20  |
| Delaney, J   | UW          | NP9       | ATLANTIS II    | SEP/OCT     | NSF/MGG   | 10  |
| Detrick, R   | WHOI        | NA6/9     | EWING          | APR/JUN     | NSF/RIDGE | 39  |
| Detrick, R   | WHOI        | NP9       | EWING*         | SUM/FALL    | NSF/RIDGE | 25  |
| Deuser, W    | WHOI        | NA6       | WEATHERBIRDII* | JAN         | NSF/CHEM  | 6   |
| Devol, A     | UW          | NP9       | BARNES         | TBA         | NSF/CHEM  | 26  |
| Dick, H      | WHOI        | MA10      | KNORR          | ANY         | NSF/RIDGE | 49  |
| Diebold, J   | LDEO        | NA9       | EWING*         | JUN94?      | NSF/MGG   | 33  |
| Donat, J     | ODU         | NA6       | CAPE HENLOPEN* | MAR/AUG/OCT | ONR/MEQ   | 9   |
| Donnelly, T  | SUNY BING   | NA9       | EWING*         | 1994?       | JOI       | 5   |
| Driscoll, N  | LDEO        | SA2       | EWING          | TBA         | NSF/MGG   | 38  |
| Driscoll, N  | LDEO        | IN1       | EWING*         | SPRING      | NSF/ODP   | 30  |
| Droxler, A   | RICE        | NA9       | CAPE HATTERAS* | FEB/MAR     | NSF/ODP   | 31  |
| Druffel, E   | UCI         | NP9       | ATLANTIS II    | FEB         | NSF/CHEM  | 5   |
| Druffel, E   | UCI         | NP9       | NEW HORIZON*   | JUN         | NSF/CHEM  | 4   |
| Ducklow, H   | HORN PT     | NA5/NA7   | MEDIUM/LARGE   | APR         | NSF/CHEM  | 24  |
| Duda, T      | WHOI        | NA6       | WEATHERBIRDII* | JAN         | NSF/PHY   | 5   |
| Dugdale, R   | USC         | NP9       | POINT SUR*     | APR/MAY/JUN | NSF/BIO   | 15  |
| Echman, J    | SKIDAWAY    | NP9       | ATLANTIS II    | APR/OCT     | NSF/      | 5/6 |
| Echman, J    | SKIDAWAY    | NA6       | BLUE FIN*      | JAN-JUN     | NSF/BIO   | 27  |
| Edmond, J    | MIT         | SP3       | ATLANTIS II    | AUST SUM    | NSF/RIDGE | 30  |
| Edson, J     | BIGELOW     | NP9       | WECOMA*        | APR/MAY     | ONR       | 34  |
| Eslinger, D  | ALASKA      | NP5/6     | ALPHA HELIX*   | APR/MAY     | NSF       | 41  |
| Felbeck, H   | SCRIPPS     | NP13      | SPROUL*        | FALL        | NSF/BIO   | 9   |
| Fenical, W   | SCRIPPS     | NA9       | ISELIN*        | SUMMER      | NSF/CHEM  | 21  |
| Fisher, A    | IND GEO SUR | NP9       | WECOMA*        | SUMMER      | NSF/RIDGE | 28  |
| Fisher, C    | PENN STATE  | NA9       | ATLANTIS II    | SUMMER      | NSF/BIO   | 6   |
| Fisher, C    | PENN STATE  | NP13      | ATLANTIS II    | MID YEAR    | NSF/BIO   | 3   |
| Fisher, C    | PENN STATE  | NP9       | ATLANTIS II    | JUL         | NSF/BIO   | 16  |
| Flood, R     | STONY BROOK | NA10      | EWING          | MAR         | NSF/MGG   | 30  |
| Fornari, D   | WHOI        | MA7       | KNORR          | JUL         | NSF/RIDGE | 30  |
| Forsyth, D   | BROWN       | SP3       | MELVILLE*      | OCT-NOV     | NSF/RIDGE | 43  |
| Frank, T     | HBOI        | NP9       | EDWIN LINK*    | MAY/AUG     | NSF/BIO   | 10  |
| Frank, T     | HBOI        | NP9       | SEA DIVER*     | FEB/OCT     | NSF/BIO   | 6   |

|                 |              |         |                |             |            |     |
|-----------------|--------------|---------|----------------|-------------|------------|-----|
| Frew, N         | WHOI         | NA6     | CAPE HENLOPEN* | SEP         | ONR        | 12  |
| Fristrup/Watk   | WHOI         | NA9     | CHARTER        | ???         | NSF/BIO    | ??  |
| Fuhrman, J      | USC          | NP9     | POINT SUR*     | JUN/JUL/AUG | NSF/BIO    | 14  |
| Gallager, S     | WHOI         | NA6     | ENDEAVOR*      | ???         | NSF/GLOBEC | ??  |
| Garcia, M       | HAWAII       | NPT2    | MOANA WAVE*    | SUMMER      | NSF/MGG    | 7   |
| Gardner, W      | TAMU         | IN      | THOMPSON*      | ANY         | NSF/JGOFs  | 5X  |
| Geider, R       | U DEL        | NA6     | CAPE HENLOPEN* | SPRING/SUM  | NSF/BIO    | 17  |
| George, R       | UNC          | NA6     | CAPE HATTERAS  | JUL/DEC     | NSF/BIO    | 16  |
| Giese, B.       | TAMU         | ???     | ???            | ???         | ??         |     |
| Godfrey, L      | CORNELL      | ANY     | ANY            | ANY         | NSF        | ANC |
| Gorsline D      | USC          | NP9     | EWING          | WINTER94/95 | NSF/MGG    | 10  |
| Gorsline D      | USC          | NP9     | EWING*         | WINTER95/96 | NSF/MGG    | 10  |
| Green, T        | MUSKEGON     | GL4     | LAURENTIAN     | AUG         | NSF/TE     | 3   |
| Grindlay, N     | PUERTO RICO  | NA9     | END/C I/OCE*** | JUN         | NSF/MGG    | 23  |
| Hansell, D      | BBS          | NA6     | WEATHERBIRD II | ALL MOS     | NSF/CHEM   | 12  |
| Harper, D       | TAMU         | NA9     | PELICAN*       | AUG         | NSF/ECOL   | 7   |
| Haury, L        | SCRIPPS      | NP9     | NEW HORIZON    | SUM/WIN     | NSF/BIO    | 10  |
| Herber, T       | NPG          | NP9     | POINT SUR      | FEB/JUN     | NAVY       | 6   |
| Highsmith, R    | UA           | NP2/4   | ALPHA HELIX*   | JUN-SEP     | NSF/DPP    | 52  |
| Hildebrand, J   | SCRIPPS      | SP1     | MELVILLE*      | JAN/FEB     | NSF/MGG    | 12  |
| Hildebrand, J   | SCRIPPS      | NP9     | NEW HORIZON*   | JUL         | NSF/MGG    | 6   |
| Hildebrand, J   | SCRIPPS      | NP9     | NEW HORIZON*   | MAR         | NSF/MGG    | 4   |
| Hildebrand, J   | SCRIPPS      | NP13    | NEW HORIZON*   | ANY         | NSF/RIDGE  | 20  |
| Hill, R         | U MD         | NA6     | CAPE HENLOPEN  | ALL MOS     | NSF/BIO    | 12  |
| Hochstaedter, A | U SO FL      | NP7     | MOANA WAVE*    | SPRING      | NSF/MGG    | 24  |
| Hodell, D       | U FL         | SA4,6   | EWING/LARGE    | JAN-MAR     | NSF/ODP    | 50  |
| Hogg, N         | WHOI         | NA6     | OCEANUS*       | APR         | ONR        | 14  |
| Holbrook, S     | WHOI         | NP5-NP6 | ALPHA HELIX    | JUL/AUG     | NSF/MGG    | 31  |
| Holbrook, S     | WHOI         | NA1/4   | EWING          | SEP         | NSF/ODP    | 42  |
| Holbrook, S     | WHOI         | NA6     | EWING*         | JUL         | NSF/MGG    | 29  |
| Honjo, S        | WHOI         | IN      | THOMPSON       | MAY/OCT     |            | ANC |
| Houghton, R     | LDEO         | NA6     | OCEANUS/END/CH | MAY         | NSF/PHY    | 15  |
| Humphris, S     | WHOI         | NA10    | ATLANTIS II    | MAR/MAY     | NSF/ODP    | 30  |
| Ingall, E       | UT           | NA9     | LONGHORN       | JUL         | NSF/CHEM   | 10  |
| Irish, et al    | WHOI         | NA6     | OCEANUS*       | ???         | NSF/GLOBEC | ??  |
| Jenkins, W      | WHOI         | NA6     | CAPE HENLOPEN* | APR-JUN     | NSF/CHEM   | 21  |
| Johnson, K      | MLML         | SP3     | LARGE          | MAY         | ONR/NSF    | 45  |
| Johnson, K      | BISHOP MU HI | IN3/4/7 | MELVILLE       | DEC         | NSF/RIDGE  | 51  |
| Johnson, K      | MLML         | NP9     | POINT SUR*     | JUN         | NSF/CHEM   | 20  |
| Johnson, P      | UW           | NP9     | ATLANTIS II    | JUN-AUG     | NSF/MGG    | 20  |
| Johnson, P      | UW           | NP10    | EWING/A II     | SUMMER      | NSF/MGG    | 15  |
| Johnson, P      | UW           | NP9     | BARNES         | SPRING      | NSF        | 3   |
| Joyce, T        | WHOI         | NP9     | WECOMA         | APRIL       | NSF/RIDGE  | 14  |
| Jumars, P       | UW           | NP6     | BARNES         | EACH QTR    | NSF/BIO    | 16  |
| Karl, D         | HAWAII       | NP12/9  | MOANA WAVE*    | AUG&SEP     | NSF/BIO    | 56  |
| Katz, E         | LDEO         | NA4-7   | MEDIUM         | SPRING/SUM  | NSF/PHY    | 8   |
| Keeling, C      | SCRIPPS      | SP2     | MEDIUM         | MAR/APR     | NSF/ATM    | 6   |
| Kent, G         | WHOI         | NA6/7   | EWING*         | FALL        | NSF/RIDGE  | 5   |
| Kiene, R        | U GEORGIA    | NA6     | CAPE HATTERAS* | JUN         | NSF/BIO    | 10  |
| Kirchman, D     | U DEL        | NA6     | CAPE HENLOPEN* | APR/AUG     | NSF/BIO    | 10  |
| Klimley, P      | SCRIPPS      | NP9     | SPROUL*        | JAN/APR     | NSF/TECH   | 4   |
| Klinkhammer, G  | OSU          | NP6     | EWING/THOMPSON | ANY         | NSF/CHEM   | 4   |
| Klinkhammer, G  | OSU          | IN10    | MELVILLE       | AUST SUM    | NSF/MGG    | 35  |
| Klinkhammer, G  | OSU          | NP6     | WECOMA*        | SUMMER      | ONR        | 3   |



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| Knap, A        | BBSR        | NA6        | WEATHERBIRDII* | ALL         | NSF/CHEM   | 110 |
| Kong, L        | USGS/HAWAII | NP12       | EWING*         | SPRING      | USGS       | 1   |
| Kosro, R M     | OSU         | IN1        | MELVILLE       | APR-JUN     | NSF/WOCE   | 50  |
| Landry/Campbel | HAWAII      | IN1        | THOMPSON       | APR-AUG     | NSF/CHEM   | 62  |
| Langmuir, C    | LDEO        | NP13       | MELVILLE       | ???         | NSF/MGG    | 35  |
| Latz, M        | SCRIPPS     | NP9        | SPROUL*        | EA MONTH    | NSF/BIO    | 15  |
| Ledwell, J     | WHOI        | NA6        | ANY            | MAY         | NSF/WOCE   | 8   |
| Ledwell, J     | WHOI        | NA6        | OCEANUS        | SEPT        | NSF/PHY    | 8   |
| Ledwell, J     | WHOI        | SA1        | OCEANUS*       | OCT         | NSF/PHY    | 29  |
| Lehman, J      | U MICH      | GL4        | LAURENTIAN*    | JUN/JUL/AUG | NSF/BIO    | 24  |
| Lessard, E     | UW          | IN1        | LARGE          | APR         | NSF/JGOFS  | 32  |
| Lessard, E     | UW          | IN1        | LARGE          | AUG         | NSF/JGOFS  | 32  |
| Light, K       | MBARI       | NP9        | POINT SUR      | EA QUARTER  | MBARI      | 10  |
| Lilley, M      | UW          | NP13       | ATLANTIS II    | LATE95      | NSF/CHEM   | 36  |
| Lin, J         | WHOI        | SA6        | MELVILLE       | WINTER      | NSF/RIDGE  | 38  |
| Lindstrom, E   | WOCE        | IN1/2      | MELVILLE       | SEP-OCT     | NSF/WOCE   | 54  |
| Lindstrom, E   | WOCE        | IN2/4/7    | MELVILLE       | MAR-APR     | NSF/WOCE   | 42  |
| Lindstrom, E   | WOCE        | IN3/1      | MELVILLE       | JUL-SEP     | NSF/WOCE   | 45  |
| Lindstrom, E   | WOCE        | IN3/6      | MELVILLE       | JUN-JUL     | NSF/WOCE   | 35  |
| Lindstrom, E   | WOCE        | IN4/3      | MELVILLE       | NOV-DEC     | NSF/WOCE   | 57  |
| Lindstrom, E   | WOCE        | IN5/4/3    | MELVILLE       | APR-JUN     | NSF/WOCE   | 53  |
| Lindstrom, E   | WOCE        | IN7/4/2    | MELVILLE       | JAN-MAR     | NSF/WOCE   | 46  |
| Lipschultz, F  | BBS         | NP9        | POINT SUR*     | JUN/JUL     | NSF        | 28  |
| Littler, D&M   | HBOI        | NA9        | SEA DIVER*     | MAY         | NSF/BIO    | 21  |
| Livermore, R   | NERC        | SA3        | EWING          | AUST SUM    | NERC       | 35  |
| Locker/Hine    | U OF SO FL  | NA9        | CAPE HATTERAS  | SPRING      | NSF/MGG    | 15  |
| Lonsdale, P    | SCRIPPS     | SP6/9      | MELVILLE*      | FEB         | NSF/GEO    | 35  |
| Love, R        | NRL         | NP9        | WECOMA*        | JUL/AUG     | NRL        | 25  |
| Lukas, R       | HAWAII      | NP12       | MOAN WAVE/NH** | EACH MOS    | NSF/HOTS   | 60  |
| Luther, D      | HAWAII      | IN11       | LARGE          | JAN         | NSF/PHY    | 31  |
| Luther, G      | U DEL       | NA6        | CAPE HENLOPEN* | EACH QTR    | NSF/CHEM   | 20  |
| Lyle, M        | BOISE ST    | NP9        | EWING*         | SEP         | NSF/ODP    | 28  |
| Lynch/Irish    | WHOI        | NP9        | WECOMA*        | MAY         | ONR        | 5   |
| Macdonald, K   | UCSB        | SP3/6      | MELVILLE       | NOV/APR     | NSF/MGG    | 43  |
| Madin et al    | WHOI        | IN1        | THOMPSON       | FEB-MAR     | NSF/JGOFS  | 10  |
| Madin, L       | WHOI        | IN1        | BALDRIDGE      | ???         | NSF/BIO    | 60  |
| Madsen, J      | DEL         | SA4/6IN6/9 | KNORR*         | JAN/FEB     | NSF/RIDGE  | 48  |
| Mann, P        | UT          | NA9        | EWING*         | APR/OCT     | NSF/MGG    | 28  |
| Mann, P        | UT          | NA9        | OCEANUS        | FEB/AUG     | NSF/ODP    | 16  |
| Martens, C     | UNC         | NA6        | CAPE HATTERAS* | SEP         | NSF        | 14  |
| Martin, W      | WHOI        | NA6        | SEWARD JHNSON* | JUL         | NSF/CHEM   | 10  |
| Martinez, F    | HAWAII      | NP10       | MOANA WAVE*    | JUN         | NSF/MGG    | 25  |
| Matrai, P      | MIAMI       | IN1        | LARGE          | NOV         | NSF/CHEM   | 30  |
| McCartney, M   | WHOI        | IN11/AN4/5 | KNORR          | JAN         | NSF/WOCE   | 49  |
| McCartney, M   | WHOI        | SP1        | KNORR*         | MAR (94)    | NSF/PHY    | 85  |
| McCleave, J    | MAINE       | NA6/9      | CAPE HATTERAS* | OCT         | NSF/BIO    | 30  |
| McCorkle, D    | WHOI        | IN5        | KNORR          | NOV/DEC     | NSF/MGG    | 21  |
| McIntosh, K    | INST OF GEO | NP9/13     | EWING*         | DEC94/JAN95 | NSF/MGG    | 32  |
| McNutt, M      | MIT         | SP2        | EWING*         | AUST SUM    | NSF/MGG    | 46  |
| Michael, P     | TULSA       | SA1-4      | EWING          | DEC93?-94?  | NSF/RIDGE  | 41  |
| Michaels, A    | BBS         | NA6        | WEATHERBIRD II | APR-JUL     | NSF/CHEM   | 23  |
| Miller, K      | UT          | NP9        | SPROUL/NEW HOR | MAR         | NSF/GEOPHY | 10  |
| Miller/Coffin  | OKLAHOMA ST | NA9        | GYRE*          | JUL/DEC     | NSF/BIO    | 14  |
| Milliman, J    | ALASKA      | NP6        | ALPHA HELIX*   | JUN         | NSF/CLI    | 23  |



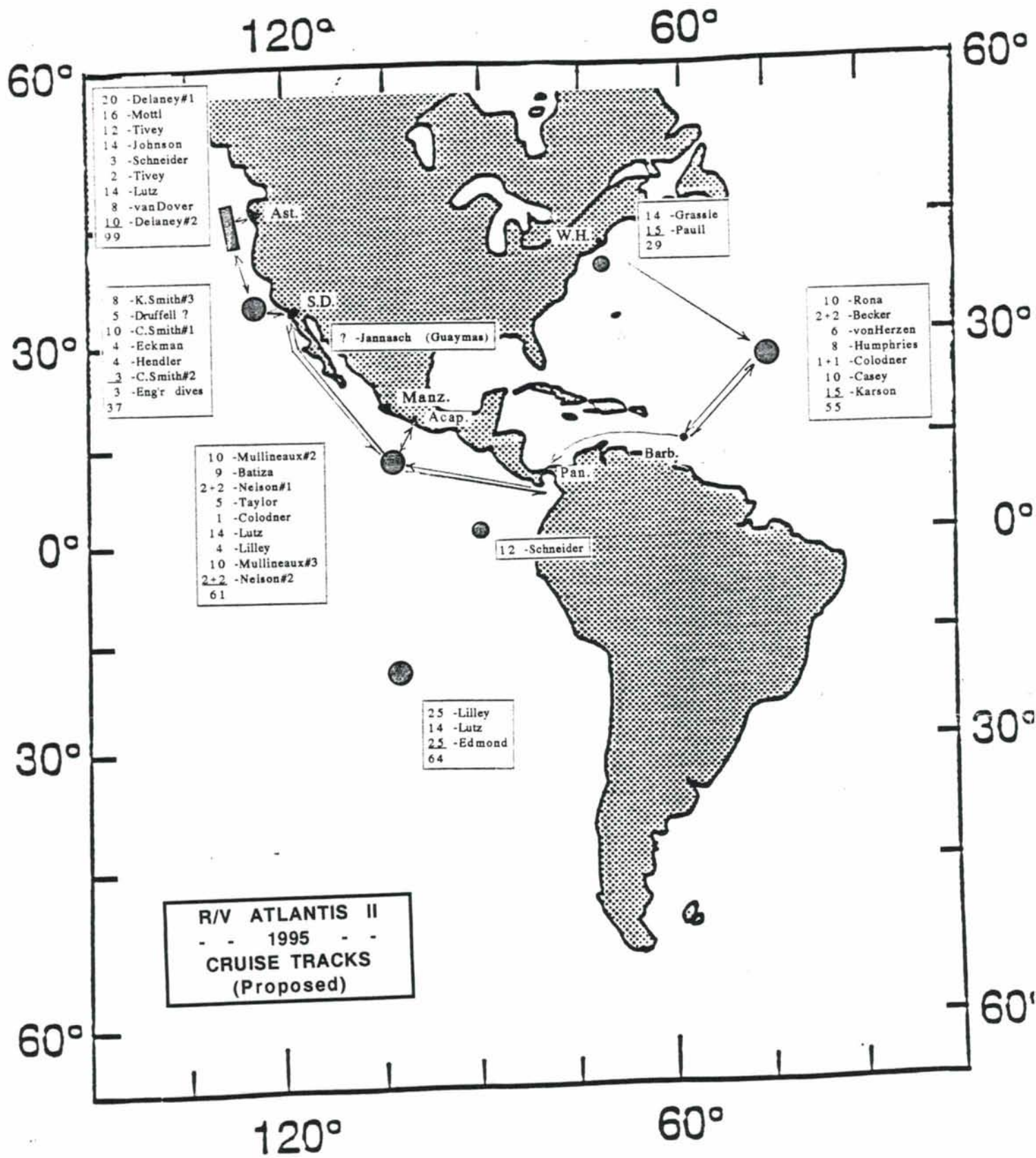
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|----------------|-------------|---------|----------------|-------------|------------|----|
| Mitchell, G    | SCRIPPS     | NP6     | NEW HORIZON*   | ANY         | ONR        | 2  |
| Moffett/Buess  | WHOI        | NA6     | OCEANUS*       | OCT         | NSF/CHEM   | 7  |
| Moore, G       | HAWAII      | NP11    | EWING*         | JUN-NOV     | NSF/MGG    | 21 |
| Moore, W       | U OF SO CAR | NA9     | CAPE HATTERAS  | JUL         | NSF/CHEM   | 12 |
| Moum, J        | OSU         | NP9     | WECOMA*        | AUG&NOV     | NSF/PHY    | 8  |
| Mullineau, L   | WHOI        | NP13    | ATLANTIS II    | OCT         | NSF/BIO    | 10 |
| Munk, W        | SCRIPPS     | NP6     | ALPHA HELIX*   | JUN         | ARPA       | 14 |
| Murray, J      | UW          | NP6     | BARNES         | ANY         | NSF/CHEM   | 27 |
| Mutter, C      | LDEO        | NP13    | EWING*         | FEB/JUN     | NSF/MGG    | 10 |
| Mutter, J      | LDEO        | SP3     | EWING*         | MAY-SEP     | NSF/RIDGE  | 29 |
| N.P.G.School   | NPG         | NP9     | POINT SUR      | APR         | NAVY       | 7  |
| N.P.G.School   | NPG         | NP9     | POINT SUR      | OCT         | NAVY       | 7  |
| N.P.G.School   | NPG         | NP9     | POINT SUR      | FEB/MAR/AUG | NAVY       | 8  |
| Nagihara, S    | SCRIPPS     | IN5     | MELVILLE       | DEC         | NSF/MGG    | 22 |
| Nelson, J      | SKIDAWAY    | NA6     | BLUE FIN*      | APR-SEP     | NSF/BIO    | 15 |
| Nittrouer, C   | STONY BROOK | NA10    | CAPE HATTERAS  | JAN-JUN     | NSF/GEO    | 49 |
| Nittrouer, C   | STONY BROOK | NP6     | ALPHA HELIX*   | JUL         | NSF/GEO    | 20 |
| Nittrouer, C   | STONY BROOK | NP9     | WECOMA*        | JUN/DEC     | ONR        | 37 |
| Norris, R      | WHOI        | IN1     | THOMPSON       | APR/AUG     | NSF/JGOFs  | ?? |
| Nowlin, W      | TAMU        | IN3/4/5 | KNORR*         | APR-JUN     | NSF/WOCE   | 47 |
| Olson, R       | WHOI        | IN1     | KNORR*         | APR         | NSF/JGOFs  | 30 |
| Olson, R       | WHOI        | NA6     | OCEANUS*       | OCT         | NSF/BIO    | 10 |
| Orcutt/Harding | SCRIPPS     | NP9     | EWING*         | JUN/JUL     | NSF/RIDGE  | 16 |
| Osgood, K      | SCRIPPS     | NP9     | SPROUL*        | JAN/APR/JUL | NSF/BIO    | 20 |
| Owens, B       | WHOI        | SA1     | ISELIN*        | MAR/APR     | NSF/       | 45 |
| Owens/Warren   | WHOI        | NP7     | MOANA WAVE*    | JUL         | NSF        | 15 |
| Paden, C       | OSU         | NP9     | FRANCISCO      | AUG         | NSF/PHY    | 5  |
| Paffenhofer, G | SKIDAWAY    | NA6     | BLUE FIN*      | ??          | NSF/BIO    | 48 |
| Paul, A        | ALASKA      | NP6     | ALPHA HELIX*   | AUG/SEP     | NSF        | 21 |
| Paul, J        | U SO FL     | NA6     | CAPE HATTERAS* | JUN         | NSF/BIO    | 9  |
| Paul, J        | U SO FL     | NA9     | PELICAN*       | JUL         | NSF/BIO    | 14 |
| Pearl, H       | UNC         | NA6     | CAPE HATTERAS* | MAY/AUG     | NSF/BIO    | 12 |
| Phillips, J    | UT          | NA9     | GYRE*          | NOV-APR     | NSF/MGG    | 24 |
| Pickart, R     | WHOI        | NA6     | OCEANUS*       | APR         | NSF/PHY    | 22 |
| Pieper, R      | USC         | NP9     | NEW HORIZON*   | EVEN MOS    | NSF/BIO    | 36 |
| Pillsbury, R   | OSU         | IN5/4/3 | MELVILLE       | APR-JUN     | NSF/WOCE   | 4  |
| Pratson, L     | LDEO        | NA9     | EWING*         | MAR         | NSF/MGG    | 20 |
| Purdy, G       | WHOI        | MA10    | EWING*         | SUMMER      | NSF/ODP    | 35 |
| Reed, D        | SAN JOSE ST | NP10    | EWING*         | MAY         | NSF/MGG    | 13 |
| Repeta, D      | WHOI        | NA6     | ENDEAVOR       | APR         | DOE        | 14 |
| Richardson, P  | WHOI        | SA2     | OCEANUS        | WINTER      | NSF/PHY    | 44 |
| Rine, J        | U SO CAR    | NA6     | CAPE HATTERAS  | JUN         | NSF/MGG    | 12 |
| Roberts, H     | LSU         | NA9     | PELICAN*       | JUL/AUG     | NSF/GEOPHY | 21 |
| Rona, P        | RUTGERS     | NA10    | ATLANTIS II    | MAR-JUL     | NSF        | 32 |
| Rossby/Hebert  | URI         | NA6     | ENDEAVOR*      | AUG/SEP     | NSF/PHY    | 17 |
| Rowe, Gil      | TAMU        | NA9     | GYRE*          | MAY-AUG     | NSF/BIO    | 10 |
| Royer, T       | ALASKA      | NP6     | ALPHA HELIX*   | APR/AUG/DEC | NSF/PHY    | 15 |
| Sandwell, D    | SCRIPPS     | SP6     | MELVILLE       | SEP/DEC     | NSF/MGG    | 32 |
| Sanford, T     | UW/APL      | NP9     | POINT SUR      | FEP         | NSF/TECH   | :  |
| Sansone, F     | HAWAII      | NP9     | ATLANTIS II    | SUMMER      | NSF/MGG    | 4  |
| Santschi, P    | TAMU        | NA9     | GYRE*          | OCT         | NSF/CHEM   | !  |
| Sawyer, D      | RICE        | NA7     | EWING*         | MAY/AUG     | NSF/MGG    | 2! |
| Sayles, F      | WHOI        | NA6     | OCEANUS        | JUN         | NSF/CHEM   | 10 |
| Sayles, F      | WHOI        | NA6     | WEATHERBIRDII* | ALL         | NSF/CHEM   | 4  |

|                |             |             |                |             |            |     |
|----------------|-------------|-------------|----------------|-------------|------------|-----|
| Schell, D      | ALASKA      | NP6         | ALPHA HELIX*   | AUG/SEP     | NSF/BIO    | 8   |
| Schelske, C    | U FL        | GL4         | LAURNETIAN*    | APR/AUG/SEM | NSF/MGG    | 20  |
| Schmitt, R     | WHOI        | NA10        | OCEANUS/END    | SEP/OCT     | NSF/PHY    | 24  |
| Schmitt/Toole  | WHOI        | SA1/3       | MEDIUM/ISELIN  | JAN/APR     | NSF/PHY    | 35  |
| Schneider, D   | WHOI        | NP9         | ATLANTIS II    | SUMMER      | NSF/MGG    | 3   |
| Sempere, JC    | UW          | IN8/11      | MELVILLE       | AUST SUM    | NSF/ODP    | 33  |
| Sempere, JC    | UW          | IN8/11      | MELVILLE       | NOV94       | NSF/RIDGE  | 6   |
| Sempere, JC    | UW          | NA6/10      | OCEANUS/C I**  | SUMMER      | NSF/RIDGE  | 35  |
| Sharp, J       | U DEL       | NA6         | CAPE HENLOPEN* | JUL         | NSF        | 3   |
| Shenker, J     | FIT         | NA6/9       | ISELIN*        | JAN/FEB     | NSF/BIO    | 14  |
| Shiller, A     | U SO MISS   | NA9         | PELICAN*       | NOV         | NSF/CHEM   | 15  |
| Siebenaller, J | LSU         | NP9         | WECOMA         | MAY         | NSF/BIO    | 10  |
| Siegel, D      | UCSB        | NA6         | WEATHERBIRDII* | JUN/SEP     | NSF        | 12  |
| Simenstad/Jay  | UW          | NP9         | SPROUL*        | MAY         | NSF/LMER   | 30  |
| Simoneit, B    | OSU         | HP9/13      | ATLANTIS II    | SUMMER      | NSF/CHEM   | 5   |
| Smith, C       | HAWAII      | NP13/9      | ATLANTIS II    | JUL-DEC     | NSF/BIO    | 12  |
| Smith, D       | WHOI        | NA9         | KNORR          | MAR-JUL     | NSF/MGG    | 28  |
| Smith, K       | SCRIPPS     | NP9         | ATLANTIS II    | FEB/JUN/OCT | NSF/BIO    | 10  |
| Smith, K       | SCRIPPS     | NP9         | NEW HORIZON*   | FEB/JUN/OCT | NSF/BIO    | 15  |
| Smith, S       | BROOKHAVEN  | IN1/3       | THOMPSON*      | FEB-DEC     | NSF/JGOFS  | 210 |
| Spiess/Hbrand  | SCRIPPS     | NP6/9       | MELVILLE*      | SUMMER      | NSF        | 14  |
| Spiess/Hbrand  | SCRIPPS     | NP6/9       | NEW HORIZON*   | SPRING      | NSF        | 5   |
| Stanton, T     | NPG         | NP9         | POINT SUR      | APR         | ONR        | 3   |
| Sturz, A       | U SAN DIEGO | NP9         | SPROUL*        | JUN         | JUN        | 2   |
| Suttle, C      | UT          | NA9         | LONGHORN       | APR/JUL     | NSF/BIO    | 21  |
| Suttle, C      | UT          | NA9         | LONGHORN       | AUG         | NSF/BIO    | 10  |
| Swift, et al   | SCRIPPS     | IN1-11AN4/5 | KNORR*         | JAN-DEC     | NSF/WOCE   | 365 |
| Taylor, B      | HAWAII      | SP1         | MOANA WAVE*    | EARLY95     | NSF/MGG    | 33  |
| Taylor/Wirsen  | WHOI        | NP9/SP3     | ATLANTIS II    | FALL        | NSF/RIDGE  | 11  |
| Tindale, N     | TAMU        | IN8/11/SP4  | LARGE          | JAN         | ONR/NSF    | 45  |
| Tivey, M       | WHOI        | NP9         | ATLANTIS II    | SUM/FALL    | NSF/MGG    | 25  |
| Toole, J       | WHOI        | IN1,2       | KNORR*         | SEP/OCT     | NSF/PHY    | 54  |
| Toole, J       | WHOI        | IN3-6       | MELVILLE       | JUN-JUL     | NSF/PHY    | 35  |
| Toole, J       | WHOI        | NA6         | WEATHERBIRDII* | MAR/JUN     | NSF/INST   | 2   |
| Toomey, D      | U OF OREGON | NA7         | EWING*         | APR         | NSF/RIDGE  | 7   |
| Toomey, D      | U OF OREGON | NA7         | OCEANUS        | ???         | NSF/RIDGE  | 12  |
| Townsend, D    | MAINE       | NA6         | ENDEAVOR       | APR/MAY     | NSF/BIO    | 20  |
| Trehu, A       | OSU         | NP9         | WECOMA*        | ???         | NSF/MGG    | 6   |
| Tucholke, B    | WHOI        | NA10        | THOMPSON/EWING | MAY-JUL     | NSF/RIDGE  | 37  |
| Twilley, R     | U SW LA     | NA9         | PELICAN        | JAN/MAY/AUG | NSF/LMER   | 48  |
| Van Dover, C   | WHOI        | NP9         | ATLANTIS II    | SUMMER      | NSF/RIDGE  | 6   |
| Van Geen, A    | LDEO        | NP9         | PT SUR         | MAY         | NSF/MGG    | 8   |
| Vogt, P        | NRL         | NA2/AR2     | EWING*         | JUL/AUG94?  | NRL        | 33  |
| Von Herzen, R  | WHOI        | NA10        | ATLANTIS II    | JAN/MAR     | NSF/MGG    | 14  |
| Vrijenhoek/Ltz | RUTGERS     | NA6         | ATLANTIS II    | JUL         | NSF/RIDGE  | 18  |
| Walsh, J       | U SO FL     | NA9         | PELICAN*       | MA/JU/SE/DE | NSF/LMER   | 40  |
| Ward, B        | UCSC        | NP9/12/13   | POINT SUR*     | JUN         | NSF/BIO    | 31  |
| Warren, B      | WHOI        | NP7         | MEDIUM/LARGE   | JUN         | NSF/OSR    | 10  |
| Warren, B      | WHOI        | IN3/4/5     | MELVILLE       | APR-JUN     | NSF/WOCE   | 53  |
| Warren, B      | WHOI        | IN3/4/5     | MELVILLE       | NOV-DEC     | NSF/WOCE   | 55  |
| Washburn, L    | UCSB        | NA6         | WEATHERBIRDII* | JUL         | NSF        | 21  |
| Waterbury, J   | WHOI        | IN1         | LARGE          | FEB/AUG     | NSF/JGOFS  | 128 |
| Watts, R       | URI         | NA6         | WEATHERBIRDII* | JAN/JUL     | NSF/ONR/NO | 31  |
| Weatherly, G   | FSU         | SA1         | OCE/C I**      | MAR/JUN     | NSF/PHY    | 12  |

|                |             |             |                |             |           |    |
|----------------|-------------|-------------|----------------|-------------|-----------|----|
| Weller, R      | WHOI        | IN1         | LARGE          | OCT         | ONR       | 10 |
| Weller, R      | WHOI        | IN1         | THOMPSON*      | APR         | ONR       | 10 |
| Whitledge, T   | UT          | NA9         | LONGHORN       | JUL         | NSF/REU   | 6  |
| Whitworth, T   | TAMU        | IN7-11AN4/5 | KNORR          | DEC94/JAN95 | NSF/WOCE  | 49 |
| Whitworth, T   | TAMU        | IN5/4/3     | MELVILLE       | APR-JUN     | NSF/WOCE  | 4  |
| Wiebe, W       | U OF GA     | NA6         | BLUE FIN*      | MAY/JUL     | NSF/BIO   | 10 |
| Wiengartner, T | UA          | NP2/3       | ALPHA HELIX*   | SEP/OCT     | NSF/OPP   | 20 |
| Wilcock, W     | UW          | NP9         | WECOMA         | JUL         | NSF/RIDGE | 9  |
| Wilcock, W     | UW          | NP9         | WECOMA*        | SEP         | NSF/RIDGE | 6  |
| Wilson, D      | UCSB        | NP13/SP3A   | MELVILLE       | ANY         | NSF/RIDGE | 28 |
| Windom, H      | SKIDAWAY    | NA6/9       | BLUE FIN*      | MAR/APR     | NSF/CHEM  | 5  |
| Wong           | U DEL       | NA6         | CAPE HENLOPEN* | MAR-AUG     | NSF/PHY   | 20 |
| Wong/Dunstan   | ODU         | NA6         | ENDEAVOR       | APR/MAY     | NSF       | 10 |
| Yayanos, A     | SCRIPPS     | NP9         | NEW HORIZON*   | JUL         | NSF/INST  | 7  |
| Zafirion, O    | WHOI        | NA6         | WEATHERBIRD II | AUG         | NSF/CHEM  | 3  |
| Zafirion, O    | WHOI        | NA6         | WEATHERBIRDII* | JUN         | NSF/CHEM  | 3  |
| Zehr, J        | STONY BROOK | NA9         | GY/CI/EN/OC*** | JAN/FEB     | NSF/BIO   | 21 |
| Zumberge, M    | SCRIPPS     | NA9         | NEW HORIZON*   | SUMMER      | ONR       | 5  |



# **APPENDIX V**



- 20 -Delaney#1
- 16 -Mottl
- 12 -Tivey
- 14 -Johnson
- 3 -Schneider
- 2 -Tivey
- 14 -Lutz
- 8 -vanDover
- 10 -Delaney#2
- 99

- 8 -K.Smith#3
- 5 -Druffell ?
- 10 -C.Smith#1
- 4 -Eckman
- 4 -Hendler
- 3 -C.Smith#2
- 3 -Engr dives
- 37

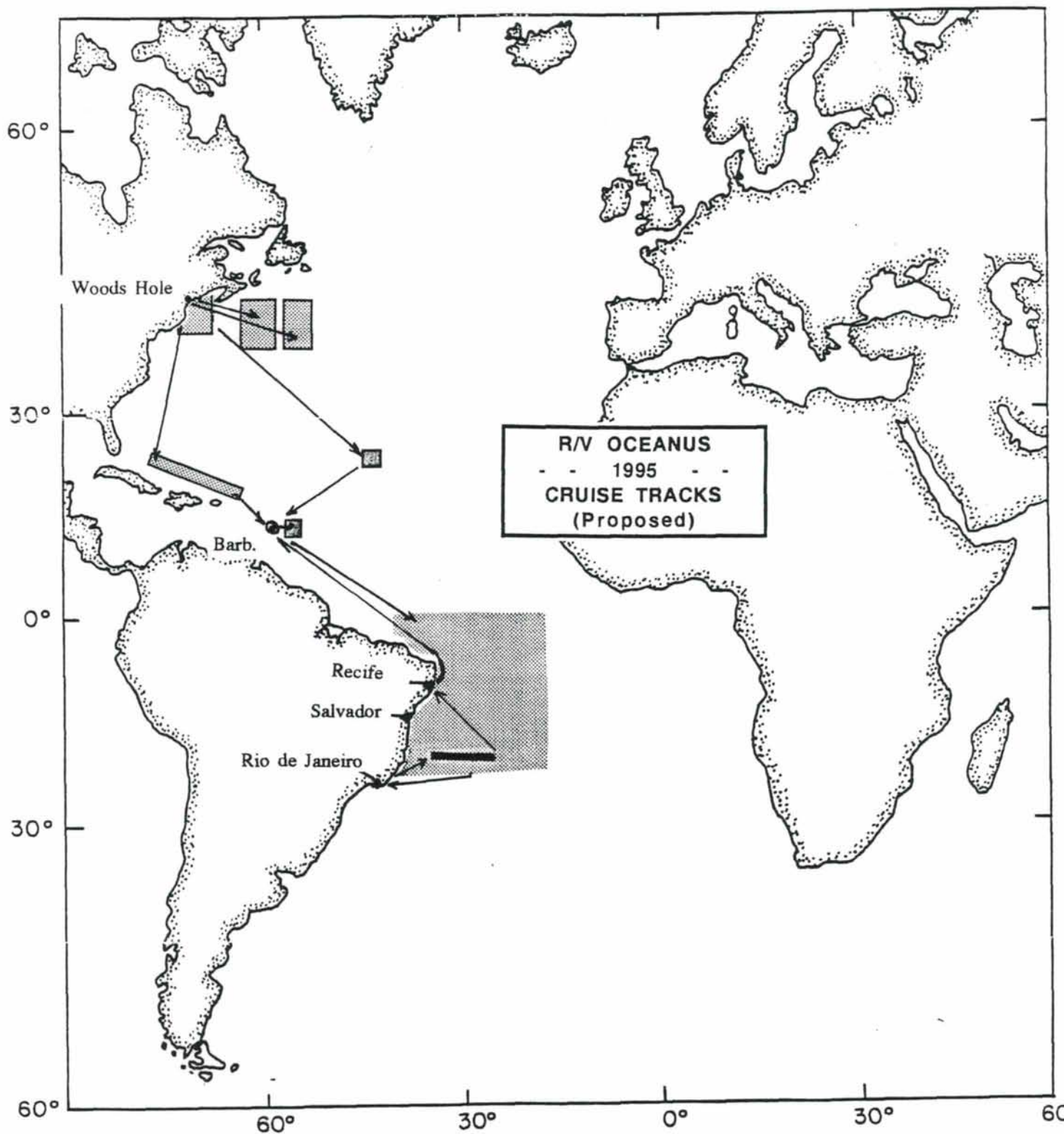
- 10 -Mullineaux#2
- 9 -Batiza
- 2+2 -Nelson#1
- 5 -Taylor
- 1 -Colodner
- 14 -Lutz
- 4 -Lilley
- 10 -Mullineaux#3
- 2+2 -Nelson#2
- 61

- 25 -Lilley
- 14 -Lutz
- 25 -Edmond
- 64

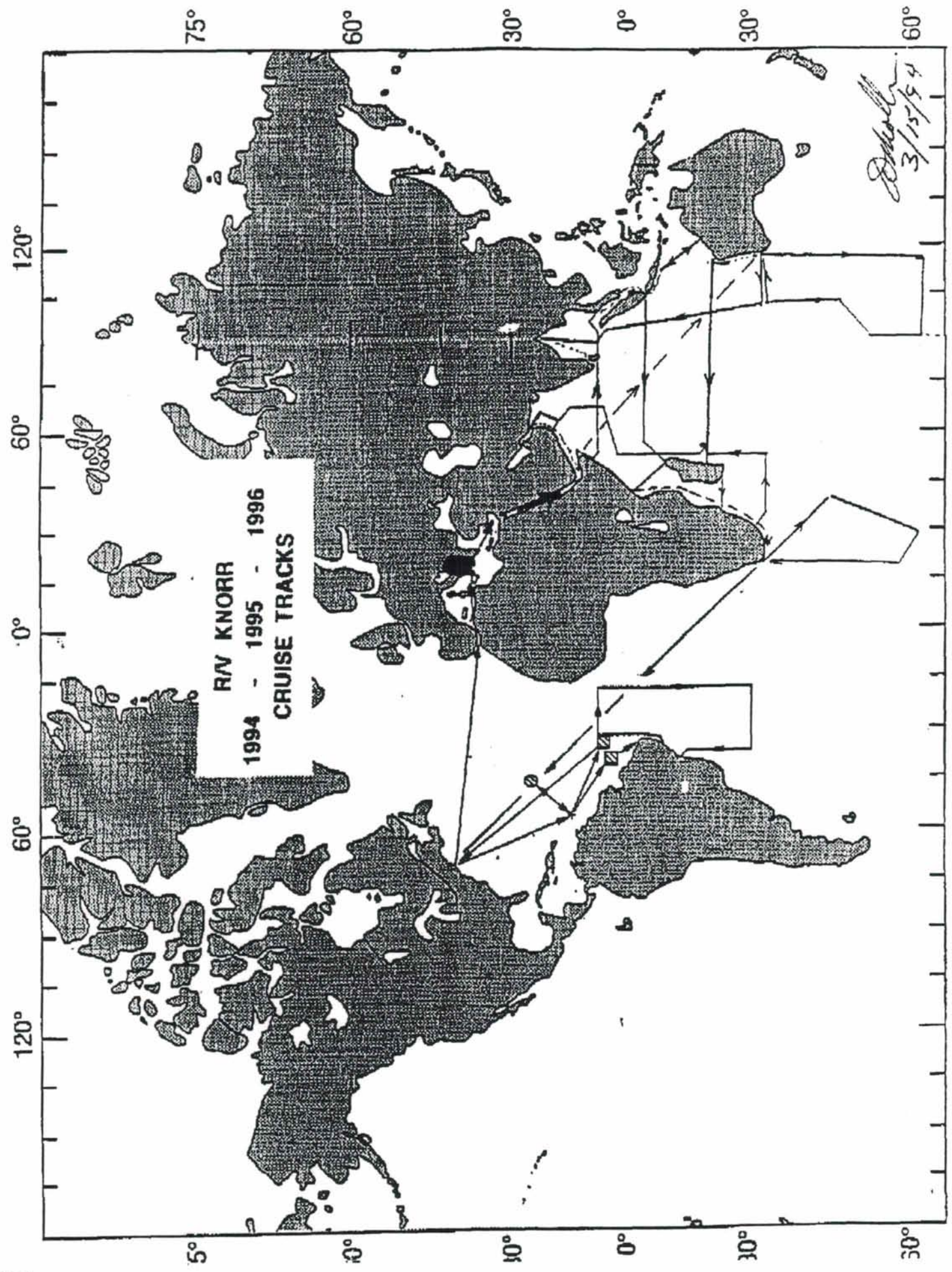
- 14 -Grassie
- 15 -Paul
- 29

- 10 -Rona
- 2+2 -Becker
- 6 -vonHerzen
- 8 -Humphries
- 1+1 -Colodner
- 10 -Casey
- 15 -Karson
- 55

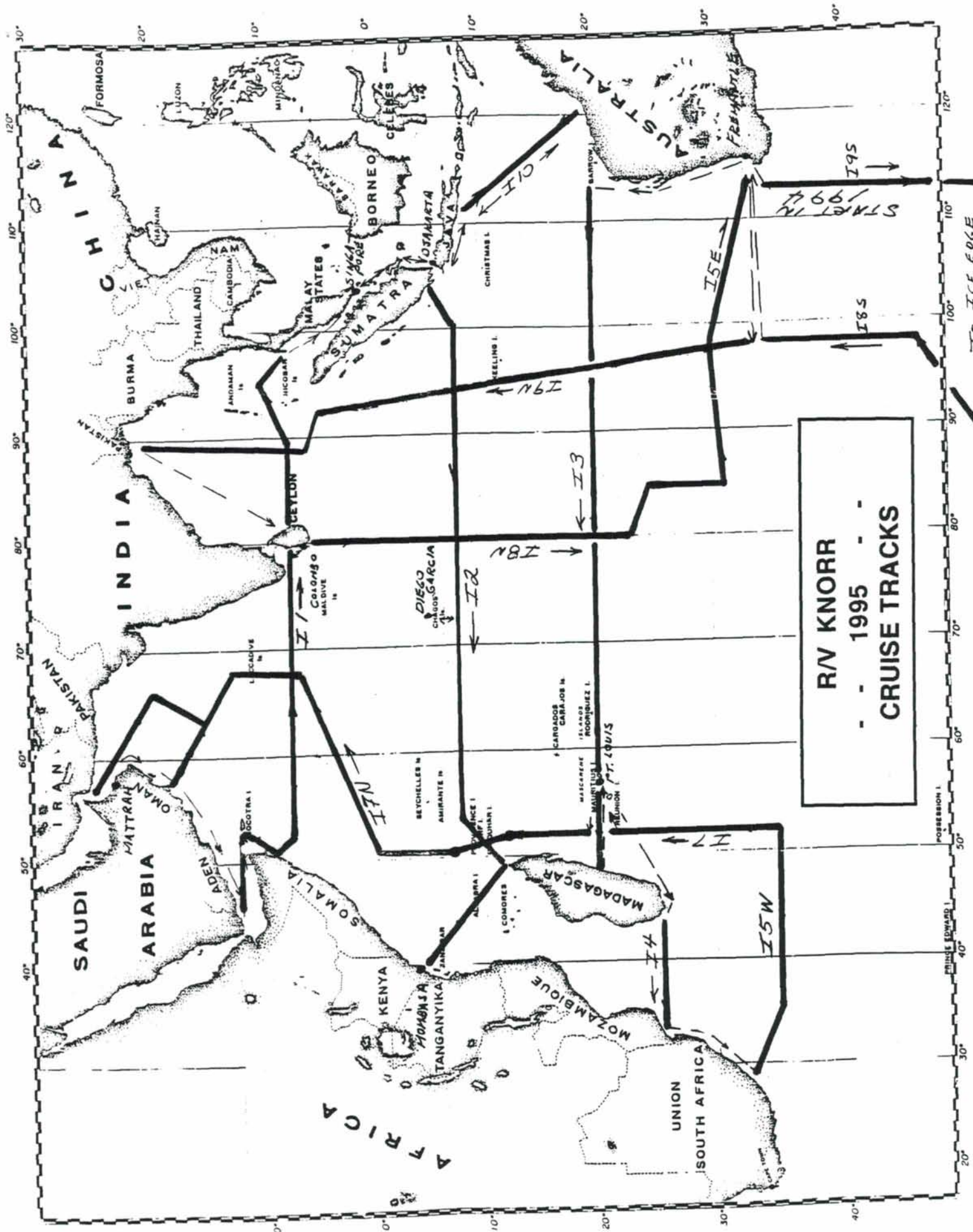
R/V ATLANTIS II  
 - - - 1995 - - -  
 CRUISE TRACKS  
 (Proposed)





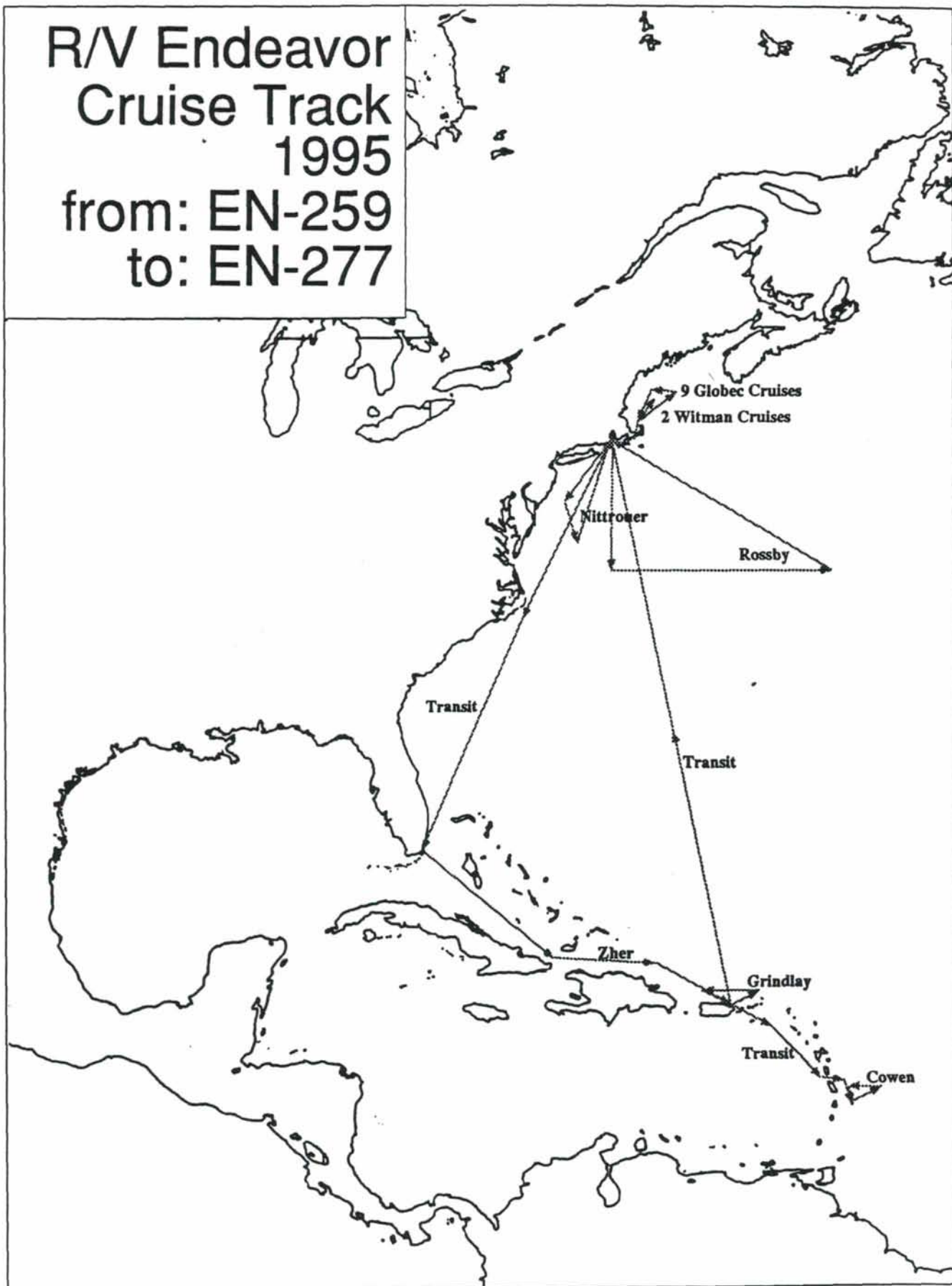






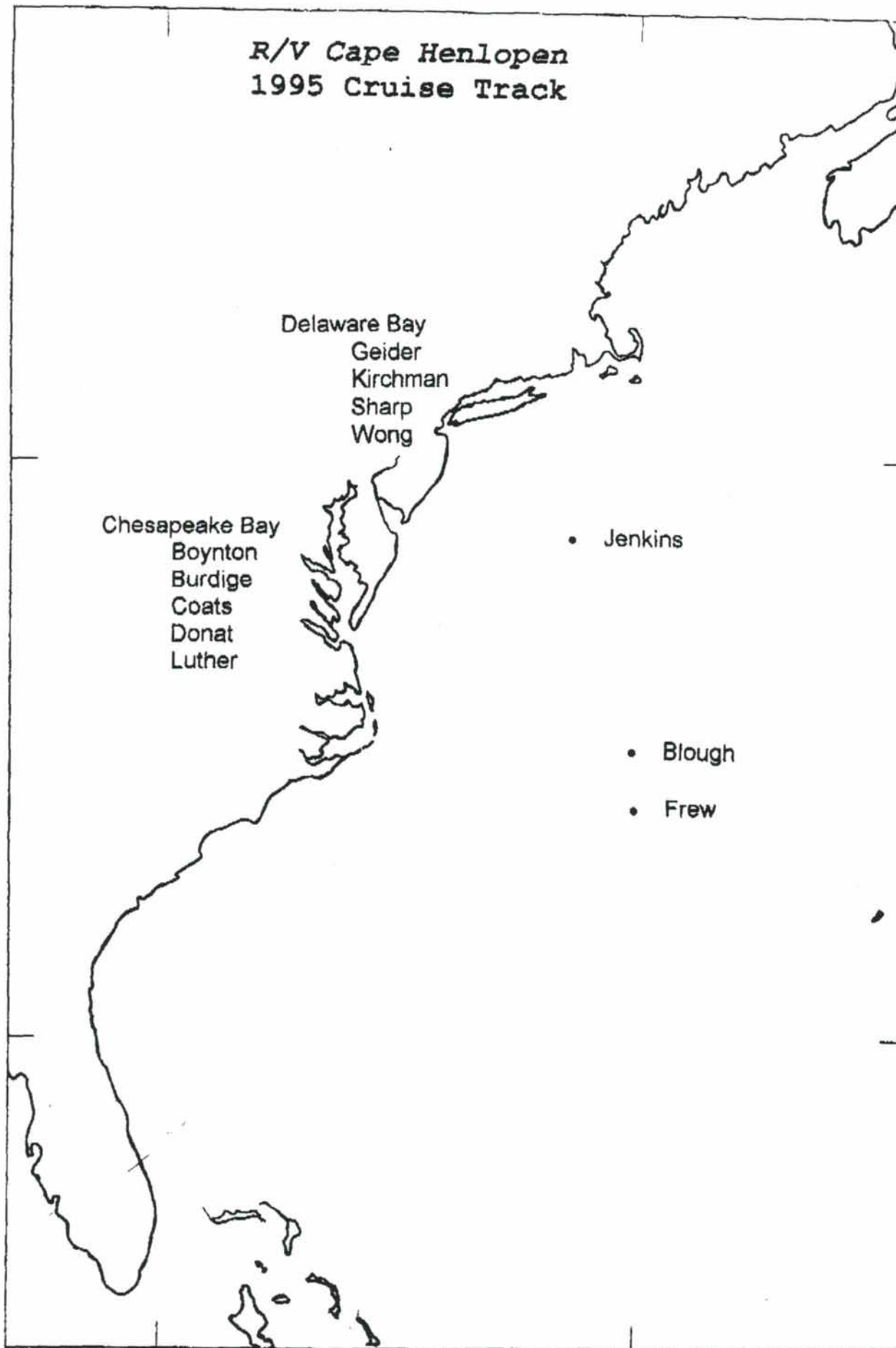
R/V KNORR  
 - - - 1995 - - -  
 CRUISE TRACKS

R/V Endeavor  
Cruise Track  
1995  
from: EN-259  
to: EN-277



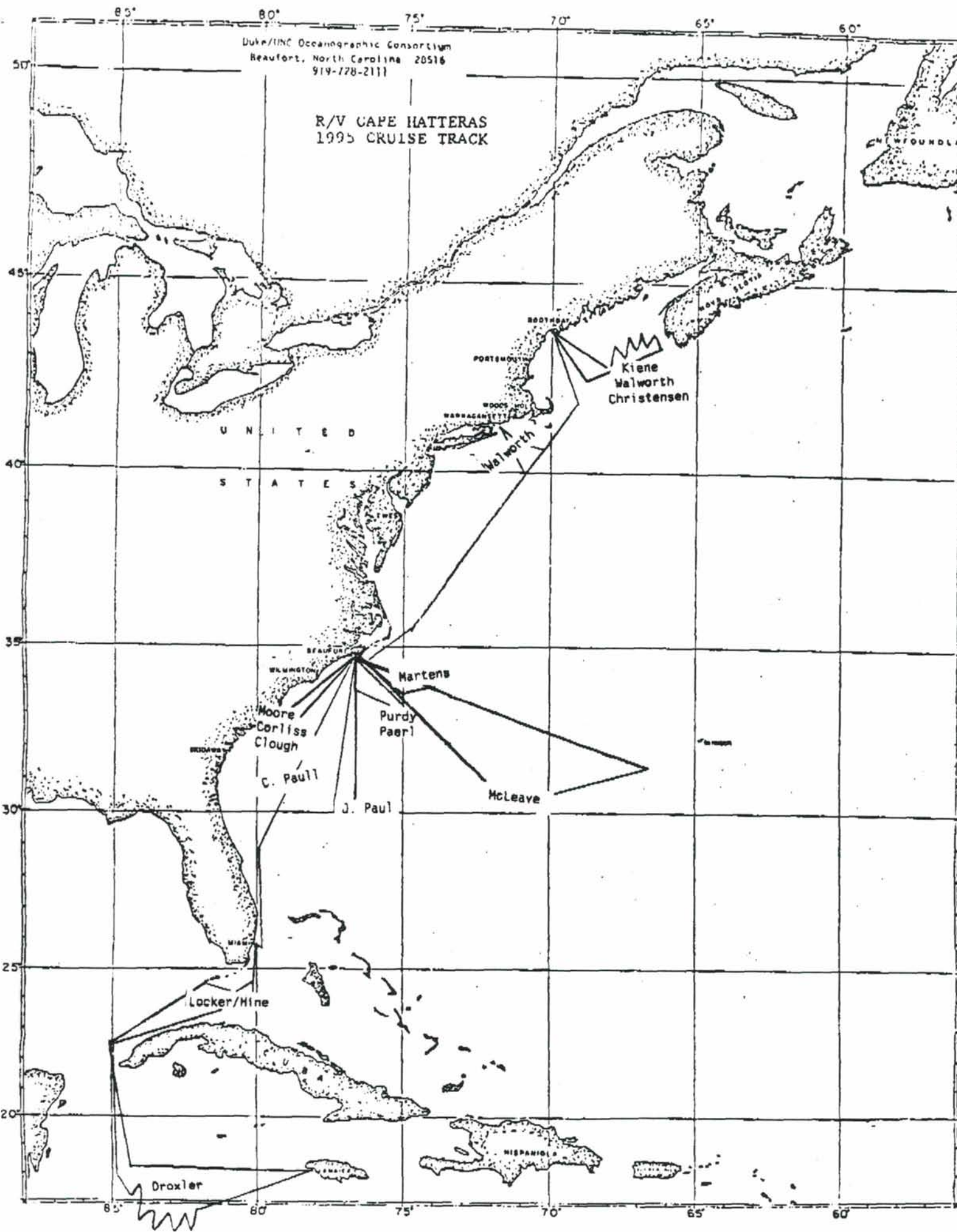


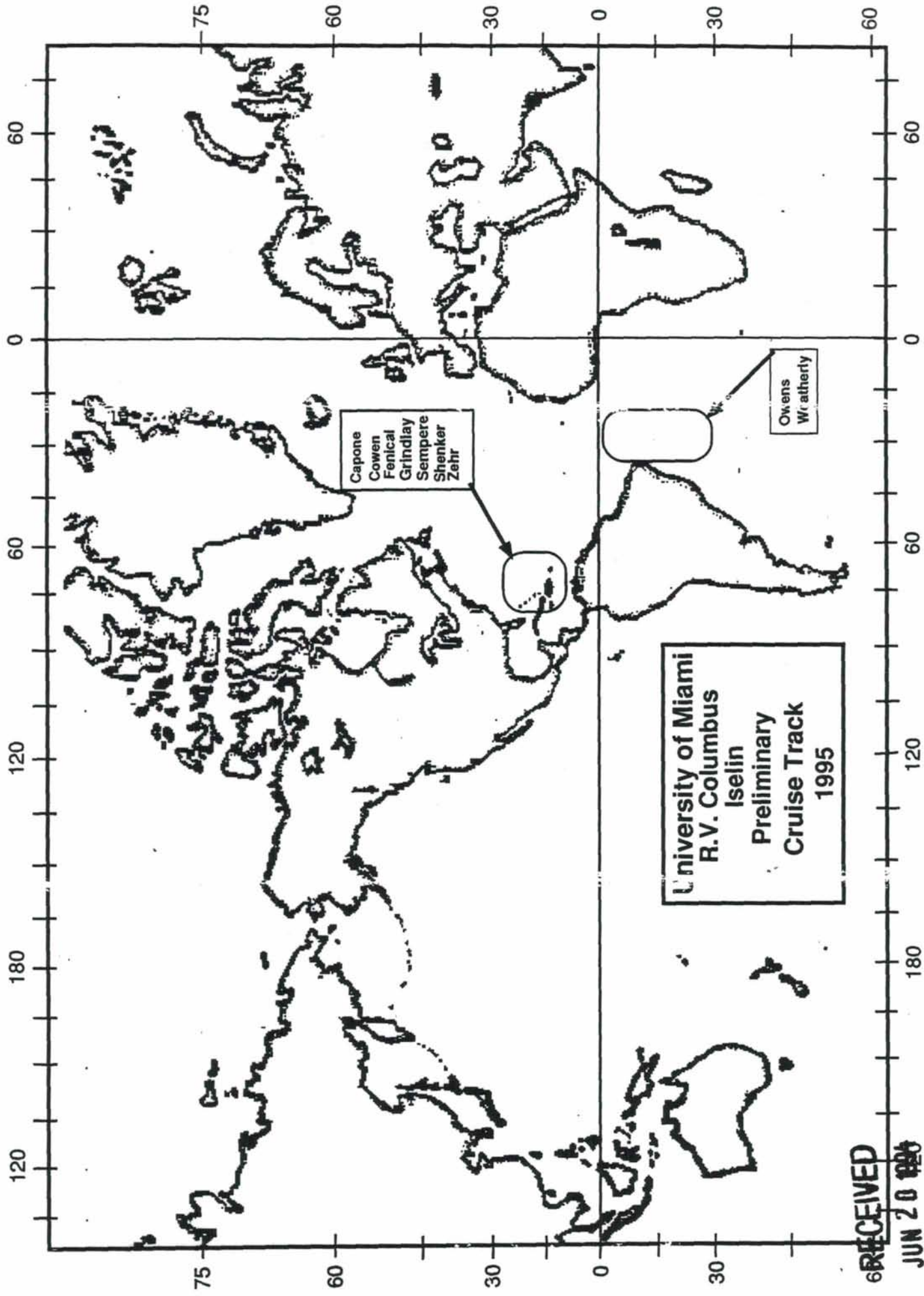
R/V Cape Henlopen  
1995 Cruise Track



Duke/UNC Oceanographic Consortium  
Beaufort, North Carolina 28516  
919-728-2111

### R/V CAPE HATTERAS 1995 CRUISE TRACK

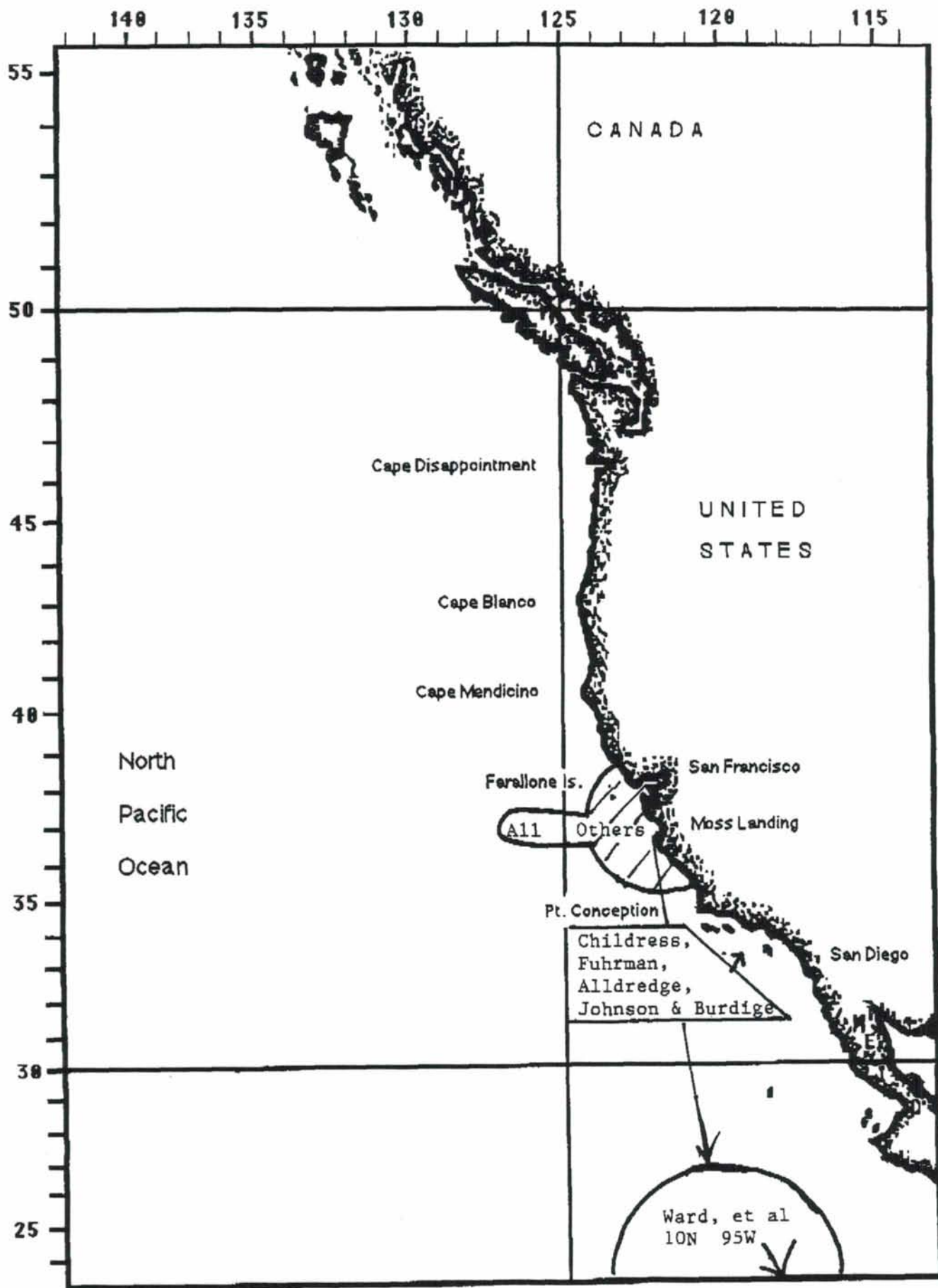


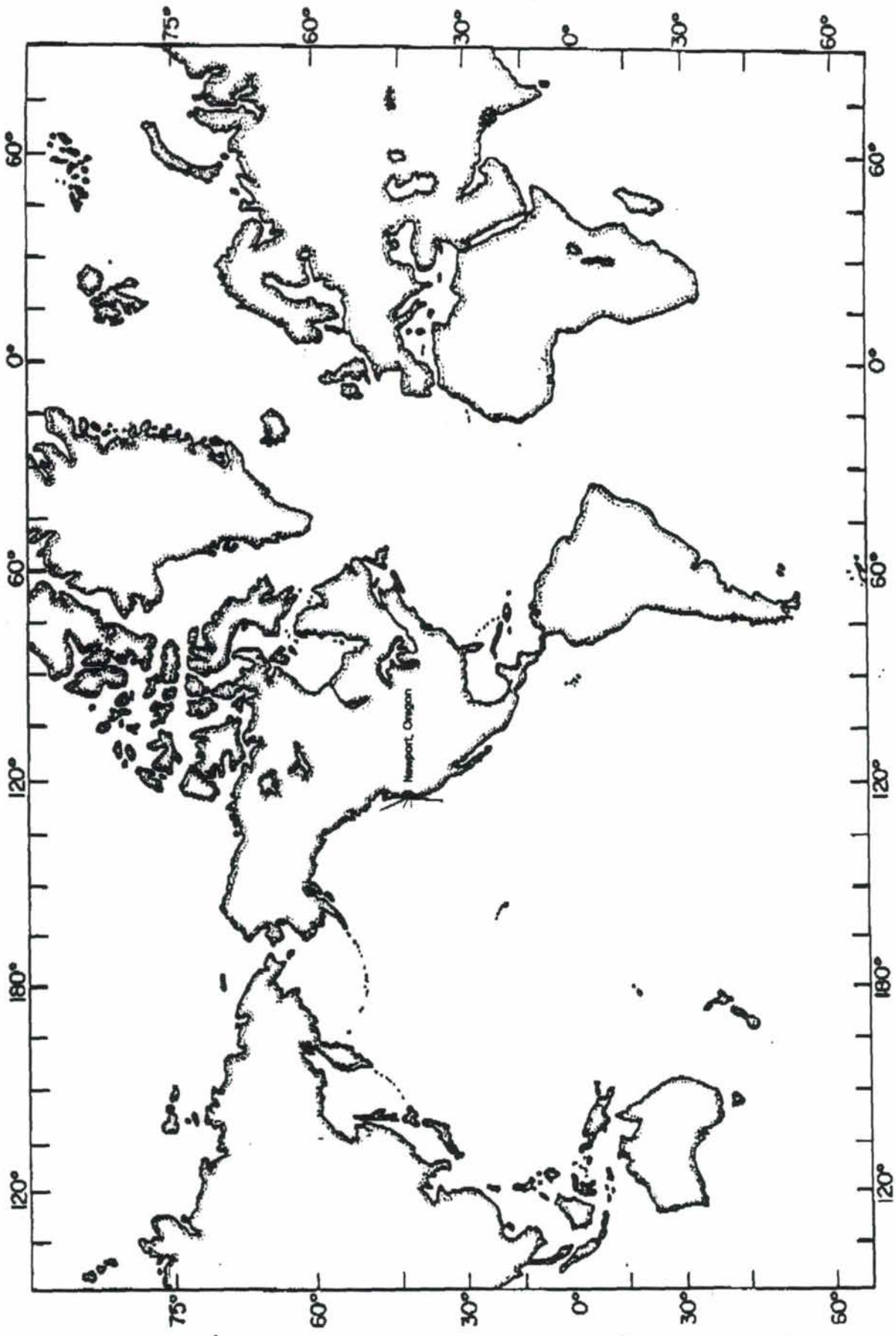


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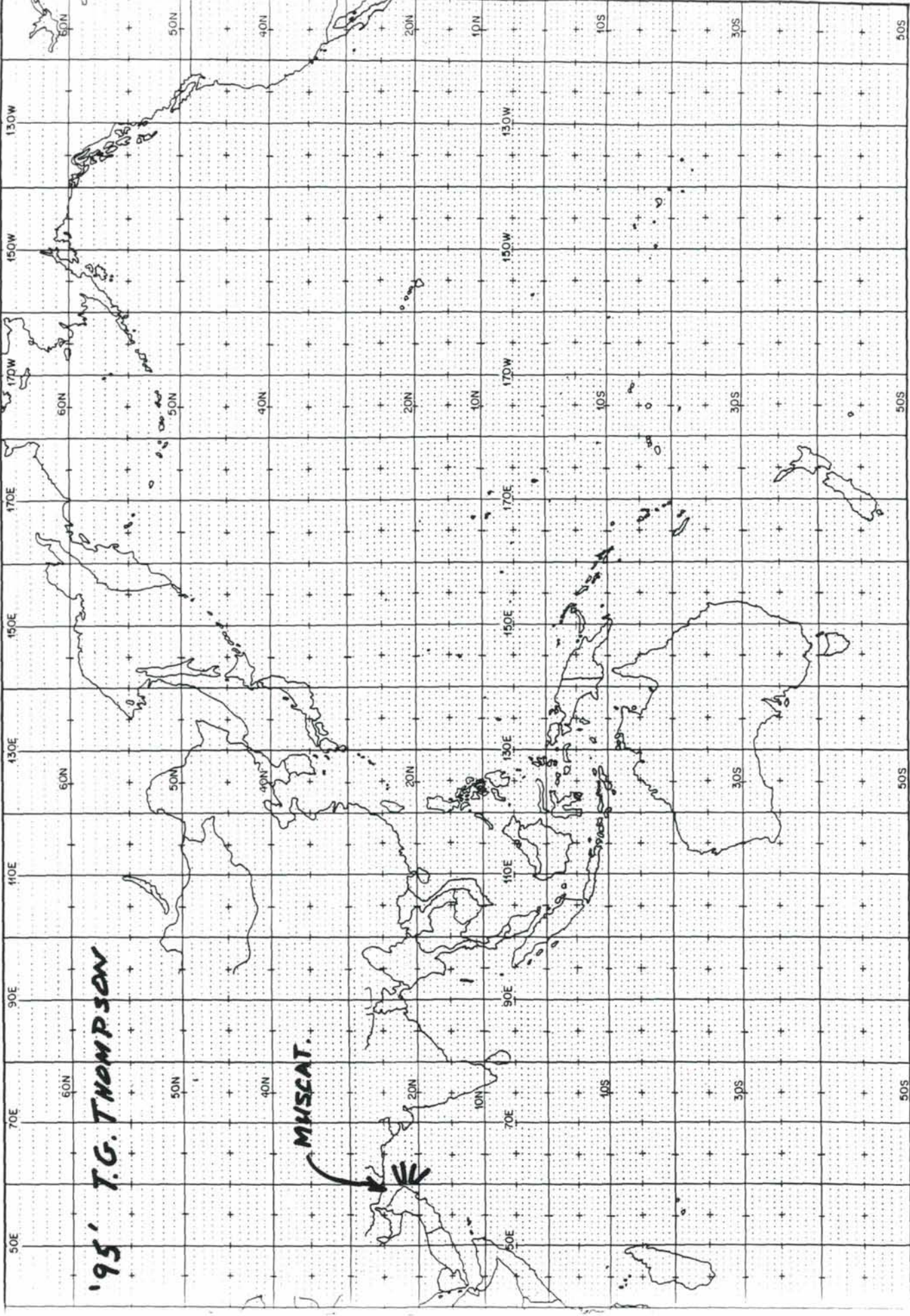
1995 R/V POINT SUR Cruise Tracks





**1995  
PROPOSED CRUISE TRACKS  
RV WECOMA  
OREGON STATE UNIVERSITY**



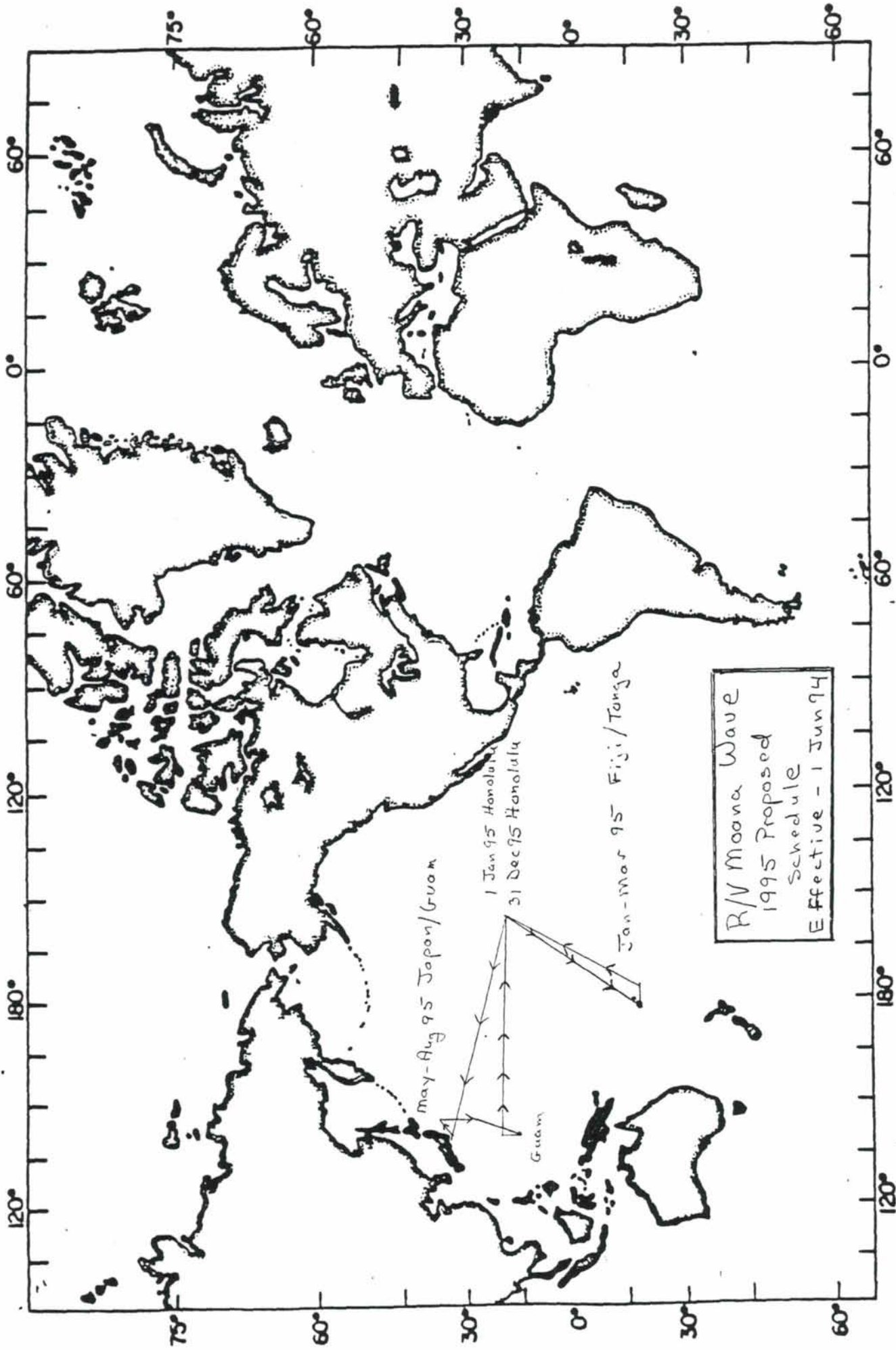


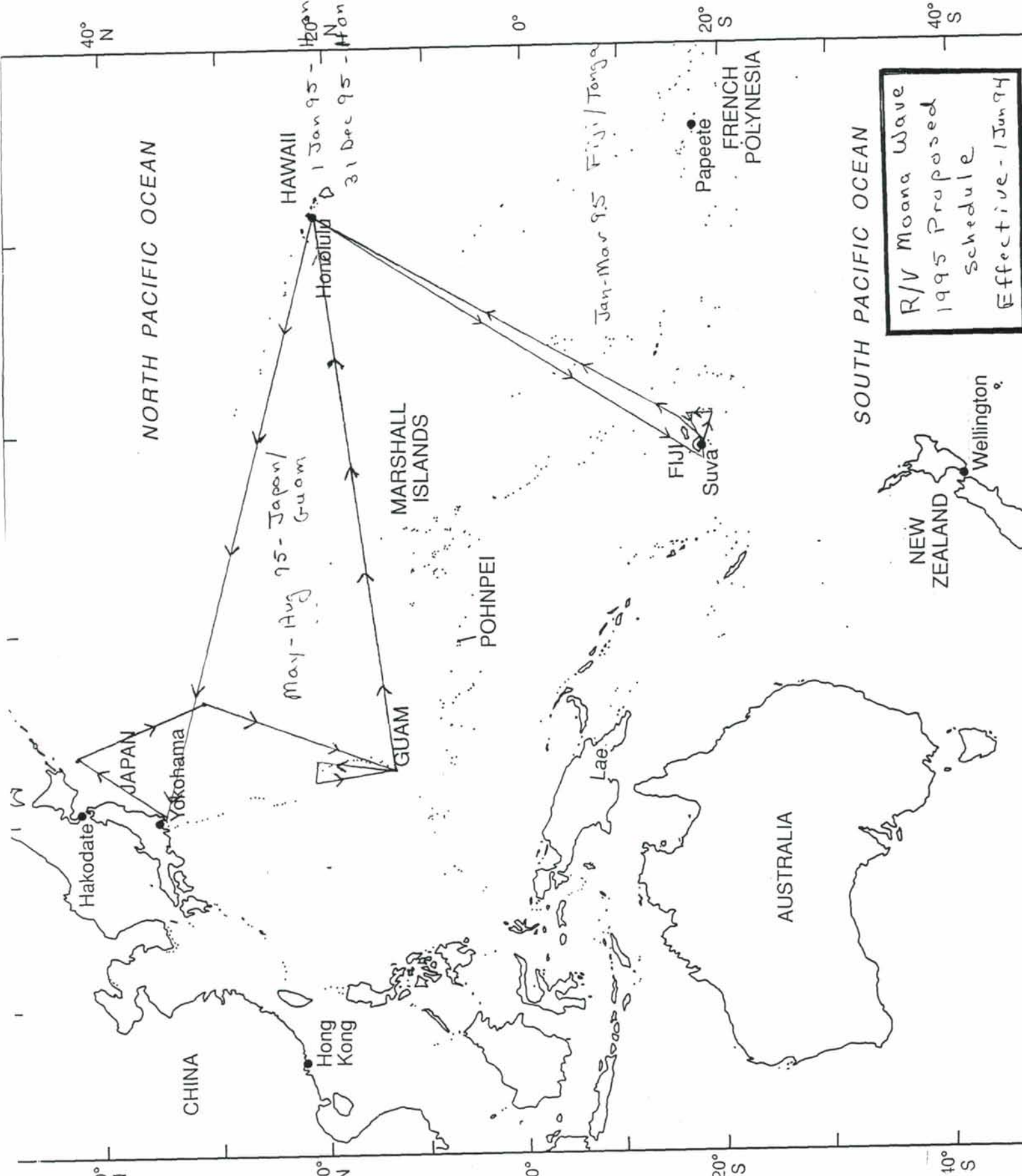
'95' T.G. THOMPSON

MUSCAT.









R/V Moana Wave  
 1995 Proposed  
 Schedule  
 Effective - 1 Jun 94







