UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS SHIP SCHEDULING COMMITTEE

Report of Meeting

9 September 1996

National Science Foundation
4201 Wilson Boulevard, Room 1235
Arlington, VA 22230

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SHIP SCHEDULING REVIEW

Report of Meeting

10 September 1996

National Science Foundation
4201 Wilson Boulevard, Room 730
Arlington, VA 22230

UNOLS SHIP SCHEDULING MEETING
National Science Foundation
4201 Wilson Boulevard, Board Room 1235
Arlington, VA 22230

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Appendices

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INTRODUCTION:

This report is a summary of the discussions at the UNOLS Ship Scheduling Meeting held at the National Science Foundation in Arlington, Virginia on 9 September 1996. The Ship Scheduling Committee met to present schedules and deliberate on the funding implications for 1997. In addition to the schedulers from the UNOLS operator institutions, agency representatives and program managers from NSF, ONR, NAVO and NOAA attended. The meeting agenda was followed except as indicated herein. A copy of the agenda is included as **Appendix I.** A list of the attendees is appended as **Appendix II.**

Schedulers provided the UNOLS Office with the latest 1997 proposed schedules. These schedules were posted on OCEANIC. Schedulers also provided the UNOLS Office their best estimates of the costs to support these schedules. A summary of these costs is included as **Appendix III.** In advance of the meeting the UNOLS Office distributed an inventory list of the 1997 and 1998 ship time requests (NSF Form 831) held by that office. Copies of these inventories are included as **Appendix IV & V** respectively. Copies of the provided 1997 ships' cruise tracks are included as **Appendix VI.**

The meeting was called to order at 0830 hrs. by the Chair, Don Moller. Introductions were made around the room.

FEDERAL AGENCY REPORTS

National Science Foundation - Dolly Dieter provided a brief statement suggesting that the schedules published reflected many inefficiencies which would need a careful look during this meeting.

Office of Naval Research - Sujata Millick reported that she had obligated all of the ONR money available for 1997 and that additional ship days would not be likely.

Naval Research Laboratory - Norm Cherkis echoed Sujata's comments that the NRL money for 1997 has been totally obligated.

National Oceanographic and Atmospheric Administration - Scott McKellar reported that NOAA's OAR is planning to obligate approximately $3M for 1997 UNOLS ship operations. In the out years this support is expected to be approximately $2.6M.

Naval Oceanographic Office - Pat Dennis reported that Congress is likely to pass the National Oceanographic Partnership Act (NOPA). This should help UNOLS with $7.5M "new" money for 1997. Although this is only one year funding, all concerned would like to see it continuing. Pat then introduced CDR Jim Trees and Gordon Wilkes of NAVO. Jim provided a series of view-graphs, **Appendix VII,** which outlined how NAVO planned to utilize the $7.5M. He explained that military surveys had access to foreign country's EEZ and that the NAVO fleet is fully committed on this work. They have generated a backlog of survey and oceanographic requirements in both the U. S. EEZ and in international waters. Here is where UNOLS can assist. Jim stressed the need for close coordination for the projects planned on UNOLS ships in 1997.

The remainder of the meeting was devoted to the proposed schedules for 1997. Below are brief comments of each ship's proposed schedule. The order listed below represents the order presented.

ALPHA HELIX - University of Alaska - Tom Smith presented a 1997 schedule of 161 days for ALPHA HELIX with 53 of these days presently funded. Tom suggested that the funding decisions for the OPP work would not be expected at this time. All Russian clearance requests were turned down for 1996 work. Tom expressed concern that NOAA chose WECOMA for the 60 days of FOCI work in the Gulf of Alaska.

MOANA WAVE - University of Hawaii - Stan Winslow reported that MOANA WAVE has scheduled 48 HOTS days for 1997. A total of 180 days was presented. The schedule would permit doing the six days of Stevens if available. Stan indicated that one HOTS cruise in September of October should be done by another UNOLS vessel, probably REVELLE.

CLIFFORD BARNES - University of Washington - A schedule of 134 days of funded work was reported by Robert Hinton for BARNES. This is a good schedule for that ship.

WECOMA - Oregon State University - Fred Jones presented a schedule of 193 days for WECOMA in 1997. This includes the NOAA FOCI work in the Gulf of Alaska. The schedule could not accommodate the cruise of Nittrouer which will go to THOMPSON.

POINT SUR - Moss Landing Marine Laboratory - Mike Prince provided a schedule of 203 days with 153 of these days presently funded. NPS will be providing $100K for ship use in 1997. The Bellingham work could not be accommodated.

ROBERT G. SPROUL - Scripps - The SPROUL schedule was presented by Rose Dufour. The schedule reflected 140 days which included work with BARNES on the Simenstad cruises. Weather days have been included in the schedule.

NEW HORIZON - Scripps- Rose also presented the schedule for NEW HORIZON. The 216 day schedule includes 63 days of NAVO work.

PELICAN - LUMCON - The PELICAN schedule was presented by Steve Rabalais and includes an optimistic 271 days. At this point 100 days have been funded. The NAVO work has been triple booked with GYRE and LONGHORN. A total of 76 days has been scheduled for servicing buoys for the National Data Buoy Center. This work is likely to be reduced significantly.

LONGHORN - University of Texas - The schedule for LONGHORN reflected 96 days of which 68 were funded. As indicated above the NAVO work has been triple booked. The funding for the Whitledge work continues to be pending.

GYRE - Texas A&M - Dave Powell represented the GYRE schedule. The scheduled work for Dunlap/Bryant needs to be resolved.

CALANUS - University of Miami - Dave also presented the schedule for CALANUS. A total of 102 days has been scheduled of which 66 are funded.

SEWARD JOHNSON - Harbor Branch Oceanographic Institution - Tim Askew provided the Johnson's schedule which includes 154 days of NSF time and 67 days of other totally 221. Tim was advised that the transit time needed to be coordinated between NSF and NOAA.

EDWIN LINK - Harbor Branch Oceanographic Institution - Link's schedule included a major cruise to New Zealand which is still problematical. Tim reported that the Martin work could drop out.

SEA DIVER - Harbor Branch Oceanographic Institution - Tim presented a modest schedule for SEA DIVER which included double booked work of NAVO.

CAPE HATTERAS - Duke/UNC - Joe Ustach provided the schedule for CAPE HATTERAS. The ship will be operating out of both WHOI and Norfolk. The Buesseler work has been funded, however, the number of days need to be checked. The Collins work has been funded which includes transit that is to be split between NSF and ONR. The NAVO work is double booked with SEA DIVER.

CAPE HENLOPEN - University of Delaware - CAPE HENLOPEN's proposed schedule was provided by Tim Pfeiffer. A schedule of 170 days was presented which included NAVO work.

WEATHERBIRD II - Bermuda Biological Station - Lee Black provided the schedule of WEATHERBIRD II which included 134 days. Lee reported that the Hydro station program has been lost as well as the work of Dueser. The ship picked up an NRL cruise for Weideman.

ENDEAVOR - University of Rhode Island - Bill Hahn provided the schedule for ENDEAVOR. This schedule was closely linked with OCEANUS including GLOBEC, Coastal Mixing and Optics and PRIMER work. A total of 187 days were scheduled.

OCEANUS - Woods Hole Oceanographic Institution. - The OCEANUS schedule was presented by Don Moller. Don discussed the coordination with ENDEAVOR and explained that equipment needed to be shared. Some date changes are likely. A total of 202 days has been scheduled.

LAURENTIAN - University of Michigan - Linda Goad provide LAURENTIAN's schedule which included a modest 77 days. Linda was informed that the Jude cruise funding remains pending.

BLUE FIN - Skidaway - No schedule was provided for BLUE FIN

URRACA - Smithsonian Tropical Research Institute - No schedule was provided for URRACA.

LARGE SHIP SCHEDULES - Don Moller reviewed the large ship requirements for 1997 listing all of the cruises that were time constrained. These constraints caused significant difficulty in scheduling.

KNORR - Woods Hole Oceanographic Institution - KNORR will be operating in the North Atlantic for 1997 which includes a major WOCE cruise. The Talley cruise should include two days for Rossby. The Catapovic ship time funding remains pending.

ATLANTIS - Woods Hole Oceanographic Institution - ATLANTIS is expected to be delivered 24 February 1997. It will undergo outfitting and ready for operation on 2 June. A total of 206 operating days are scheduled which include 198 funded days. There are 88 ALVIN dives planned and 32 days with AMS 120. The schedule starts in the Atlantic and moves to the Pacific with work off San Diego then south to the northern and southern EPR. A Post Shakedown Availability (PSA) is required before the end of April 1998.

THOMPSON - University of Washington - Robert Hinton provided the schedule for THOMPSON. The ship will sail in early January 1997 for the western Pacific for the Fryer and Derbyshire work then returning to Seattle in May. The NOAA work originally scheduled will go to BROWN. A schedule of 290 days is expected.

REVELLE - Scripps - The schedule of REVELLE was presented by Rose Dufour. The recent addition of Urabe and Lutz cruises permits an efficient way to work to Valparaiso for the Lonsdale cruise. This positioned REVELLE for Mix then north for the NOAA Weller work. Timing for the Weller cruise will need coordination.

MELVILLE - Scripps - MELVILLE departed 8 September for work in the south eastern Pacific then proceeding around the world from west to east. The ship will pick up the moorings of Nowlin and then Luther. After returning to the U. S. MELVILLE will be available for the NAVO work in the Gulf of Alaska.

MAURICE EWING - Lamont Doherty Earth Observatory - EWING's schedule was provided by Mike Rawson. The ship is planning a maintenance period in the Gulf Coast completing the end of March 1997. EWING can then be available for the NAVO work. After Atlantic cruises the ship will transit the Panama Canal completing the year in the Pacific.

Questions came up during the meeting as to the scheduling process. Scheduling was particularly dynamic during the summer with many cruises changing ships several times. Scientists expressed to their program managers their dissatisfaction with the process. The year was particular active due to the late additions of some cruises and the late funding decisions of others. The Ship's Scheduling Committee adjourned while a smaller group deliberated the ramifications of these changes and to further wrestle with the scheduling process as it exists.

Ship Scheduling Review

National Science Foundation, Room 730
4201 Wilson Boulevard
Arlington, VA

September 10, 1996

The Ship Scheduling Review Group met at 0800 10 September to review the deliberations of the UNOLS Ship Scheduling Committee meeting of 9 September. Present were Don Moller, SSC Chair; Robert Hinton, SSC Vice Chair; Dolly Dieter, NSF; Steve Piotrowicz and Beth White, NOAA; Ken Johnson, UNOLS Chair; and Jack Bash, UNOLS.

Below are comments resulting from the meeting. They are presented in the order addressed during the 9 September Scheduling meeting. Most issues had been resolved prior to the meeting with the exception of the NAVOCEANO work and the schedules of MELVILLE, REVELLE and EWING. The NAVOCEANO work will be discussed in the ship write ups then summarized at the end.

ALPHA HELIX - The 161 day schedule appears fine as presented. It is understood that funding decisions from OPP will come later with changes likely. NOAA has cruises scheduled for WECOMA that could possibly be accommodated by ALPHA HELIX. A justification of ship selection by NOAA is anticipated.

MOANA WAVE - Additional days must be added to the schedule to accommodate the Phipps-Morgan deployment cruise. The Duennebier work is funded by NSF facilities not the instrumentation section of NSF.

CLIFFORD BARNES - A good schedule of 134 days was presented for BARNES.

WECOMA - A justification of the NOAA FOCI work aboard WECOMA is anticipated.

POINT SUR - POINT SUR has scheduled the February portion of the NAVO work. The Review Group believes that science would be best served by having both portions of the cruise (Feb and Aug) on the same ship. This would only work if NEW HORIZON could take POINT SUR cruises freeing that ship to complete both portions of the work. This needs to be investigated and the cost implication evaluated. If greater costs are incurred by NSF this exchange will not be acceptable. If the swap is not feasible then two different platforms will be the only way to accomplish both portions of this project.

ROBERT SPROUL - A possibility of four weather days could be included on the Simenstad cruise not eight. Weather days should only be used if needed and not converted into science days.

NEW HORIZON - See comments above concerning the coordination of the NAVO work with POINT SUR.

PELICAN - An ambitious and optimistic 271 days has been scheduled. It is likely that the National Data Buoy Center Program work will be significantly reduced. The NAVO work is triple booked on PELICAN, GYRE and LONGHORN. The Review Group believes that both PELICAN and GYRE are capable of doing the work and the decision may come down to cost. It is recommended that NAVO perform a ship check and assess which of these two ships is preferred for their work taking into account the differences in day rate. It is understood that if PELICAN is selected LUMCON will work with U Texas to organize the technician support.

LONGHORN - The Whitledge cruise remains pending. The Review Group believes that both PELICAN and GYRE are better suited for the NAVO work - see comments above.

GYRE - Funding for the Dunlap/Bryant work needs to be resolved. See comments above with respect to the NAVO work. The Rowe-REU work remains pending.

COLUMBUS ISELIN - No schedule.

CALANUS - No comment.

SEWARD JOHNSON - The coordination between Molinari, Leaman and Richardson is necessary to resolve the South Atlantic work. More consolidation is necessary. Transit costs between NSF and NOAA will need to be shared.

EDWIN LINK - The June Molinari work should be 10 not 22 days.

SEA DIVER - The LaPointe work has been declined. For the integrity of the science it is the view of the Review Group that both legs of the NAVO work should remain on one ship. Because CAPE HATTERAS is able to schedule both legs and is a more capable ship to do the work the NAVO project should go to that ship.

BLUE FIN - No schedule presented.

CAPE HATTERAS - The Ledwell work should be listed as ONR not NSF. A sharing of the transit costs between NSF and ONR should be worked out. Check the timing of the Collins work to ensure it fits with Collins on EWING. The Gettrust work is still pending. Note the comments above (SEA DIVER) concerning the NAVO work.

CAPE HENLOPEN - Good schedule - no comment.

WEATHERBIRD II - A light schedule, no comment

ENDEAVOR - The multiple ship work with Morrison could create a timing problem for the cruise. ENDEAVOR and OCEANUS have well integrated schedules to accommodate the GLOBEC (NSF) CM&O (ONR) and PRIMER (ONR) work.

OCEANUS - A tight schedule with mostly GLOBEC work through August.

LAURENTIAN - The Jude cruises have been declined which leaves LAURENTIAN with a very light schedule. Coordination with NOAA's HALCYON for future operations should be considered.

URRACA - No schedule available.

Large Ships - The schedules of the large ships are driven by several programs which have serious constraints.

KNORR - The ship will remain in the Atlantic for the year. Investigate adding two days to the Talley transit to accommodate Rossby. Silva should be considered for 1998.

ATLANTIS - The Schedule presented may be significantly modified if the ship can do its' PSA early which frees up an open end for the southern EPR programs. DESSC should consider when is the best time to marry the ROV system to ATLANTIS. This will have an impact on future work. The ATLANTIS schedule is unable to accommodate the funded Karson and Wirsen/Taylor work in the Pacific.

THOMPSON - The NOAA O'Clock work will go aboard BROWN. The port time in the NAVO program was removed reducing the charged time from 18 to 14 days. A healthy 291 day schedule remains. (see note in REVELLE comments re HOTS)

REVELLE - A Urabe/Lutz cruise has been added to bridge the transit to the South Pacific for the Lonsdale cruise. REVELLE will do the Mix work then Weller. A resolution is necessary concerning the loading port for the Weller cruise. Is Callao acceptable? REVELLE will do the Tanner Banks SeaBeam survey for NAVO. Stephens has been moved to September. REVELLE or THOMPSON (depending on the month available) could be available for a HOTS cruise.

MELVILLE - After MacDonald/Haymon MELVILLE will proceed to Cape Town sailing west to east. The Nowlin moorings will be picked up first followed by Luther's moorings. The ship could complete Christie's work if funds are available (very tentative). After Chave in the mid-Pacific and an overhaul in San Diego MELVILLE is available for the NAVO gravity work in the Gulf of Alaska. Ninety days have been

scheduled, however, this could be extended if needed. The ship completes the year with Langmuir at 9°N.

EWING - After an extended maintenance period EWING will be available for the NAVO work New York to Jacksonville. EWING must resolve the deck space and power requirements of NAVO. The Kent/Barton funding needs to be resolved. EWING will be available in September for the NAVO Seamap C/Remus work. The September start time must be acceptable to NAVO.

The following is a summary of the 11 NAVOCEANO projects:

Priority #1- Atlantic - Continental Margin Slope Stability Study.
EWING - April-May - Must check deck space and power requirements.

Priority #2 - ODISTA 23 Survey.
THOMPSON - 31 July - 13 August

Priority #3 - Seamap C/REMUS survey of Onslow Bay.
EWING - 3-27 Sept - Must check date acceptability.

Priority #4 - Southern California Offshore Range Survey.
REVELLE - 26 May-2 Jun - SeaBeam Survey
NEW HORIZON - 6 Jun-20 Jun - Side scan
- - Sampling

Priority #5 - NE Pacific Gravity Surveys.
MELVILLE - 22 Jun-19 Sept - Gravity.
(Could expand this work.)

Priority #6 - Cape Lookout to Mayport.
CAPE HATTERAS - 17 Feb-23 Mar, 25 Aug-28 Sep.

Priority #7 - Galveston, TX to Corpus Christi - NAVO ship check requested.
Option #1 - PELICAN - 10-22 Feb, 1-13 Aug.
Option #2 - GYRE - 1-13 Feb, 1-13 Aug.

Priority #8 - San Diego to Port Hveneme.
NEW HORIZON- 25 Feb-14 Mar, 28 Aug-14 Sep.

Priority #9 - Virginia Beach to Long Beach, NY.
CAPE HENLOPEN - 12 Feb-4 Mar, 21 Aug-10 Sep.

Priority #10 - San Francisco to Monterey, CA.
POINT SUR - 11-21 Feb.
NEW HORIZON - 15-16 Aug.

Priority #11 - Straits of Juan de Fuca to Columbia River.
WECOMA - Feb.
THOMPSON - Aug.
Neither has been scheduled, however, the schedules of the respective ships can accommodate the science.

APPENDIX I

AGENDA

UNOLS SHIP SCHEDULING COMMITTEE MEETING

MEETING: UNOLS Ship Scheduling Committee Meeting

DATE: 9 September 1996

PLACE: National Science Foundation, Room 1235
4201 Wilson Boulevard
Arlington, VA

TIME: 0830 Hrs.

The Ship Scheduling Committee meeting will be called into session by Don Moller, Chair.

AGENCY PRESENTATIONS. Representatives from NSF, ONR and NOAA will provide scheduling guidance, science program ship requirements and priorities, science funding decisions, ship operation funding outlook and related matters for the 1997 scheduling year.

NAVAL OCEANOGRAPHIC OFFICE. Representatives from NAVOCEANO will give a briefing on the operational requirements of the Navy programs recently presented for scheduling on board UNOLS vessels during 1997.

REVIEW AND UPDATE SCHEDULES. Each scheduler will present and update their respective ship(s) schedule and cost information. View graph(s) for this presentation are recommended.

IDENTIFY CONFLICTS AND UNSOLVED ISSUES. There will be a discussion of cruises with scientific and operational conflicts, double booked cruises, and unscheduled programs. (Note: We will attempt to account for all cruises on the inventory list distributed by the UNOLS Office.)

COSTS. The UNOLS Office will provide a summary of projected cost figures for vessel operations in CY-'97.

ELECTIONS. The terms of both the Chair and co-Chair of the Ship Scheduling Committee of UNOLS expire at the end of 1996. Nominations for the positions will be solicited from the floor. These are two year terms ending in 1998. A vote will follow closing of nominations.

GENERAL DISCUSSION. There are significant changes occurring in the environment in which the UNOLS Fleet operates. Projected funding reductions, expansion of the partnerships with NOAA and NAVOCEANO, an increase in the number of PIs from non-UNOLS academia, an increase in the number of large multi-ship, multi-year programs and changes in the very nature of the science programs themselves all directly affect the way the Fleet is utilized and scheduled. There will be a discussion of the effect that these and other changes are having on the UNOLS ship scheduling process. Discussion of procedural changes, if any, necessary to improve responsiveness to the scientist user and to attain cost effective efficient utilization of the Fleet.

PRE-MEETING ACTION. All ship's schedules should be posted on the OCEANIC bulletin board. Cost figures in the following format for both 1996 and 1997 should be passed to the UNOLS Office no later than 4 September 1996.

1996	NSF	NAVY	OTHER	TOTAL	DAY RATE
SHIP DAYS					
COST $K					

1997	NSF	NAVY	OTHER	TOTAL	DAY RATE
SHIP DAYS					
COST $K					

Costs for 1996 should be your latest projection. Costs for 1997 should be realistic estimates. (over)

WHAT TO BRING TO THE MEETING:

1. View graph(s) to illustrate your 1997 schedule.
2. View graph(s) of the cruise track for 1997. (A hard copy for the record is requested.)
3. An extra copy of UNOLS Ship Time Request forms not on file at the UNOLS Office.

APPENDIX II

Ship Scheduling Meeting Participants - 9/9/96

Name	Institution/Organization	Phone/Fax/E-mail
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APPENDIX III

SUMMARY OF SHIP USE AND COSTS

YEAR: 1996

As of: 10/9/96

	NSF		NAVY		OTHER		TOTAL		DAILY
SHIP/CLASS	DAY	$	DAY	$	DAY	$	DAY	$	RATE
R. REVELLE	18	288	6	96	74	1,184	98	1,568	16,000
MELVILLE	291	4,423	3	46	3	46	297	4,515	15,202
KNORR	267	4,326	0	0	12	194	279	4,520	16,200
ATLANTIS II	78	1,552	1	20	14	278	93	1,850	19,890
EWING	300	4,695	0	0	4	63	304	4,758	15,651
T.G. THOMPSON	164	2,658	10	162	74	1,199	248	4,019	16,208
MOANA WAVE	109	1,459	0	0	36	482	145	1,941	13,400
CLASS II	1,227	19,401	20	324	217	3,446	1,464	23,171	- -
AVE: (7)	175	2,772	3	46	31	492	209	3,310	- -
EDWIN LINK	68	544	43	344	76	608	187	1,496	8,000
ENDEAVOR	84	1,124	48	642	24	321	156	2,087	13,378
OCEANUS	73	865	63	747	42	498	178	2,110	11,850
GYRE (a)	0	0	0	0	229	1,464	229	1,464	6,300
ISELIN (c)							0	0	NA
NEW HORIZON	149	1,326	6	53	35	312	190	1,691	8,900
SEWARD JOHNSON	208	1,872	71	639	26	234	305	2,745	9,000
WECOMA	102	1,216	85	1,013	10	119	197	2,348	11,915
CLASS III	684	6,947	316	3,438	442	3,556	1,442	13,941	- -
AVE: (8)	86	868	40	430	55	445	180	1,743	- -
PELICAN	23	83	3	11	154	556	180	650	3,611
LONGHORN	71	284	20	80	37	148	128	512	4,000
POINT SUR (b)	46	299	50	325	40	260	136	884	6,500
CAPE HATTERAS (c)							0	0	NA
ALPHA HELIX	27	405.1	0	0	46	500	73	905	12,399
R. SPROUL	91	467	41	210	60	308	192	985	5,130
CAPE HENLOPEN	158	828	31	162	0	0	189	990	5,241
WEATHERBIRD II	148	986	22	147	0	0	170	1,132	6,660
SEA DIVER	57	228	32	128	45	180	134	536	4,000
CLASS IV - TOTAL	621	3,580	199	1,063	382	1,952 0	1,202	6,594	- -
AVE: (9)	69	398	22	118	42	217	134	733	- -
BLUE FIN	101	240	0	0	0	0	101	240	2,376
LAURENTIAN	42	185	0	0	10	44	52	229	4,404
BARNES	61	85	0	0	23	32	84	117	1,390
CALANUS	27	87.8	30	97.6	13	42.3	70	227.7	3,253
CLASS IV TOTAL	231	598	30	98	46	118	307	814	- -
AVE: (4)	58	149	8	24	12	30	77	203	- -
Fleet Total	2,763	30,525	565	4,922	1,087	9,072	4,415	44,520	- -
AVE: (28)	99	1,090	20	176	39	324	158	1,590	- -

NOTES:
a. Daily rate changed to $7,800 for November cruises.
b. Includes 12 NPS (CNOC) days/$78K.
c. Did not operate in 1996

SUMMARY OF SHIP USE AND COSTS

YEAR: 1997

As of: 10/9/96

	NSF		NAVY		OTHER		TOTAL		DAILY
SHIP/CLASS	DAY	$	DAY	$	DAY	$	DAY	$	RATE
R. REVELLE	147	2,470	0	0	73	1,226	220	3,696	16,800
MELVILLE	193	3,082	0	0	68	1,086	261	4,168	15,969
KNORR	146	2,365	110	1,782	28	454	284	4,601	16,200
ATLANTIS	190	3,135	2	33	14	231	206	3,399	16,500
EWING	315	4,756	0	0	4	60	319	4,816	15,097
T.G. THOMPSON	143	2,104	10	147	163	2,398	316	4,649	14,712
MOANA WAVE	160	2,127	0	0	20	266	180	2,393	13,295
CLASS I/II	1,294	20,039	122	1,962	370	5,721	1,786	27,722	- -
AVE: (7)	185	2,863	17	280	53	817	255	3,960	- -
EDWIN LINK	43	366	47	399.5	122	1,037.0	212	1,802	8,500
ENDEAVOR	118	1,338	90	1,021	0	0	208	2,359	11,341
OCEANUS	166	1,759	36	382	0	0	202	2,141	10,600
GYRE	40	292	26	190	75	547	141	1,029	7,298
ISELIN (b)	0	0	0	0	0	0	0	0	NA
NEW HORIZON	115	1,080	4	37	97	911	216	2,028	9,389
SEWARD JOHNSON	154	1,448	0	0	67	630	221	2,077	9,400
WECOMA	114	1,351	11	130	70	829	195	2,310	11,850
CLASS III	750	7,633	214	2,160	431	3,954	1,395	13,746	- -
AVE: (8)	94	954	27	270	54	494	174	1,718	- -
PELICAN	65	228	40	140	100	350	205	718	3,502
LONGHORN	10	40	42	168	44	176	96	384	4,000
POINT SUR (a)	82	492	61	366	60	360	203	1,218	6,000
CAPE HATTERAS	126	756	119	714	29	174	274	1644	5,999
ALPHA HELIX	125	1,240	0	0	36	357	161	1597	9,917
R. SPROUL	124	667	16	86	0	0	140	753	5,379
CAPE HENLOPEN	88	493	82	459	0	0	170	952	5,600
WEATHERBIRD II	114	886	20	156	0	0	134	1,042	7,775
SEA DIVER	40	180	69	311	0	0	109	491	4,500
CLASS IV - TOTAL	774	4,982	449	2,399	269	1,417	1,492	8,798	- -
AVE: (9)	86	554	50	267	30	157	166	978	- -
BLUE FIN (b)	0	0	0	0	0	0	0	0	NA
LAURENTIAN	67	302	0	0	10	45	77	347	4,500
BARNES	68	99	2	3	28	41	98	143	1,459
CALANUS	66	218	12	40	24	79	102	336.6	3,300
URRACA (c)	0	0	0	0	0	0	0	0	NA
< CLASS IV TOTAL	201	618	14	43	62	165	277	826	- -
AVE: (5)	40	124	3	9	12	33	55	165	- -
Fleet Total	3,019	33,273	799	6,563	1,132	11,257	4,950	51,093	- -
AVE: (29)	104	1,147	28	226	39	388	171	1,762	- -

NOTES:
a. Includes 29 NPS (CNOC) days/$174.
b. Not scheduled to operate in 1997.
c. Cost have not yet been determined.

APPENDIX IV

1997 CRUISE REQUESTS — 3 SEP 1996

PI	INSTITUTION	AREA	SHIP REQUESTED	OPTIMUM 1997 DATES	SOURCE/ FUNDING	DAYS
Amerman, J	TAMU	NAe	WEATHERBIRD II	FEB	NSF/BIO	12
Badiey, M	UDEL	NAe	CAPE HENLOPEN	AUG/SEP	ONR	10
Bailey, T	WHOI	NA9	SEWARD JOHNSON	MAY	NSF/BIO	12
Banse, K	UW	NP9	BARNES	SEP	NSF/BIO	20
Banse, K	UW	NP9	MEDIUM	FALL	NSF/BIO	9
Barth, J	OSU	NA6	ENDEAVOR	AUG	ONR	21
Barton, P	U CAMBRIDGE	NP13	EWING	JAN-MAY	UK-NERC	44
Beardsley, R	WHOI	NA6	ENDEAVOR	FEB	ONR	22
Beardsley, R	WHOI	IN5	MELVILLE/REV	JUN/JUL	NSF/PHY	61
Becker, K	MIAMI	NP9	THOMPSON	SUMMER	NSF/ODP	3
Bellingham, J	MIT	NA4	KNORR/LARGE	SEP/OCT	ONR	10
Blair, N	NC STATE	NA6	LINK 7 SEW J	JULY	NSF/CHEM	16
Block, B	STANFORD	NP9	POINT SUR/SPR	SEP/OCT	NSF/PHYS	14
Blough, N	U MD	NA6	CAPE HENLOPEN	APR & JUL	ONR	10
Bock, E	WHOI	NA6	OCEANUS	MAY	NSF/COOP	21
Bonatti, E	LDEO	NA10	ATLANTIS/ALVIN	ANY	NSF/MGG	30
Bond, G	LDEO	NA1/2	EWING	JUL/AUG	NSF/	30
Boucot, A	OSU	NA4	EWING/LARGE	JUL/AUG	NSF/MGG	17
Boynton, W	U MD	NA6	CAPE HENLOPEN	QUARTERLY	NSF/LMER	45
Brown, K	SCRIPPS	NP13	MEDIUM	ANY	NSF/MGG	3
Brown, W	UNH	NA6	ENDEAVOR/OCE	JAN/FEB/SEP	NSF/PHY	15
Bruland, K	UCSC	NP9	POINT SUR	JUN/JUL	NSF/CHEM	21
Buesseler, K	WHOI	NA6	CAPE HATTERAS	MAR-AUG	NSF/CHEM	24
Buskey, E	UT	NA9	LONGHORN	JAN/APR/JUL	???	6
Button, D	ALASKA	NP6	ALPHA HELIX	JUN	NSF/BIO	3
Calder, D	RYL ONTARIO	NA6	ATLANTIS/ALVIN	ANY	CANADA	7
Cande, S	SCRIPPS	AN2/3	PALMER	FEB/MAR	NSF/OPP	52
Carbotte,S	LDEO	SP3	EWING	JAN/MAY	NSF/MGG	37
Carbotte, S	LDEO	NP13	ATLANTIS	OCT-DEC	NSF/MGG	36
Cary, S	UDEL	SP3	ATLANTIS	NOV	NSF/BIO	4
Cary, S	UDEL	NP9	ATLANTIS	NOV	NSF/BIO	4
Calapovic/OWEN	WHOI	NA4	OCEANUS/END	SEP	ONR	28
Cary, S.C.	UDEL	NP13	ATLANTIS/ALVIN	NOV	NSF/BIO	4
Chadwick, W	OSU	NP9	THOMPSON	SUMMER/FALL	NSF/RIDGE	5
Chave, A	WHOI	NP9	KNORR/JASON	SEP	NSF/ARI	22
Chave, A	WHOI	SP6/6A	LARGE	APR	NSF/RIDGE	39
Chave, A	WHOI	NP9	ATLANTIS II	JUN/JUL	NSF/OSIDP	6
Chave, A	WHOI	NP9	ATLANTIS II	OCT/NOV	NSF/OSIDP	6
Chisholm, S	MIT	NA6	OCEANUS/MED	JAN	NSF/BIO	14
Christnesen, J	BIGELOW	NA6	CAPE HATTERAS	JUN-OCT	NSF/CHEM	18
Clark, P	OSU	NP2	LARGE	SUM/FALL	NSF/ATM	28
Cochran, J	LDEO	NP13	EWING	ANY	NSF/RIDGE	36
Cochran, J K	LEDO	IN7/IN11	EWING	DEC	NSF/RIDGW	43
Cochran, K	STONY BROOK	NP12	MOANA WAVE	MONTHLY	NSF/CHEM	1
Coffin, M	UT	NP10/11	EWING	APR-MAY	NSF/ODP	41
Coffin, M	UT	SA6	MELVILLE/LAR	JAN-MAR	NSF/MGG	56
Coffin, M	UT	NP10/11	EWING	APR/MAY	NSF/ODP	41
Collins, C	NPS	NP13	POINT SUR	MAY	NSF/PHY	16
Collins, J	WHOI	NA10	EWING	SPRING	NSF/ODP	36

Collins, J	WHOI	NA6	CAPE HATTERAS	JUN/JUL	ONR	12
Cota, G	ODU	MP5	ALPHA HELIX	JUN/JUL	NSF/OPP	28
Conte, M	WHOI	NA6	WEATHERBIRD II	TBA	NSF/BATS	18
Conte, M	WHOI	NA6	WEATHERBIRD II	TBA	NSF/RIDGE	6
Cormier, M-H	LDEO	MP13	EWING	SUMMER	NSF/RIDGE	27
Cowan, E	APPALA STATE	MP6	ALPHA HELIX	JUL/AUG	NSF/OPP	14
Cowen, J	HAWAII	MP9	WECOMA	APR	NSF/RIDGE	10
Cowen, R	STONY BROOK	NA9	MEDIUM	APR/MAY	NSF/	30
Cowles, T	OSU	MP9	WECOMA	JUN	NSF/JGOFS	4
Dagg, M	LUMCON	NA9	PELICAN	JUL/AUG	NSF/BIO	10
DeLuca, T	ALASKA	NAI	MEDIUM	AUG	NSF/OPP	30
Delaney, J	UW	MP9	THOMPSON	JUL/AUG	NSF/MGG	36
Deming, J	UW	AR9	POLAR SEA	JUL/AUG	NSF/ARCSS	42
Devol, A	UW	MP13	WECOMA	JUL	NSF/CHEM	25
Devol, A	UW	MP9	BARNES	TBS	NSF/CHEM	12
Dick, H	WHOI	IN4	KNORR	JAN/FEB	NSF/ODP	31
Dickey/Straska	USC	NA6	WEATHERBIRD II	MAR/SEP	NSF/	15
Diebold, J	LDEO	INI	EWING	FALL	NSF/ODP	42
Donat, J	ODU	NA6	CAPE HENLOPEN	FEB/MAR	ONR	11
Dortch, Q	LUMCON	NA9	PELICAN	MAY/JUN	NSF/BIO	15
Dortch, Q	LUMCON	NA9	PELICAN	MONTHLY	NSF/BIO	8
Duncan, R	OSU	MP9	WECOMA/THOMP	JUN/AUG	NSF/ESIE	13
Dunlap, W	TAMU	NAY	GYRE	MAY	NSF/BIO	12
Dunlap, W	TAMU	NA9	GYRE	MAR	NSF/BIOENG	20
Dunlap, W	TAMU	NA9	GYRE	JUL	NSF/BIOENG	15
Dushaw, B	APL/WASH	NP11	MOANA WAVE	APR	NSF/PHY	14
Eckman, J	SKIDAWAY	NA6	BLUE FIN	JUN	NSF/BIO	4
Emerson, S	UW	MP9	BARNES	SUMMER	NSF/CHEM	5
Emerson, S	UW	MP8.9.11	THOMPSON	MAR & AUG	NSF/CHEM	45
Evans, R	WHOI	MP6	MELVILLE	AUG/SEP	NSF/SGG	7
Fairbanks, R	LDEO	MP11/SP1	MOANA WAVE	OCT/NOV	NSF/MGG	53
Felbeck, H	SCRIPPS	MP13	NEW HORIZON	TBA	NSF/BIO	35
Felbeck, H	SCRIPPS	MP13	ATLANTIS/ALVIN	TBA	NSF/BIO	10
Felbeck, H	SCRIPPS	MP9	SPROUL	FALL	NSF/BIO	9
Fisk, G	WHOI	NA6	OCEANUS	MAR	ONR	14
Fornari, D	WHOI	NA6/7	ATLANTIS	JUN	NSF/ONR	17
France, S	UNH	MP13/SP3	ATLANTIS II	FALL	NSF/RIDGE	4
France/Mull	UNH	MP8/11	K-O-K	JUL	NSF/BIO	16
Friedrichs, C	VMI	NA6	CAPE HATTERAS	MAR	NSF/MGG	10
Fuhrman, J	USC	MP9	POINT SUR	JUN-AUG	NSF/BIO	7
Glynn, P	MIAMI	MP13	URRACA	JUL	NSF/BIO	12
Goldfinger, C	OSU	MP9	REVELLE/MELV	SEP	NSF/MGG	18
Goldfinger, C	OSU	MP9	REVELLE/MELV	SEP	USGS	5
Goff, J	UT	MP9	WECOMA	JUN-SEP	NSF/MGG	32
Green, T	MUSKEGON	GL4	LAURENTIAN	AUG	NSF/TE	5
Green, S	Mich Tech U	GL4	LAURENTIAN	AUG	NSF/COOP	12
Greg, M	UW	MP9	POINT SUR	AUG/SEP	NSF/PHY	9
Hamilton, M	USGS	MP6	ALPHA HELIX	JUN/JUL	NMS	16
Hammond, S	NOAA	MP9	LARGE	AUG/SEP	NOAA	60
Harbison, R	WHOI	NA6	OCEANUS	SEP	NSF/BIO	26
Harbison, R	WHOI	NA6	OCEANUS/ISLEN	JUN/JUL	NSF/BIO	26
Harding, A	SCRIPPS	SP1	EWING	FALL	NSF/MGG	13

Hayward, T	SCRIPPS	NP8/NP12	THOMPSON	MAR & AUG	NSF/BIO	60
Herbers, T	NPS	NA6	CAPE HATTERAS	JUL & DEC	ONR	15
Hebert, D	URI	NA6	ENDEAVOR	MAY	ONR	4
Hogg, N	WHOI	NA6	OCEANUS	AUG/SEP	ONR	14
Holt, R	NOAA/NMFS	AN9	LARGE	JAN-MAR	NOAA	70
Honjo, S	WHOI	SP4/7/AN6	LARGE	APR	NSF/BIO	30
Houde, E	U MD	NA6	CAPE HENLOPEN	JUN/JUL	NSF/BIO	15
Houghton, R	LDEO	NA6	ENDEAVOR	MAY	NSF/	12
Hunt, G	UCI	NP5	ALPHA HELIX	AUG-SEP	NSF/OPP	31
Huyer/Wij	OSU	NP9	WECOMA	JUL&NOV	ONR	4
Ingram, Carey	NAVO	NA6	LARGE	JUN	NAVO	60
Jacobs, D	SCRIPPS	SA1	MEDIUM	MAR	NSF	4
Jahnke, R	SKIDAWAY	NA6/10	LARGE	MAR	NSF/CHEM	2
Jenkins, W	WHOI	NP12	THOMPSON	TBA	NSF/CHEM	37
Johns, W	RSMAS	IN1	LARGE/MEDIUM	FEB & SEP	ONR	28
Johnson, P	UW	NP9	KNORR/ALVIN	LATE 97	NSF/MGG	39
Johnson, P	UW	NP9	BARNES	SPRING	NSF/OCNTEC	2
Johnson, P	UW	NP9	REVELLE	SUMMER	NSF/OCNTEC	2
Johnson, P	UW	NA10/SA1	ATLANTIS/ALVIN	ANY	NSF/MGG	26
Johnson, P	UW	NP6.9	THOMPSON	SUMMER	NSF/MGG	33
Johnson, P	UW	NP9	THOMPSON/JASON	SUMMER	NSF/MGG	2
Johnson, P	UW	NA10/SA1	ATLANTIS/ALVIN	LATE 97	NSF/MGG	23
Joseph, Dev	NAVO	NA6	MEDIUM/LARGE	NOV	NAVO	29
Joye, S	TAMU	NA9	GYRE	JAN & JUL	NSF/CHEM	18
Joyce, T	WHOI	NP13	MEDIUM	AUG	NSF/MGG	14
Joyce, T	WHOI	NA6/9	KNORR/ATLANTIS	MAY/JUN	NSF/ACCE	47
Jude, D	UMICH	GL4	LAURENTIAN	APR/MAY	NSF/EPA	20
Jumars, P	UW	NP6	BARNES	TBA	NSF/BIO	16
Karl, D	HAWAII	NP12/9	MOANA WAVE	JAN/FEB/MAR	NSF/CHEM	84
Karlin, R	U NEVADA	NP9	BARNES	SPRING/SUM	NSF/MGG	14
Karsten, J	HAWAII	SP6	MELVILLE	DEC96/FEB97	NSF/MGG	32
Karsten, J	HAWAII	NP9	ATLANTIS/ALVIN	JUN-SEP	NSF/MGG	20
Keil, R	UW	NP9	BARNES	3 DAYS/MO	NSF/CHEM	18
Kent, G	WHOI	NP13	EWING	JAN-MAY	NSF/RIDGE	42
Kirchman, D	DEL	NA6	CAPE HENLOPEN	APR	NSF/CHEM	8
Klein, M	DUKE	SP6A	MELVILLE	AUST SUM	NSF/MGG	16
Klinkhammer,G	OSU	NP9	WECOMA	MAY	ONR	6
Knap, A	BBSR	NA6	WEATHERBIRD II	THRU-OUT	NSF/PHY	26
Knap, A	BBSR	NA6	WEATHERBIRD II	THRU-OUT	NSF/PHY	70
Kunze, E	UW	NP9	POINT SUR	AUG-OCT	NSF/PHY	
Langseth, M	LDEO	NP13	EWING	JUN-APR	NSF/ODP	30
Lasker, H	SUNY BUFFALO	NA9	URRACA	JUL/AUG	NSF/BIO	8
Lawver, L	UT	SASA	ATLANTIS II	JAN/FEB	NSF/OPP	30
Lawver, L	UT	NA9	LONGHORN	WINTER96/97	NSF/MGG	13
Ledwell, J	WHOI	SA1	MEDIUM	JAN-MAR	NSF/PHY	36
Ledwell, J	WHOI	NA6	OCEANUS	MAY	NSF/PHY	15
Lentz, S	WHOI	NA6	OCEANUS	MAY/JUN	ONR	15
Liechty, J	ONR	NA6/9	SEA DIVER	JAN	ONR	7
Lilley, M	UW	NP6/9	LARGE	TBA	NSF/MGG	15
Luther, D	HAWAII	IN8	MEL/THOM/KNORR	JAN	NSF/PHY	29
Manahan, D	USC	NP13	ATLANTIS	OCT	NSF/RIDGE	4
Mann, P	UT	SP9A	MELVILLE	JAN	NSF/MGG	37
Marmorino, G	NRL	NA6	CAPE HENLOPEN	MAY	NRL	9
Martin, W	WHOI	NA6	SEWARD JOHNSON	JUL	NSF/CHEM	14

Martin, W	WHOI	NA10	LARGE	JUN-OCT	NSF/CHEM	25
Martin, W	WHOI	NA6	MEDIUM/OCEANUS	APR/MAY	NSF/CHEM	5
McManus, J	OSU	SP3A/6A/7A	MELVILLE	WINTER	NSF/MGG	3
McNutt, M	MIT	NP11/12	EWING	APR-OCT	NSF/MGG	28
McCleave, J	U MAINE	NA6,9	MED/LARGE	FEB/JUN/SEP	NSF/BIO	55
McClintock, J	U ALABAMA	NA6	WEATHERBIRD II	JUN	NONE	ANC
McCorkle, D	WHOI	NA6	C HATTERAS/OCE	JUL AUG	NSF/MESH	14
McCorkle, D	WHOI	NP10/11	LARGE/WAVE	OCT/NOV	NSF/MGG	15
McKee, B	LAMCON	NA9	PELICAN	MAR & OCT	NSF/CHEM	24
McManus, J	OSU	SP3A,6A,7A	MELVILLE	WINTER 96/7	NSF/CHEM	3
Messing, C	NOVA	NA9	LINK & SEW J	SPRING	NSF/PAL	6
Michaels, A	BBS	NP9	POINT SUR	JUN/JUL	???	20
Miller, J	ODU	SA3A/3,1	ANY	ANY	NSF/PHY	ANC
Mitchell, D	MD ANDS CC	NA9	PELICAN/GYRE	JUN	NSF/BIO	14
Mitchell, G	SCRIPPS	NP9	NEW HORIZON	TBA	ONR	ANC
Mix, A	OSU	SASA	MELVILLE	WINTER96/7	NSF/ODP	38
Molinari, R	AOML	SA1/SA2	LARGE	SUM/FAL	NOAA	70
Molinari, R	AOML	NA9	MEDIUM	SEP	NOAA	20
Montagna, P	UT	NA9	LONGHORN	JUN	EPA	4
Montoya, J	HARVARD	NP9/13	POINT SUR	MAY	NSF/BIO	30
Montoya, J	HARVARD	NP9/13	POINT SUR	OCT/NOV	NSF/BIO	30
Moore, G	HAWAII	NP12	EWING	MAY	NSF/MGG	19
Moore, T	U MICH	NP9/11/12	EWING	MAY?JUN	NSF/MGG	42
Morgan/Blacke	SCRIPPS	IN8/IN11	MELVILLE	FEB	NSF/GEO	35
Morgan/Gabr	SCRIPPS	NP12	REVELLE	APR	NSF/GEO	6
Morgan, JP	SCRIPPS	NP12	SMALL/MEDIUM	TBA	NSF/GEO	29
Mottl, M	HAWAII	SP3	LARGE	NOV	NSF/MGG	48
Mourn, J	OSU	NP9	WECOMA	JUL/OCT	NSF/PHY	10
Mullineaux, L	WHOI	NP1	ATLANTIS/ALVIN	OCT	NSF/RIDGE	14
Murray, J	UW	NP9	BARNES	TBA	NSF/CHEM	25
Murray, J	UW	NP9	BARNES	TBA & APR	NSF/CHEM	17
Murray, J	UW	NP9	POINT SUR	APR	NSF/CHEM	10
Nagihara, S	U HOUSTON	NP12	EWING	JUN	NSF/MGG	15
Natland, J	MIAMI	NP13	MELVILLE/KNORR	JAN/FEB	NSF/RIDGE	19
Nelson, J	SKIDAWAY	NA6	BLUEFIN	MAR-NOV	NSF/BIO	20
Nittrouer, C	STONY BROOK	NP9	WECOMA	SUMMER	ONR	16
Nowlin/Whitw	TAMU	IN3/IN4	LARGE	JAN-APR	NSF/PHY	35
Olson/Sosik	WHOI	AN6/7	LARGE	AUST SUM96	NSF/JGOFS	30
Olson/Sosik	WHOI	AN6/7	LARGE	AUST SUM97	NSF/JGOFS	45
O'Neil, C	NAVO	NP6/9	LARGE	MAY-OCT	NAVO	153
O'Neil, C	NAVO	NP9	LARGE	SPRING/SUM	NAVO	21
Oppo, D	WHOI	SA1/3A	KNORR	ANY	NSF/MGG	28
Overland, J	NOAA	NP5	MEDIUM	MAY/JUN	NOAA	30
Overland, J	NOAA	NP5	MEDIUM	JUN/JUL	NOAA	30
Paffenofer, G	SKIDAWAY	NA6	BLUE FIN	TBA	NSF/BIO	12
Paffenofer, G	SKIDAWAY	NA6	CAPE HATTERAS	MAY/JUN	NSF/BIO	25
Paul, J	U SO FL	NA9	PELICAN	JUL	NSF/BIO	12
Peltzer, E	WHOI	NP12	MOANA WAVE	FALLL	NSF/CHEM	1
Perfit, M	U FL	SP1/IN5	KNORR/ALVIN	SUMMER	NSF/MGG	24
Perry, M J	UW	NP9	BARNES	APR	ONR	2
Perry, M J	UW	NP9	BARNES	SEP	SEA GRANT	3
Persson, O	NOAA	NA5	LARGE	JAN/FEB	NOAA	30
Pisias/Mix//We	OSU	SP7/AN6	THOMPSON	AUST SUMMER	NSF/JGOFS	77
Pickart, R	WHOI	NA6	END/OCEANUS	FEB	ONR	22

Pickart, R	WHOI	NA6	END/OCEANUS	DEC	NSF	1
Pickart, R	WHOI	NA4	LARGE (ICE ST)	FEB/MAR	NSF/ONR	40
Pineda, J	WHOI	NP9	SPROUL	JUL	NSF/GEO	25
Pillsbury, R	OSU	IN5/4/3	MELVILLE	JUN	NSF/WOCE	35
Purdy, M	WHOI	NP12	REVILLE	JAN	NSF/ODP	6
Richardson, P	WHOI	SA2	MEDIUM/LARGE	SPRING	NSF/	25
Reid, P	MIAMI	NA9	CALANUS	MAR/APR	???	42
Reynolds, L	NAVO	NP9	LARGE	SEP	NAVO	13
Riggs, S	EAST CAR U	NA6	CAPE HATTERAS	JUL/AUG	NSF/MGG	24
Rossby& Talley	URI	NA4	KNORR	MAY	NSF/PHY	2
Rowe, G	TAMU	NA9	GYRE	JUN	NSF	10
Ryan, W	LEDO	NA4	KNORR/EWING	ANY	NSF/MGG	20
Sanford, T	UW	NP9	WECOMA/MED	AUG	NSF/PHY	18
Santschi, P	TAMU	NA9	GYRE	MAR & JUL	NSF/CHEM	14
Sawyer, J	RICE	NA7	EWING	MAY/AUG	NSF/MGG	29
Seppere, J C	UW	NA6	KNORR	ANY	NSF/RIDGE	35
Seppere, J C	UW	NA6/10	OCEANUS	SUMMER	NSF/RIDGE	37
Sharp, J	UDEL	NA6	CAPE HENLOPEN	JUL	NSF/REU	5
Sharp, J	UDEL	NA6	CAPE HENLOPEN	TBA	NSF/	20
Shaw, T	U SC	NA6	CAPE HATTERAS	JUL	NSF/MGG	4
Sherr/Sherr	OSU	NP9	WECOMA	JUL	NSF/BIO	23
Siebenaller, J	LSU	NP9	WECOMA	MAY	NSF/BIO	10
Silva, A	URI	NP9	KNORR	ANY	NSF/GEO	207
Simenstad, C	UW	NP9	BARNES	FEB	NSF/LMER	15
Sharp, J	UDEL	NA6	CAPE HENLOPEN	JUL	NSF/REU	1
Sharp, J	UDEL	NA6	CAPE HENLOPEN	??	NSF/	5
Silver, M	UCSC	NP9	POINT SUR	JUL	NSF/BIO	6
Slattery, M	U MISS	NP5	ALPHA HELIX	JUN/JUL	NSF/ARCTIC	28
Smith, D	WHOI	NP12	ATLANTIS/ROV	SEP97-MAR98	NSF/MGG	33
Staanes, K	ALASKA	NP6	ALPHA HELIX	SUMMER	NSF/POLAR	10
Stanton, T	WHOI	NP9	MEDIUM	AUG	NSF/BIO	6
Steinberg, D	BBRS	NA6	WEATHERBIRD II	NOV	NSF?	ANC
Steinberg, R	UW	NP6	BARNES	MAR	NSF/CHEM	2
Stephen, R	WHOI	NP12	REVELLE	JAN	NSF/ODP	32
Stephen, R	WHOI	NP12	REVELLE	JAN/JUN	NSF/ODP	49
Steinberg, D	BBSR	NA6	WEATHERBIRD II	APR/JUN	???	10
Sternberg, R	UW	NP6	BARNES	MAR	NSF/MGG	4
Strom, S	WWU	NP9/13	POINT SUR	MAR/APR	NSF/BIO	30
Strom, S	WWU	NP9/13	POINT SUR	OCT/NOV	NSF/BIO	30
Szmant, A	MIAMI	NA9	SEA DIVER/CAL	APR&AUG	NSF/BIO	12
Takizawa, T	JAMSTEC	NP6	ALPHA HELIX	JUN	JAMSTEC	20
Talley, L	SCRIPPS	NA1-7	LARGE	MAY	NSF/GEO	30
Taylor/Wirsen	WHOI	NP12	ATLANTIS/ALVIN	NOV/DEC	NSF/ECO	2
Taylor/Doherty	WHOI	NA6	WEATHERBIRD II	FEB/MAY	NSF/TECH	4
Tebbens, S	U SO FL	SP6	MELVILLE	AUST SUM	NSF/MGG	46
Thomas/Townsen	U MAINE	NA6	MEDIUM	JUL	NSF/BIO	10
Tivey, M	WHOI	NP9	ATLANTIS II	JUN/SEP	NSF/RIDGE	5
Tolstoy/For/Or	SCRIPPS	NP13	LARGE/JASON	NOV/DEC	NSF/RIDGE	5
Tolstoy/For/Or	SCRIPPS	NP13	NEW HORIZON	NOV/DEC	NSF/RIDGE	2
Toole, J	WHOI	NA9/10	LARGE	AUG	???	28
Toomey, D	U OR	NP13	EWING	SEP	NSF/RIDGE	34
Torres, J	U SO FL	NA9	PELICAN	JUN/JUL	NSF/BIO	21
Trefry, J	FIT	SP3	KNORR/ALVIN	AUSTRAL SUM	NSF/CHEM	15
Trehu, A	OSU	NP9	ANY (SEABEAM)	AUG	NSF/MGG	10

Turner, R	LSU	NA9	PELICAN	JAN-OCT	[illegible]	[illegible]
Van Dover, C	NURP/ALASKA	NP13	ATLANTIS	FALL	NSF/RIDGE	14
Van Dover, C	NURP/ALASKA	SP3	ATLANTIS	ANY	NSF/BIO	10
Van Geen	LDGO	NP9	POINT SUR/NH	FALL	NSF/MGG	4
Voss, K	MIAMI	NA6	CALANUS	SEP	???	2
Walsh, J	U OF SO FL	NA9	PELICAN	AUG/SEP/OCT	NSF/LMER	30
Ward, B	UCSC	NP9	POINT SUR	JAN/MAR/MAY	NSF/BIO	9
Warren/WHITWTH	WHOI	IN3/4/5	LARGE	TBA	NSF/WOCE	35
Watts, R	URI	NA6/7	ENDEAVOR/OCEA	SEP	NSF/WOCE	13
Webb, S	SCRIPPS	NP9	WECOMA	MAY	NSF/ODP	6
Webb, S	SCRIPPS	NP9	NEW HORIZ/MEL	SUMMER	NSF/MGG	12
Weidemann, A	NRL	NA6	SEWARD JOHNSON	MAY	NRL	16
Weidemann, A	NRL	NA6	EDWIN LINK	APR/MAY	NRL	30
Weller, R	NOAA	NP13	KNORR	APR	NOAA	40
Wilcock, W	UW	NP9	ANY	AUG/SEP	NSF/OCNTEC	1
Wilcock, W	UW	NP9	BARNES	SP/SUM/WINT	NSF/OCNTEC	3
Williams, A	WHOI	NA6	OCEANUS	JAN&APR	ONR	10
Whitledge, T	UT	NA9	LONGHORN	JUL	NSF/REU	12
Yamamoto, T	MIAMI	NP13	REVELLE	OCT	NSF/ODP	5
Young, C	HBOI	NA5	SEWARD JOHNSON	SUMMER	???	20
Young, C	HBOI	NA5	EDWIN LINK	MAY/JUL	???	25
Zafiriou, O	WHOI	NA6	WEATHERBIRD II	MAR	NSF/CHEM	3
Zaneveld, R	OSU	NA6	SEWARD JOHNSON	APR	ONR	21

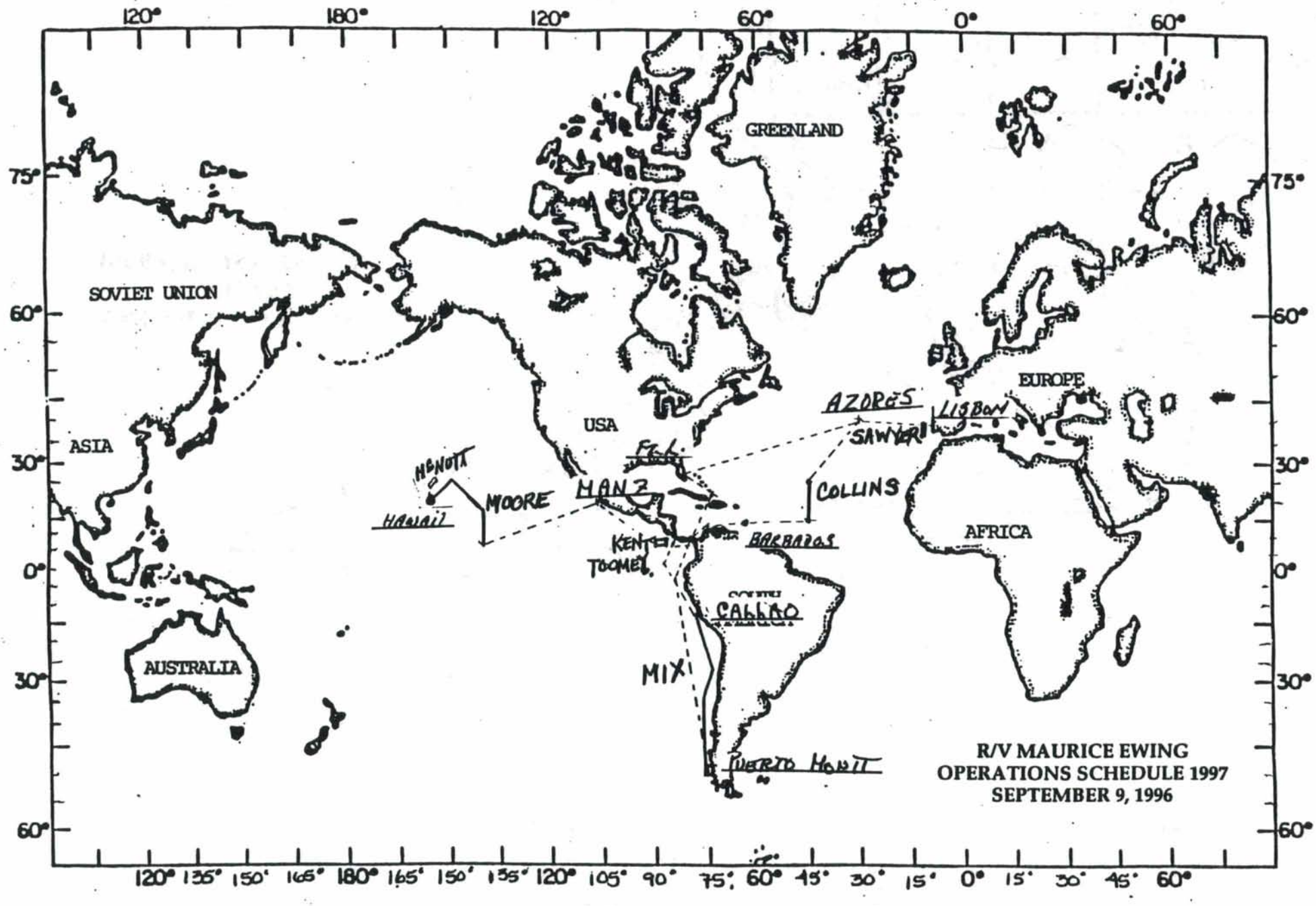
APPENDIX V

1998 SHIP TIME REQUESTS				~~LAST~~ UPDATED 5 SEP96		
PI	INSTITUTION	AREA	SHIP REQUESTED	DATES 98	FUNDING	DAYS
Bailey, T	HBOI	NA9	SEW JOHN/ED LINK	MAY	NSF/BIO	14
Ballard, R	INST. FOR ENVI	NP13	ATLANTIS/ALVIN/J	FEB-MAR	ONR	21
Becker, K	MIAMI	NP9	ATLANTIS/ALVIN	SUMMER	NSF/ODP	6
Becker, K	RSMAS	NP9	ATLANTIS/ALVIN	SUMMER	NSF/ODP	8
Bellingham, J	MIT	NA4	KNORR	JAN	ONR	12
Bellingham, J	MIT	NA4	LARGE	APR	ONR	7
Benfield, M	WHOI	NA6	CAPE HATTERAS	MAR-JUN	NSF/BIO	28
Bernhard, J	WADSWORTH CENT	NP9	NEW HORIZON	MAY	NSF/MGG	6
Bernhard, J	ALBANY	NA9	SEWARD JOHNSON	JUN	NSF/MGG	20
Block, B	STANFORD	NP9	POINT SUR	SEP	NSF/PHY	16
Boynton, W	CHESAPEAKE BIO	NA6	CAPE HENLOPEN	MAR-OCT	NSF/LME	39
Boynton, W	CHESAPEAKE BAY	NA6	CAPE HENLOPEN	TBA	NSF/LME	45
Brown, K	SCRIPPS	HP13	ANY	ANY	NSF/MGG	6
Brown, W	UNH	NA6	ENDEAVOR/OCEANUS	FEB&MAY	NSF/PHY	10
Brown, W	UNH	NA6	OCEANUS/ENDEAVOR	FEB&MAY	NSF/PHY	10
Buesseler, K	WHOI	NA6	WEATHERBIRD II	MAR/APR	NSF/CHE	8
Buskey, E	TEXAS	NA9	LONGHORN	JUL/OCT	???	4
Button, D	ALASKA	NP6	ALPHA HELIX	JUN	NSF/BIO	3
Cary S.Craig	UDEL	NP9	ATLANTIS/ALVIN	MAY	NSF/BIO	4
Cary, S. Craig	UDEL	NP13/SP3	ATLANTIS/ALVIN	MAY	NSF/BIO	4
Chadwick, W	OSU	NP9	THOMPSON	SUMMER/F	NSF/RID	9
Chave, A	WHOI	NP9	MEDIUM	JUL-SEP	NSF/MGG	5
Chave, A	WHOI	NA4	OCEANUS/ENDEAVOR	AUG	NSF/PHY	26
Christensen, J	BIGELOW	NA6	CAPE HATTERAS	SUMMER	NSF/CHE	14
Coakley, J	OSU	IN2?	LARGE	EARLY 98	???	??
Cochran, J	LDEO	IN10/11	EWING	AUST.SUM	NSF/RID	43
Cota, G	ODU	NP5	ALPHA HELIX	JUN/JUL	NSF/OPP	28
Cowles, T	OSU	NP9	WECOMA	JAN&MAY	NSF/BIO	64
Cutter, G	ODU	NA6	CAPE HATTERAS	FEB	NSF/CHE	7
Dagg, M	LUMCON	NA9	PELICAN	MAY	NSF/BIO	10
Devol, A	UW	NP13	BARNES	TBA	NSF/CHE	6
Devol, A	UW	NP9	BARNES	TBD	NSF/CHE	8
Devol, A	UW	NP9	BARNES	TBA	NSF/CHE	12
Devol, A	UW	NP13	NEW HORIZON	MAR	NSF/CHE	26
Devol, A	UW	NP9	WECOMA	AUG	NSF/CHE	26
Devol, A	UW	NP9	WECOMA	JUL	NSF/CHE	32
Diebold, J	LDEO	SP4	EWING	JAN/FEB	NSF/DYN	23
Dobbs, F	ODU	NA6	CAPE HENLOPEN	FEB/MAR	NSF/CHE	4
Dortch, Q	LUMCON	NA9	PELICAN	JAN-DEC	NSF/BIO	5
Dortch, Q	LUMCON	NA9	PELICAN	EVERY MOS	NSF/BIO	12
Duncan, R	OSU	NP9	WECOMA/THOMPSON	JUN-AUG	NSF/ESI	13
DUshaw, B	UW	NP11	MOANA WAVE	APR	NSF/PHY	8
Emerson, S	UW	NP9	BARNES	TBD	NSF/CHE	5
Fornari, D	WHOI	IN3	ATLANTIS/ALVIN/R	JAN-MAR	NSF/RID	31
Fuhrman, J	USC	NP9	POINT SUR	JUN/JUL/A	NSF/BIO	7
Goldfinger, C	OSU	NP9	REVELLE/MELVILLE	SEP-OCT	USGS	5
Goldfinger, C	OSU	NP9	REVELLE/MELVILLE	SEP-OCT	NSF/MGG	18

Greene, G	MLML	NP13	POINT SUR	JUN	NSF/MGG	21
Harbison, R	WHOI	NA6	MEDIUM	JAN-MAR	NSF/JGO	10
Harbison, R	WHOI	NA6	OCEANUS/ISELIN	JUN/JUL	NSF/BIO	26
Hautala, S	UW	NP9	WECOMA	JAN/MAR/A	NSF/PHY	54
Hautala, S.	UW	NP9	WECOMA	JAN/M/S	NSF/PHY	57
Hickey, B	UW	NA9	SEA DIVER/JOHNSO	FEB	NSF/PHY	11
Hickey, B	UW	NA9	SEA DIVER/JOHNSO	MAY	NSF/PHY	11
~~Hickey, B~~	~~UW~~	~~NA9~~	~~SEA DIVER/SEW JO~~	~~FEB/MAY~~	~~NSF/PHY~~	~~22~~
Houde, E	CHESAPEPAKE BI	NA6	CAPE HENLOPEN	JUN/JUL	NSF/BIO	15
Jahnke, R	SKIDAWAY	SP1/NA10/	LARGE	SEP	NSF/CHE	33
Jahnke, R	SKIDAWAY	NA10/6	MEDIUM (HATTERAS	JUN	NSF/CHE	14
Johnson, Ken	MLML	NP9	WECOMA	JUN & OCT	NSF/CHE	30
Joyce, T	WHOI	NP13	MEDIUM/LARGE	MAR	NSF/MGG	14
Jude, D	U MICH	GL4	LAURENTIAN	JUN/JUL	NSF/EPA	20
Jumars, P	UW	NP6	BARNES	THRU-OUT	NSF/BIO	16
~~Jumars, P~~	~~UW~~	~~NP6~~	~~BARNES~~	~~TBD~~	~~NSF/BIO~~	~~16~~
Karsten, J	HAWAII	NP9	ATLANTIS/ALVIN	JUN-SEP	NSF/MGG	18
Keil, R	UW	NP9	BARNES	TBD	NSF/CHE	36
Klein, E	DUKE	SP6A	MELVILLE/LARGE	AUSTRAL S	NSF/MGG	23
Lasker, H	SUNY BUFFALO	NA9	URRACA	AUG	NSF/BIO	8
Ledwell, J	BIGELOW	SA1	MEDIUM	MAR	NSF/PHY	31
MacDonald, I	TAMU	NP6	ATLANTIS	JUL	NSF/BIO	10
Manahan, D	USC	NP13	ATLANTIS/ALVIN	APR/OCT	NSF/RID	12
Mann, Paul	U TEX	SP6A	MELVILLE	JAN-FEB	NSF/MGG	37
Martin, W	WHOI	NA10/SA1	LARGE	AUG/SEP	NSF/CHE	25
McClintock, J	U ALABAMA	NA6	WEATHERBIRD II	JUN	NSF?	10
Michaels, A	BBSR	NP9	POINT SUR	JUL	NSF/	10
Michaels, A	BBSR	NA6	WEATHERBIRD II	JAN&JUL	NSF/	10
Moffett, J	WHOI	NA6	OCEANUS	AUG	NSF/CHE	15
Morgan, J P	SCRIPPS	NA9	SMALL/MEDIUM	TBA	NSF/GEO	29
Moum, J	OSU	NP9	WECOMA	JUL&OCT	NSF/PHY	10
Mullineaux, L	WHOI	NP1	ATLANTIS/ALVIN	OCT	NSF/BIO	10
Murray, J	UW	NP9	BARNES	TBA	NSF/CHE	5
Murray, J.	UW	NP9	BARNES	TBA	NSF/CHE	10
Murray, James	UW	NP9	POINT SUR	TBA	NSF/CHE	10
Nelson, J	SKIDAWAY	NA6	BLUE FIN	JAN&MAY	NSF/BIO	20
Nelson, J	SKIDAWAY	NA6	BLUE FIN	EVERY 2 M	NSF/BIO	40
Oppo, D	WHOI	SA1-SA3A	KNORR	ANY	NSF/MGG	28
Pawlik, J	UNC WILIMINGTO	NA6	SEWARD JOHNSON	JUN	NSF/BIO	14
Peterson, R	SCRIPPS	NA9	OCEANUS	NOV	NSF?	18
Peterson, R	SCRIPPS	NA10	OCEANUS	FEB	NSF?	20
Proctor, L	FSU	NA6	WEATHERBIRD II	MAY	NSF/BIO	5
Proctor, L	FSU	NA6	WEATHERBIRD II	APR&AUG	NSF/BIO	10
Rowe, G	TAMU	NA9	GYRE	JUN	NSF	10
Scranton,M/Cochran J	STONY BROOK	NA6	CAPE HENLOPEN	MAR/SEP/D	NSF?	21
Sharp, J	UDEL	NA6	CAPE HENLOPEN	JUL	NSF	5
Sharp, J	UDEL	NA6	CAPE HENLOPEN	TBA	NSF/	20
Silver, M	UCSC	NP9	POINT SUR	JUL	NSF/BIO	10
Stanton, T	WHOI	NA6	OCEANUS/MEDIUM	AUG	NSF/BIO	12
Staton T	WHOI	NP9	MEDIUM	AUG	NSF/BIO	6
Steinberg, D	BBSR	NA6	WEATHERBIRD II	APR/JUN	???	10

Steinberg, D	BBRS	NA6	WEATHERBIRD II	APR/JUN	NSF?	10
Szmant, A	MIAMI	NA9	SEA DIVER/CALANU	APR&AUG	NSF/BIO	12
Thomas,A/Townsend,D	U MAINE	NA6	MEDIUM	JUL	NSF/BIO	10
Toole, J	WHOI	NA6	WEATHERBIRD II	MAY&OCT	NSF/OSR	6
Turner, R	LSU	NA9	PELICAN	JAN-OCT	NSF/LME	24
Van Dover, C	ALASKA	SP3	ATLANTIS/LARGE	EARLY 98	NSF/BIO	10
Walsh, J	U OF SOUTH FLA	NA9	PELICAN/CALANUS	NOV/DEC	NSF/LME	30
Ward, B	UCSC	NP9	POINT SUR	EVERY 2 M	NSF/BIO	6
Weller et al	WHOI	SA1	LARGE	???	NOAA	43
Whitledge, T	UT	NA9	LONGHORN	JUL	NSF/REU	6
Wilcock, W	UW	NP9	ANY	AUG-SEP	NSF/TEC	1
Wilcock, W	UW	NP9	BARNES	TBD	NSF/TEC	4
Young, C	HBOI	NA9	EDWIN LINK	MAR	NSF	10

APPENDIX VI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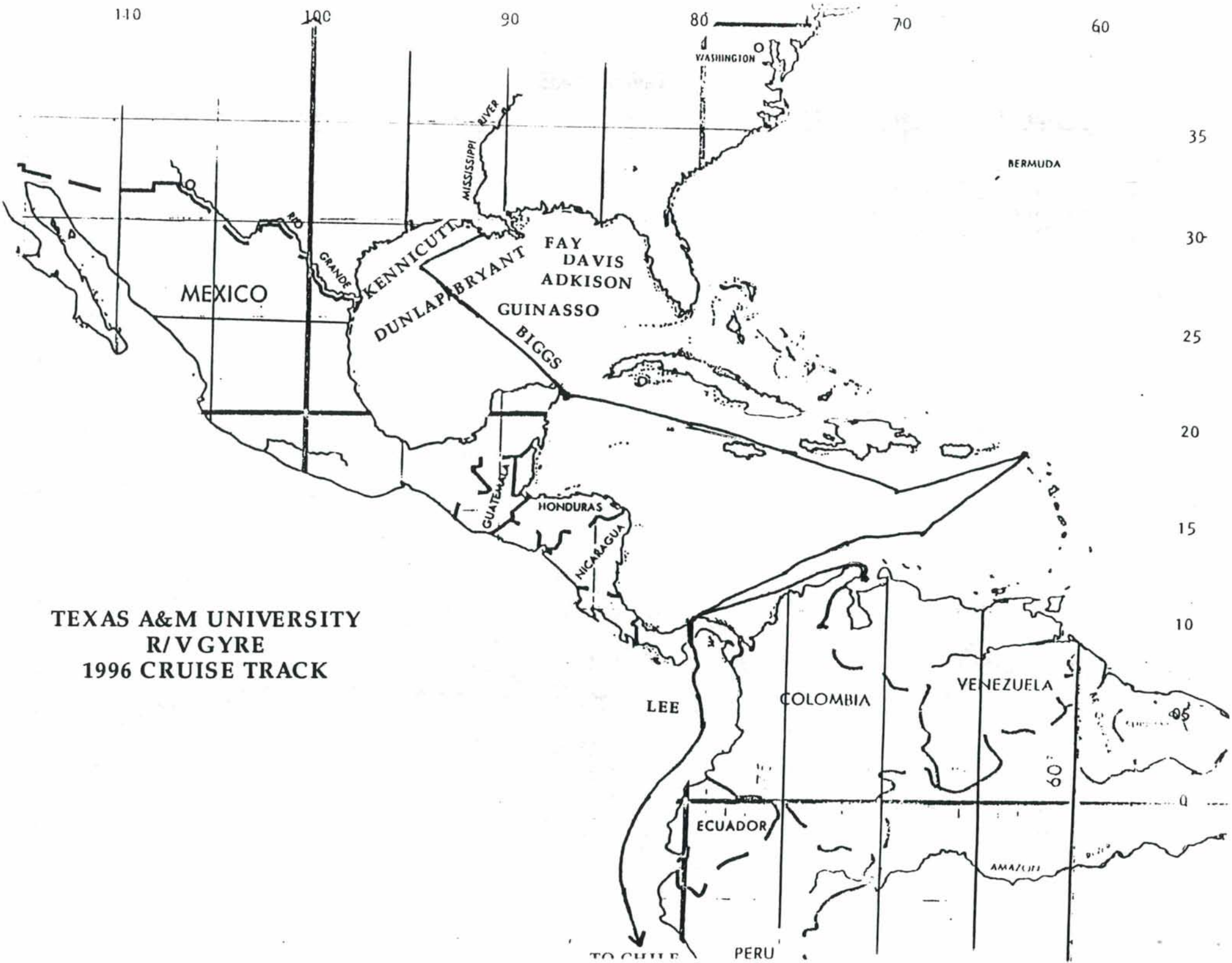
SOVIET UNION
ASIA
USA
EUROPE
AFRICA
AUSTRALIA
AZORES
LISBON
SAWYER
FGL
COLLINS
HANZ
MOORE
HONOTX
HAWAII
KENT
TOOMEL
BARBADOS
CALLAO
MIX
PUERTO MONTT
R/V MAURICE EWING
OPERATIONS SCHEDULE 1997
SEPTEMBER 9, 1996
120° 135° 150° 165° 180° 165° 150° 135° 120° 105° 90° 75° 60° 45° 30° 15° 0° 15° 30° 45° 60°

TRACK CHART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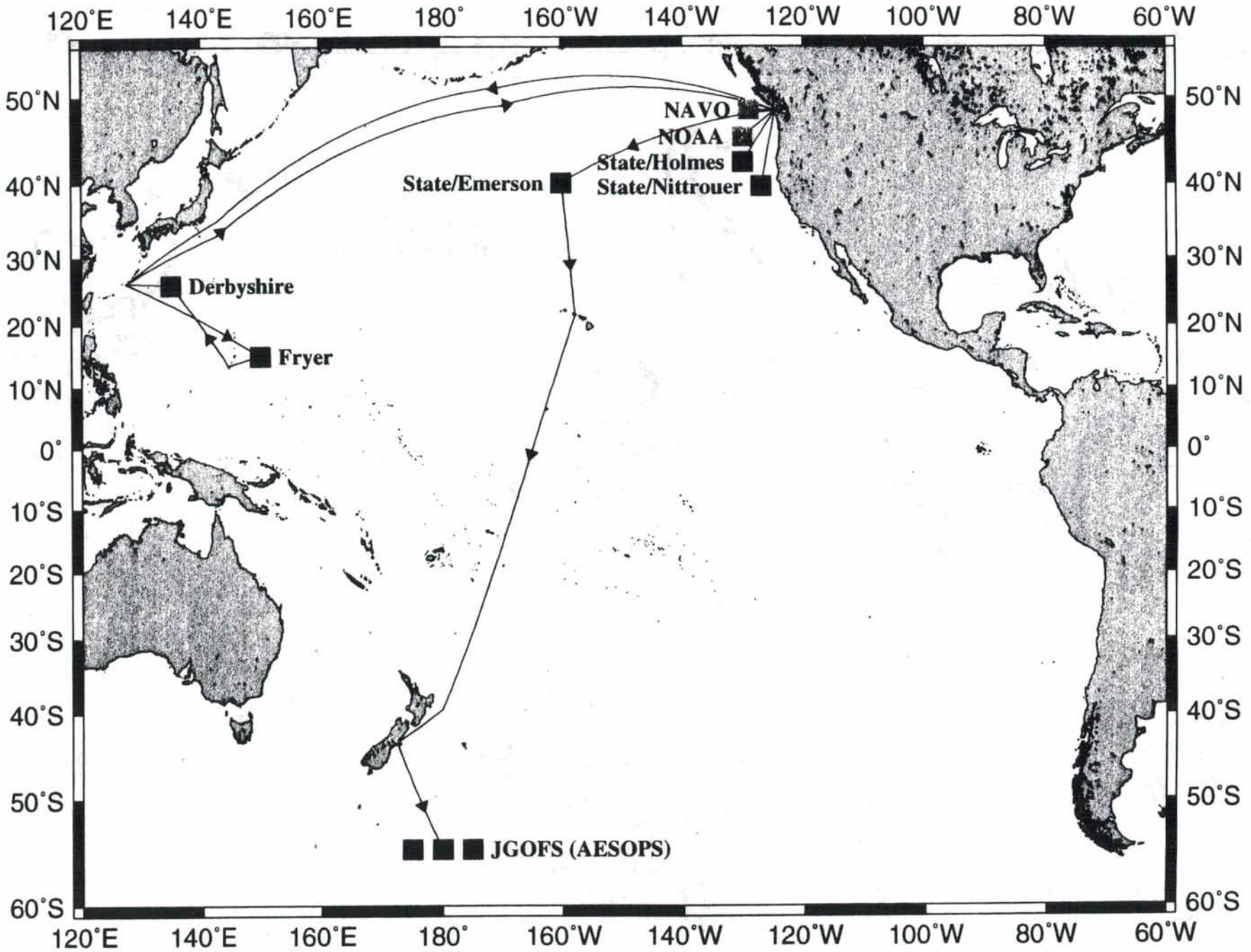
MEXICO
KENNICUTT
DUNLAP
BRYANT
FAY
DAVIS
ADKISON
GUINASSO
BIGGS
GUATEMALA
HONDURAS
NICARAGUA
LEE
COLOMBIA
VENEZUELA
ECUADOR
AMAZON
PERU
TO CHILE
TEXAS A&M UNIVERSITY
R/V GYRE
1996 CRUISE TRACK



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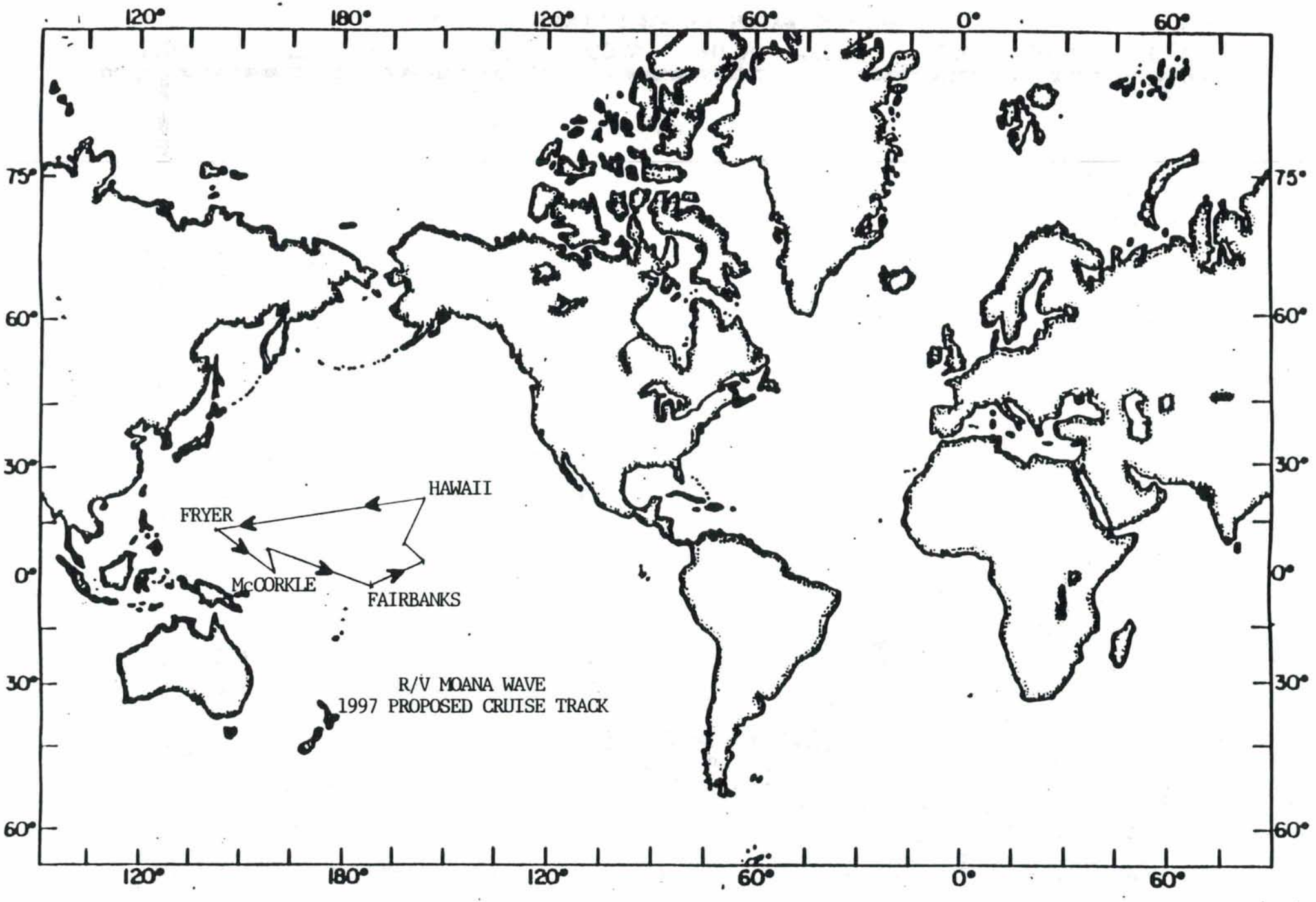
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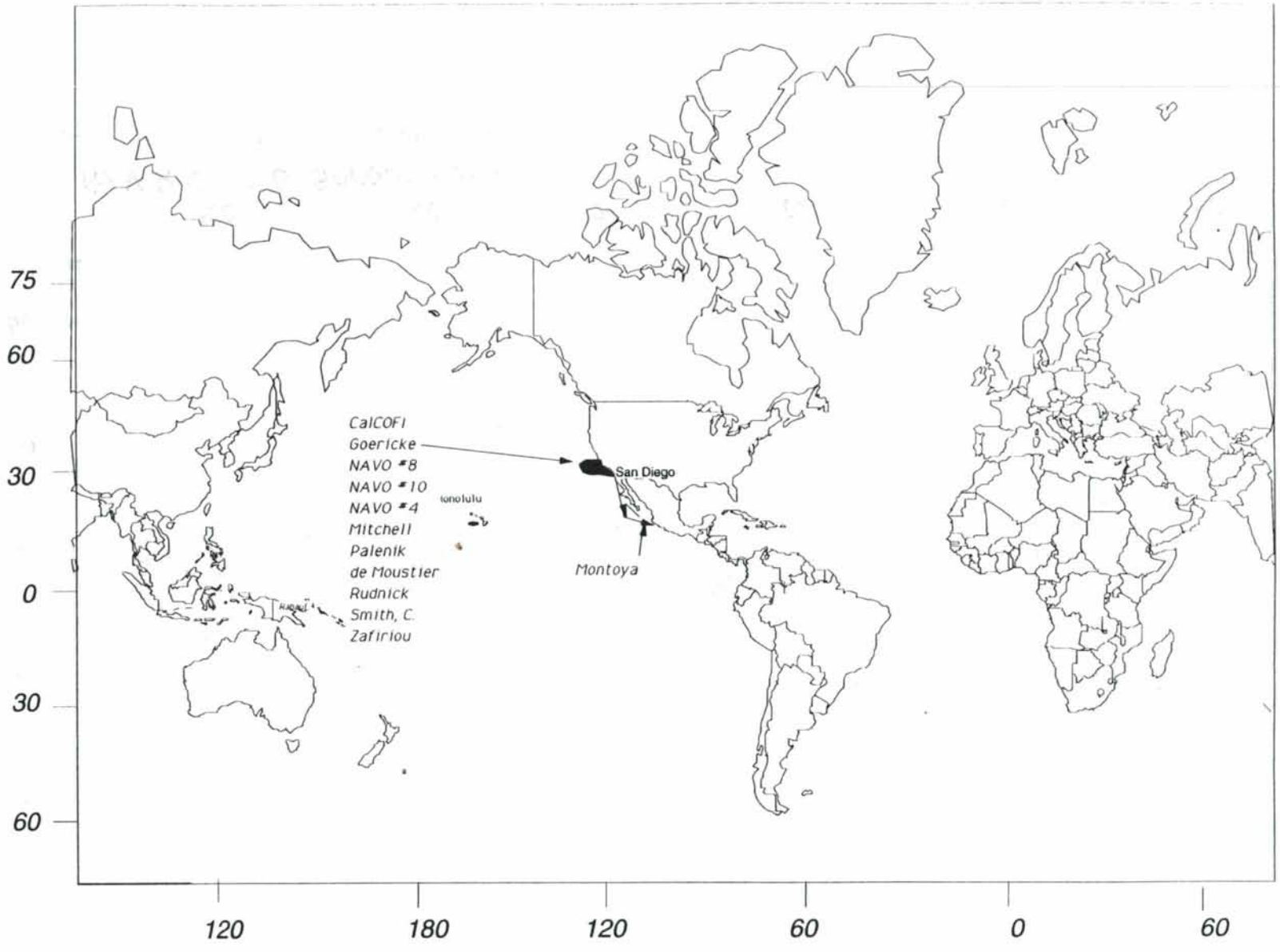
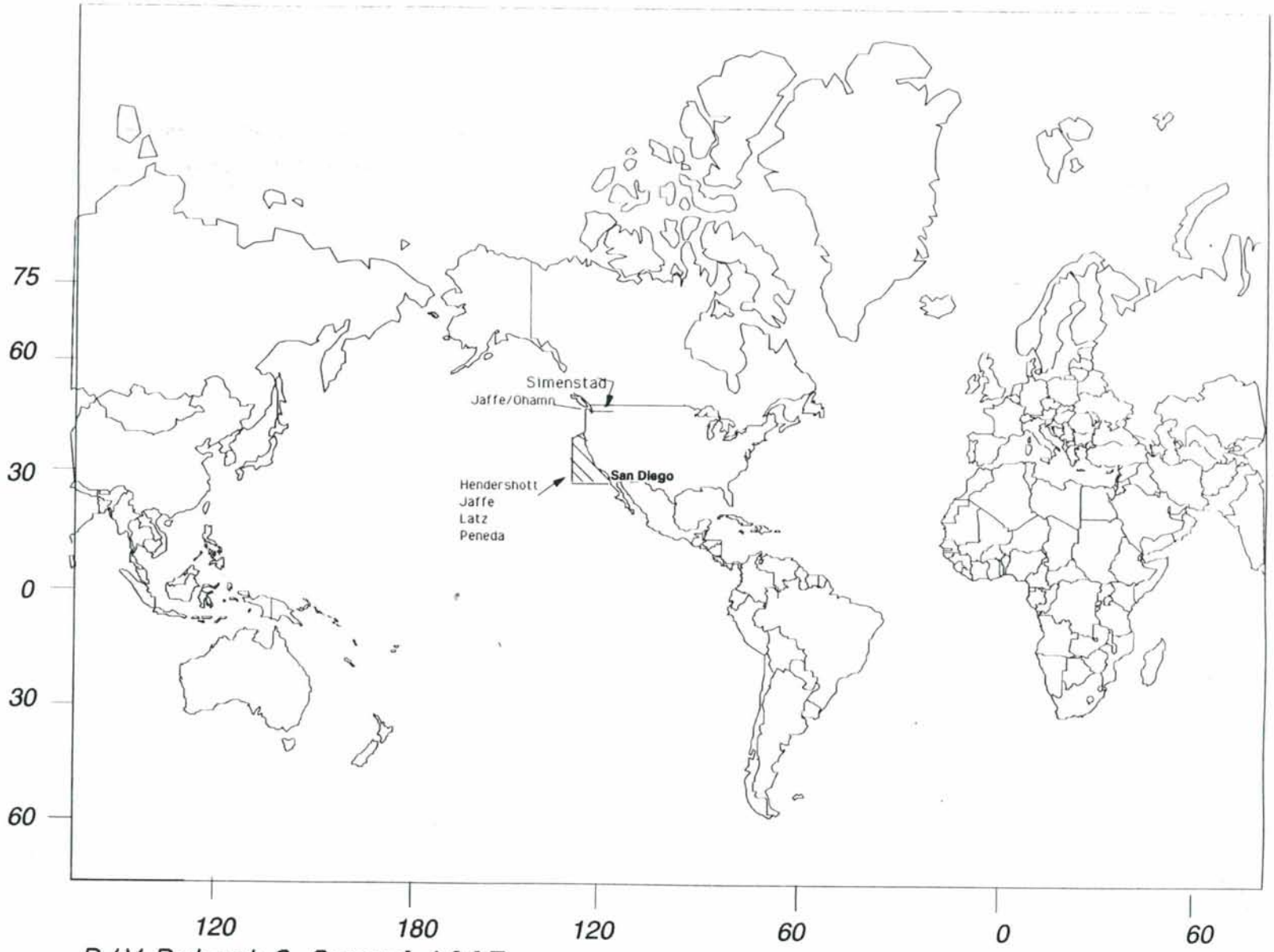
HAWAII
FRYER
McCORKLE
FAIRBANKS
R/V MOANA WAVE
1997 PROPOSED CRUISE TRACK



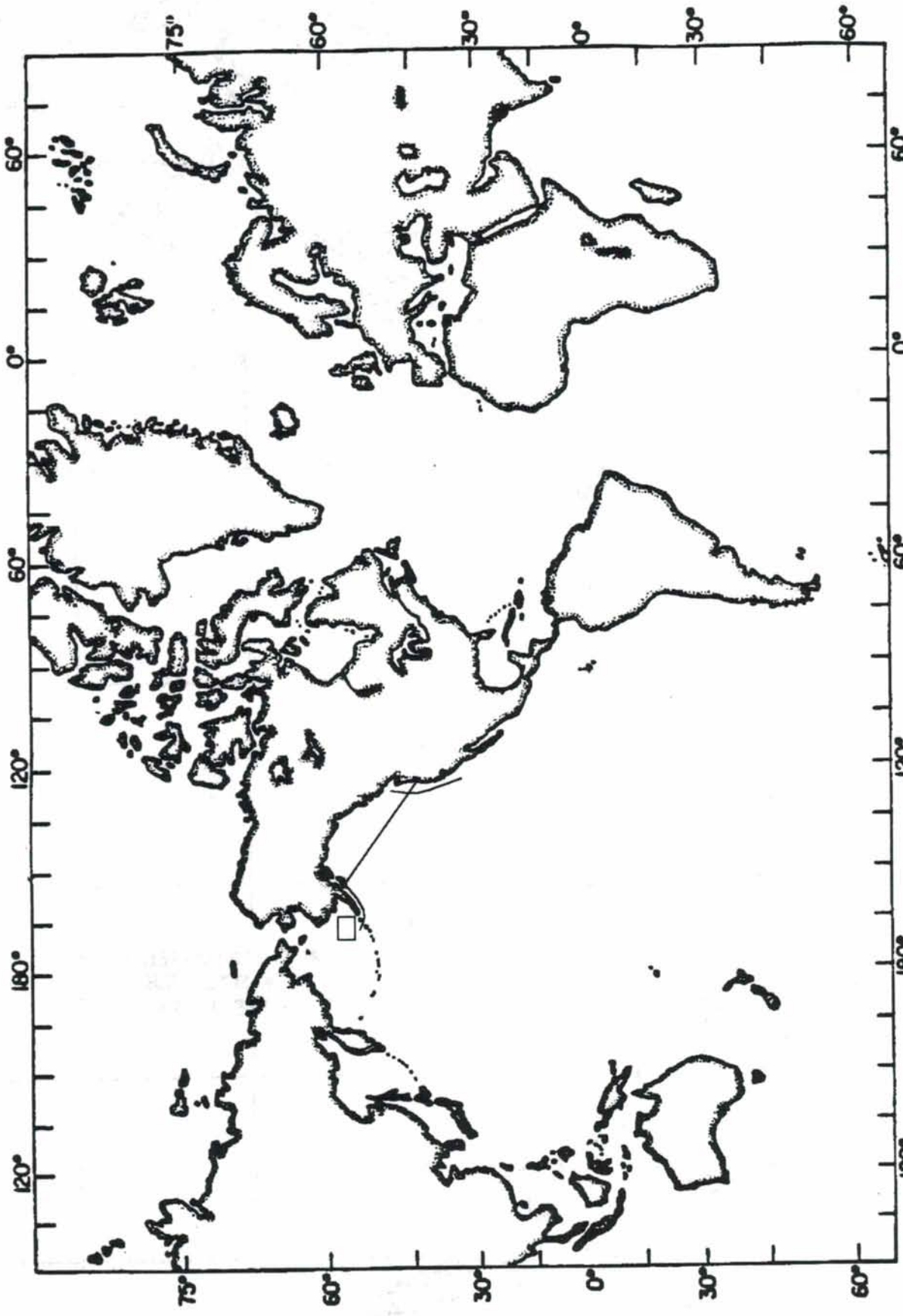
R/V New Horizon 97

Scripps Institution of Oceanography

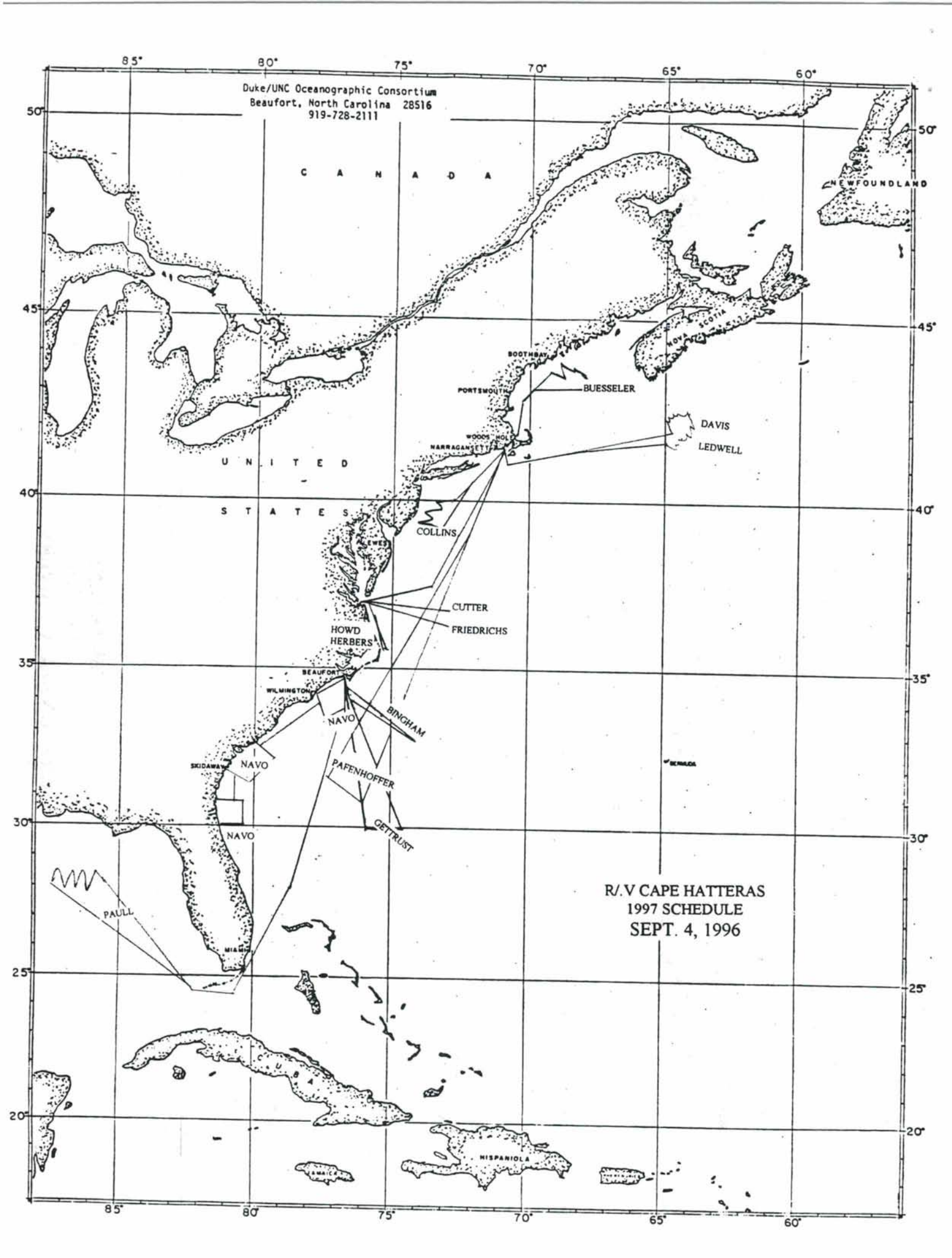


R/V Robert G. Sproul 1997

Scripps Institution of Oceanography



1997
CRUISE TRACKS
R/V WECOMA
OREGON STATE UNIVERSITY


Duke/UNC Oceanographic Consortium
Beaufort, North Carolina 28516
919-728-2111
C A N A D A
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S T A T E S
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NOVA SCOTIA
BOOTHBAY
PORTSMOUTH
WOODS HOLE
NARRAGANSETT
BUESSELER
DAVIS
LEDWELL
COLLINS
CUTTER
FRIEDRICHS
HOWD
HERBERS
BEAUFORT
WILMINGTON
NAVO
BINGHAM
SKIDAWAY
NAVO
PAFENHOFFER
NAVO
GETTRUST
PAULL
MIAMI
BERMUDA
CUBA
JAMAICA
HISPANIOLA
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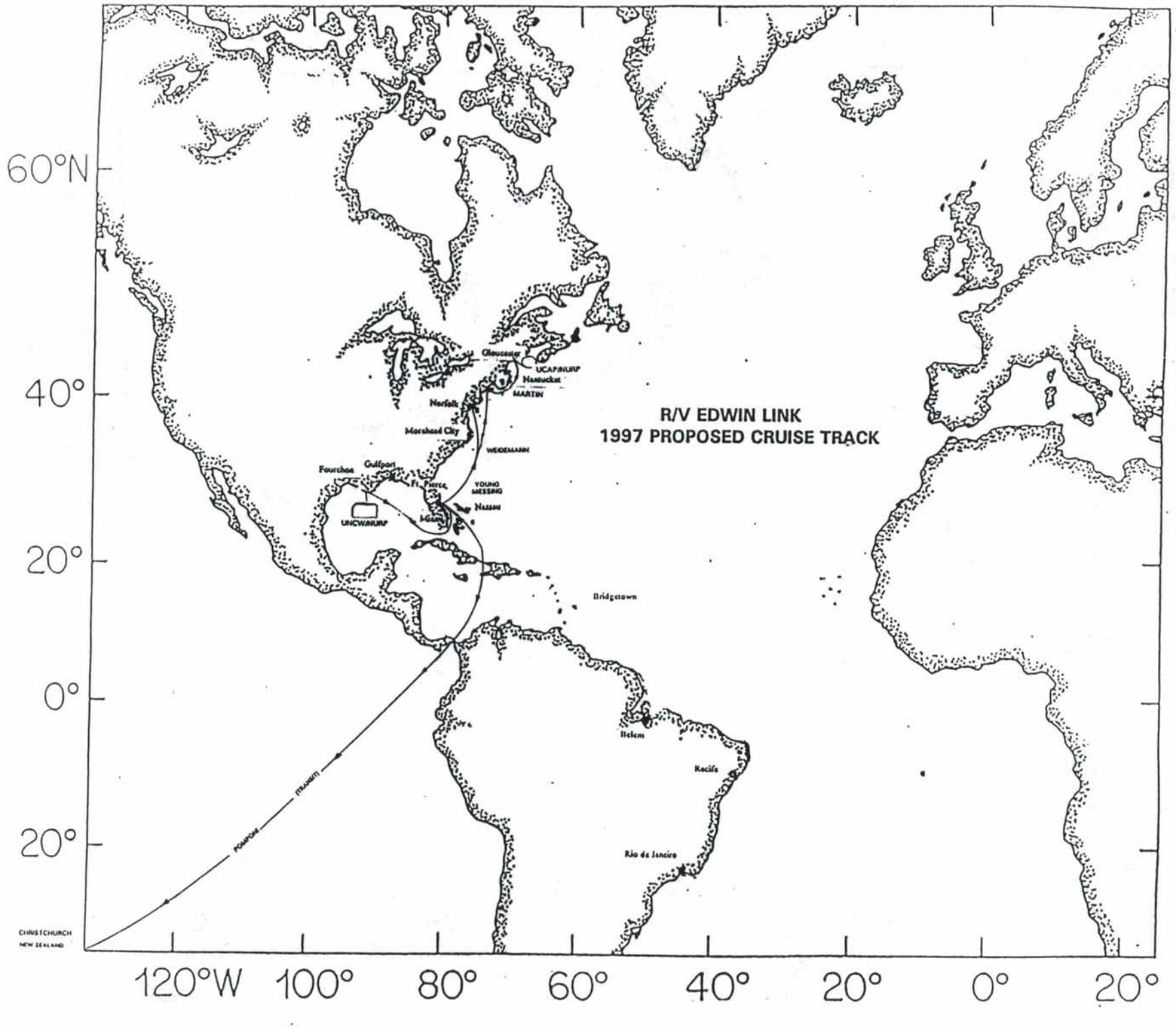
R/.V CAPE HATTERAS
1997 SCHEDULE
SEPT. 4, 1996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1997 PROPOSED CRUISE TRACK
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20°
120°W
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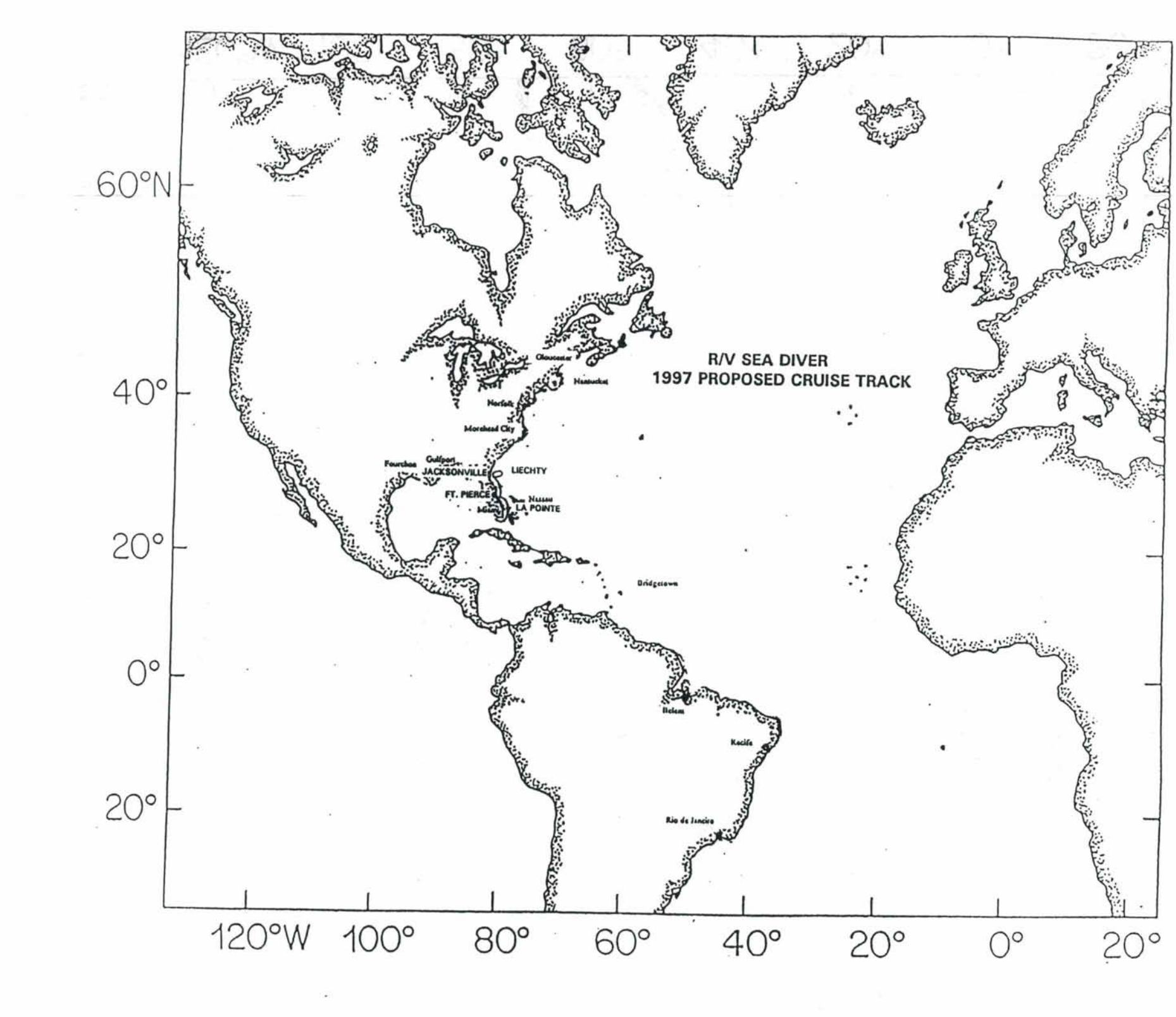
40°
20°
0°
20°
Gloucester
UCAP/NURP
Nantucket
MARTIN
Norfolk
Morehead City
WEIDEMANN
Fourchon
Gulfport
Ft. Pierce
YOUNG MESSING
Nassau
UNCW/NURP
Bridgetown
Belem
Recife
Rio de Janeiro
POSEIDON (TRANSIT)
CHRISTCHURCH
NEW ZEALAND


R/V SEA DIVER
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80°
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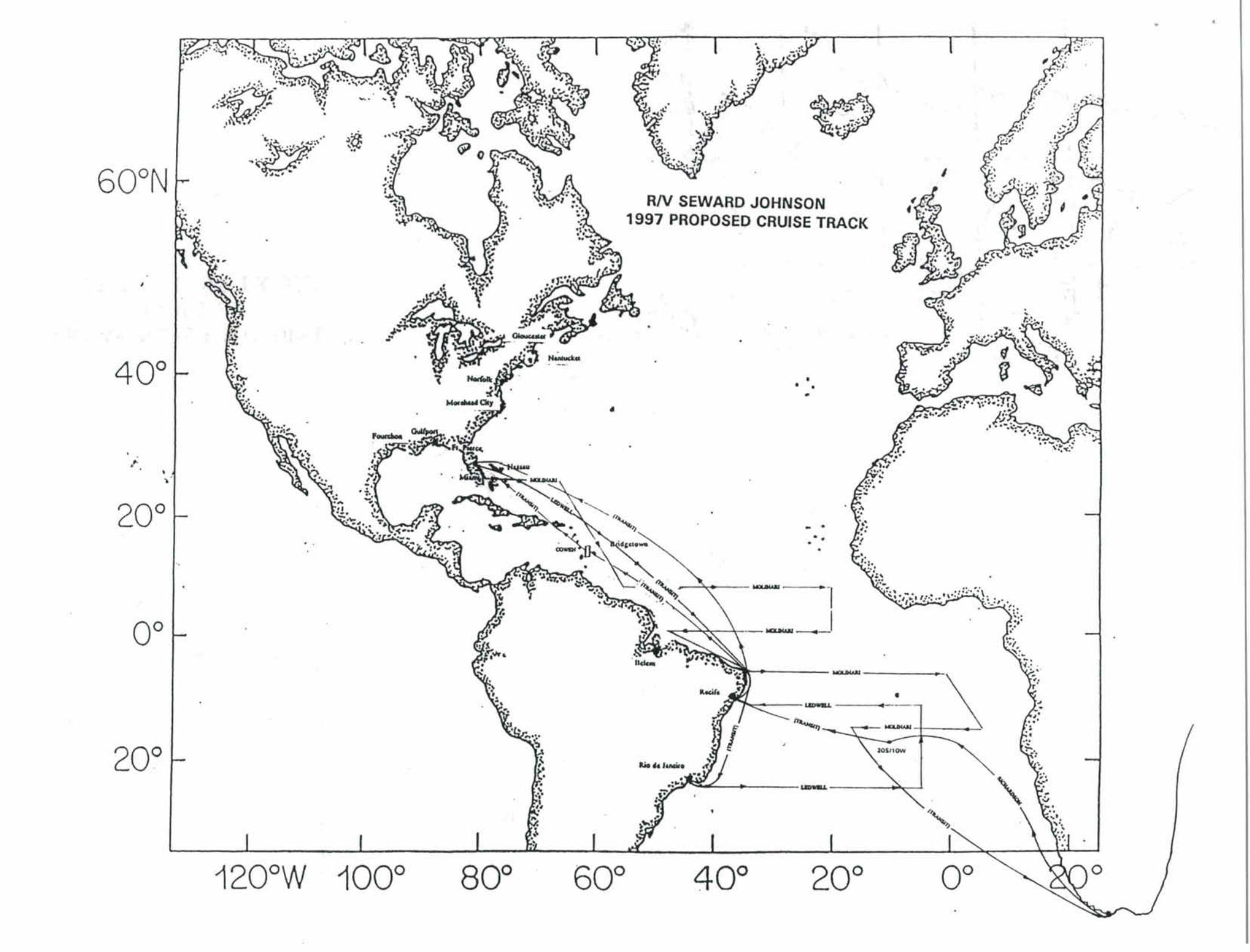
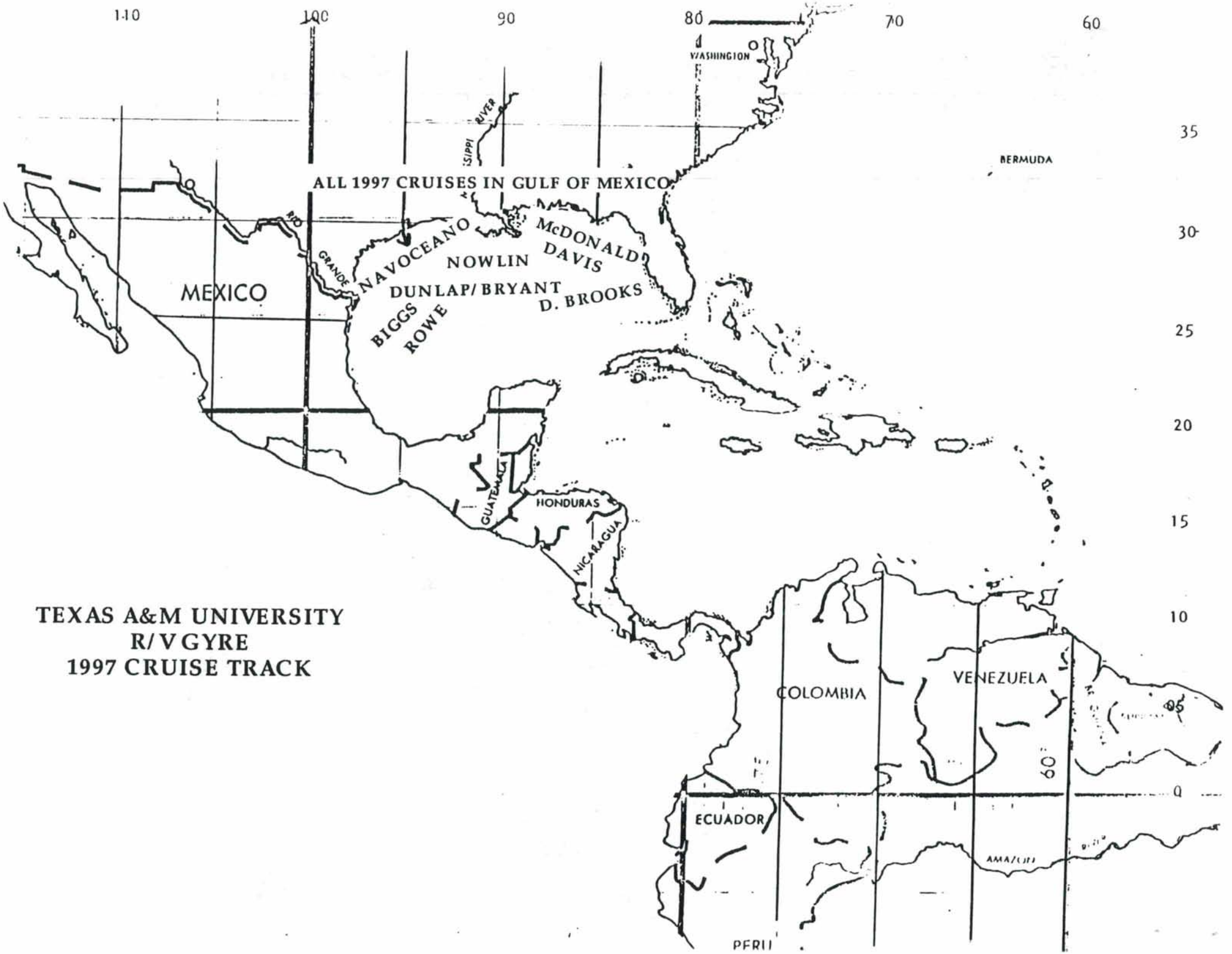
40°
20°
0°
20°
Gloucester
Nantucket
Norfolk
Morehead City
Fourchon
Gulfport
JACKSONVILLE
LIECHTY
FT. PIERCE
Nassau
LA POINTE
Miami
Bridgetown
Belem
Recife
Rio de Janeiro


R/V SEWARD JOHNSON
1997 PROPOSED CRUISE TRACK
60°N
40°
20°
0°
20°
120°W
100°
80°
60°
40°
20°
0°
20°
Gloucester
Nantucket
Norfolk
Morehead City
Fourchon
Gulfport
Ft. Pierce
Nassau
Miami
MOLDYARI
LEDWELL
(TRANSIT)
Bridgetown
COWEN
Belem
Recife
205/10W
Rio de Janeiro
AGULHAS


110
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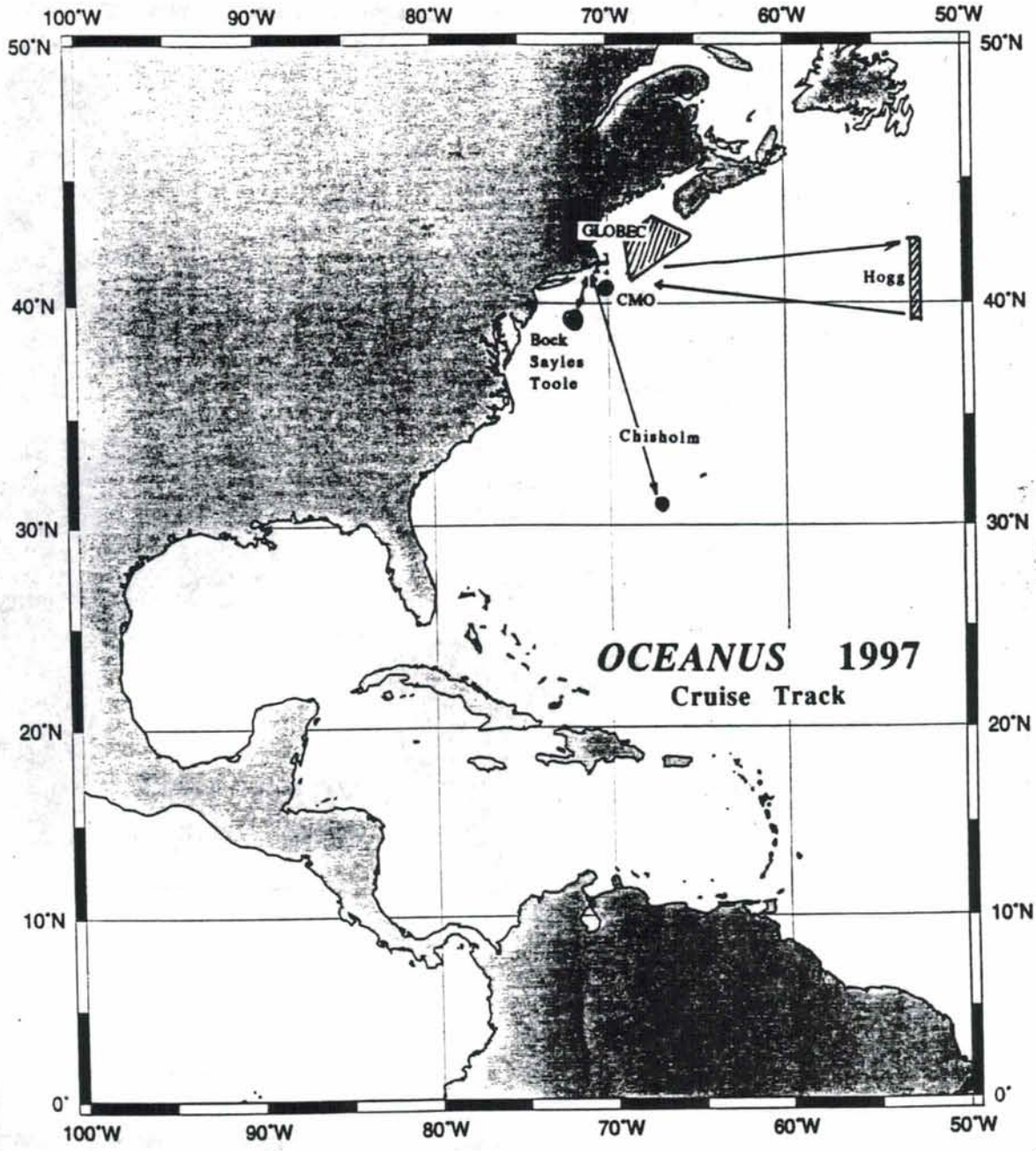
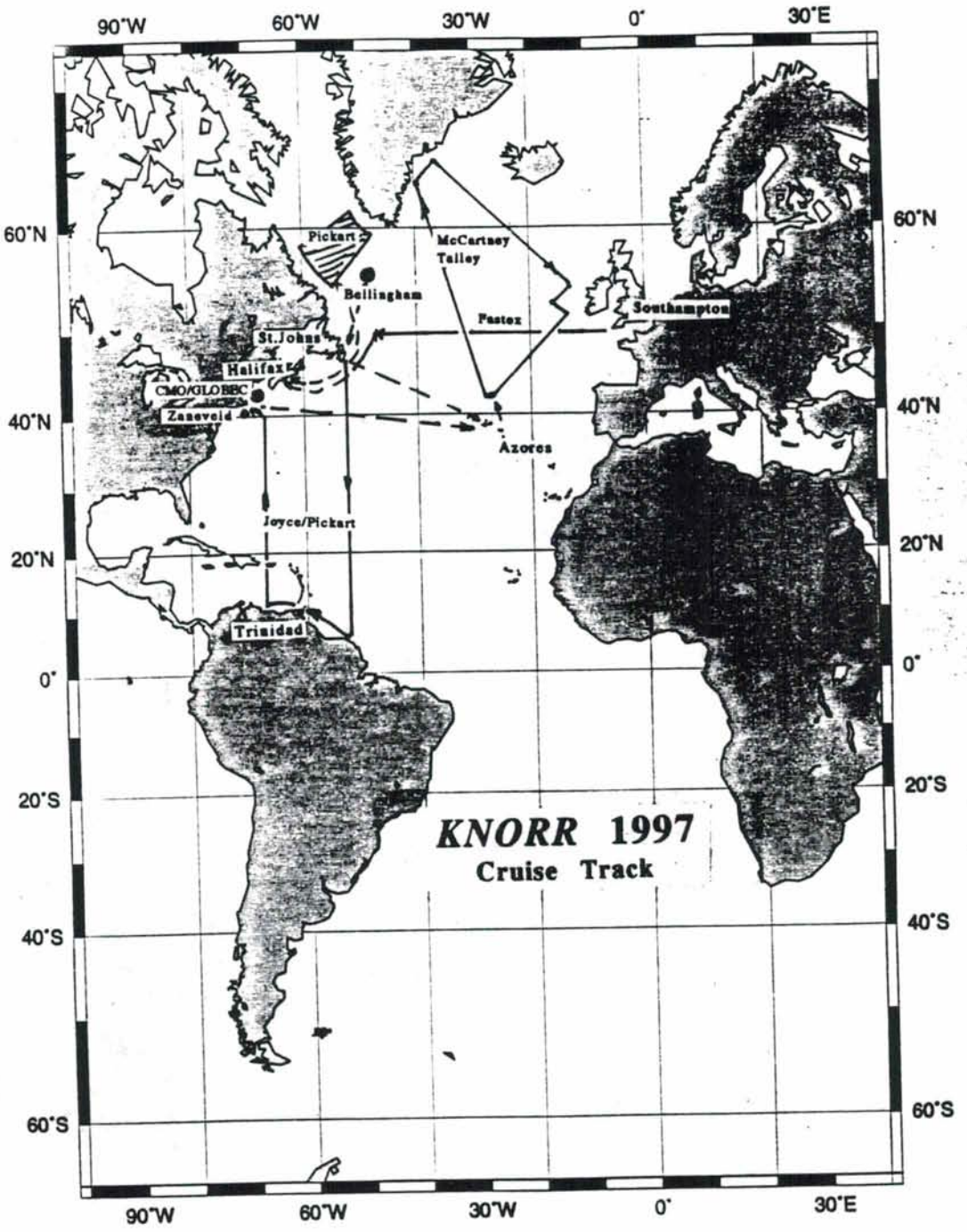
WASHINGTON
BERMUDA
ALL 1997 CRUISES IN GULF OF MEXICO
MEXICO
RIO GRANDE
NAVOCEANO
NOWLIN
McDONALD
DAVIS
DUNLAP/ BRYANT
D. BROOKS
BIGGS
ROWE
GUATEMALA
HONDURAS
NICARAGUA
COLOMBIA
VENEZUELA
ECUADOR
PERU
TEXAS A&M UNIVERSITY
R/V GYRE
1997 CRUISE TRACK



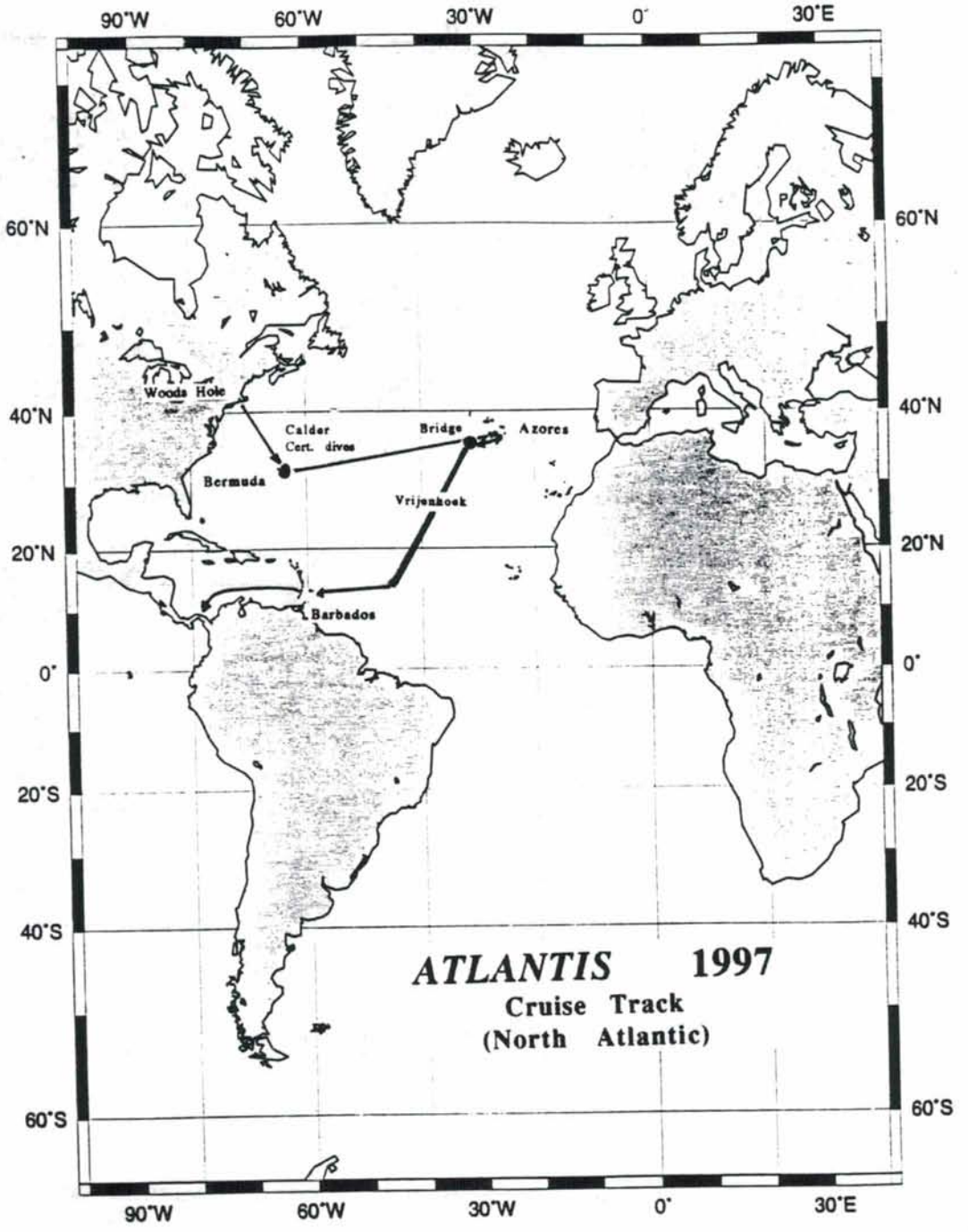
MOC10: Western Atlantic Ocean

WHOI / Moller



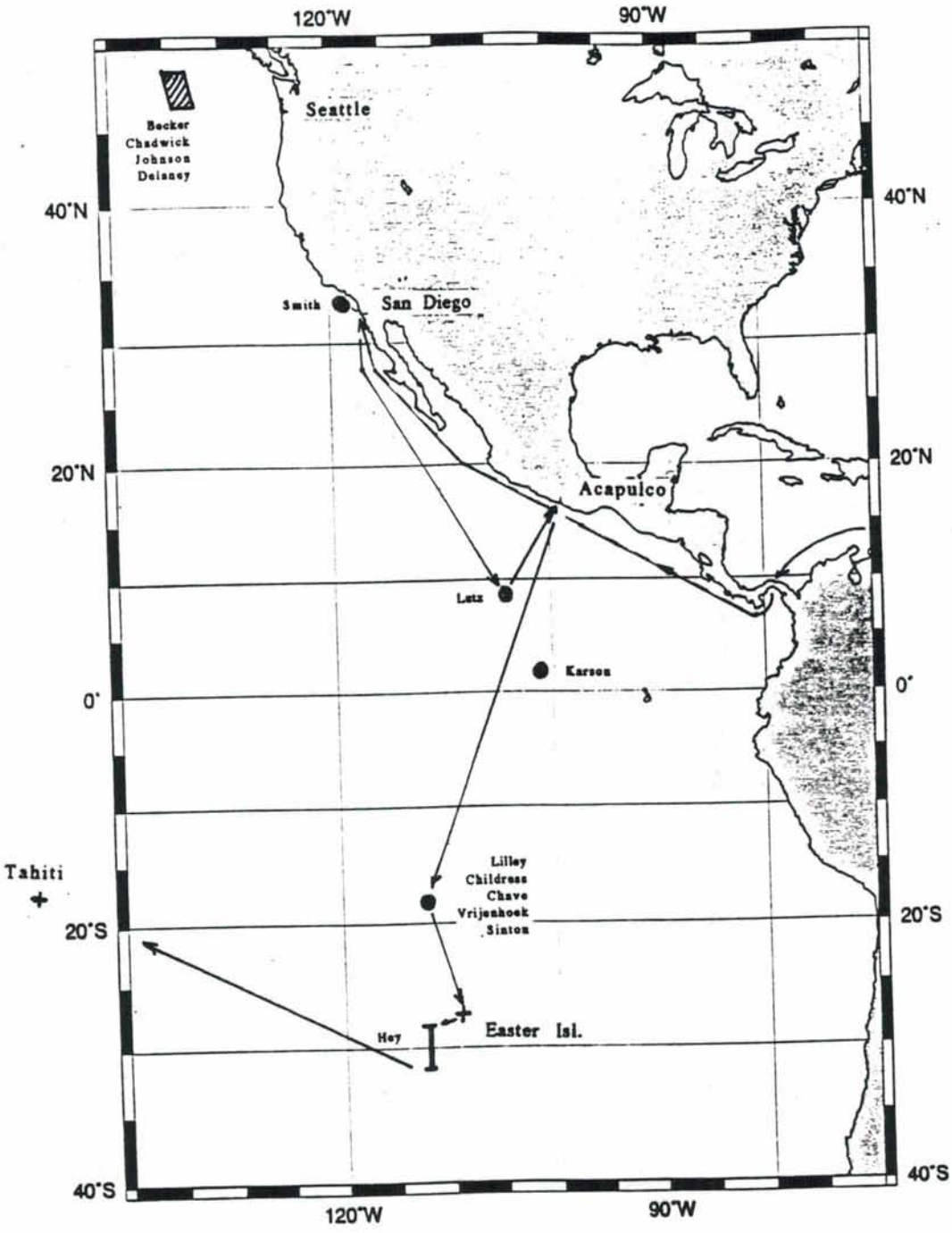
WHOI / Moller

MOC04: Atlantic Ocean



MOCD4: Atlantic Ocean

WHOI / Moller



MOC11: Equatorial Pacific Ocean

ATLANTIS 1997

Cruise Track

WHOI / Moll

APPENDIX VII

Naval Oceanographic Office

CDR Jim Trees

Operations and Readiness Officer

Code N35

UNOLS/NAVO PARTNERSHIP

- Congress establishes National Oceanographic Partnership Program.
  - Authorized 7.5 million for oceanographic ship operations.
- NAVOCEANO expects obligation authority.
- NAVOCEANO will schedule ships through UNOLS scheduling process.

UNOLS/NAVO PARTNERSHIP(cont)

- Additional quality data at lower overall costs.
- Realize NAVO manpower savings by using UNOLS ships.
- Keep our customers happy by satisfying high priority requirements.
- Unexpected funding cuts in oceanographic fleet activities have increased need.
- This is the start of a mutually beneficial **<u>long term</u>** partnership.

PARTNERSHIP ACCOMPLISHMENTS

- What's been done so far.
  - Fleet Improvement Committee meeting in August 95.
    - Initial concept discussed.
  - Fleet Improvement Committee and Council meeting in November 95.
    - Hosted at NAVO - Familiarity with NAVO ops and NAVO reps to committees assigned.

PARTNERSHIP ACCOMPLISHMENTS

- Ship scheduling review in June 96.
  - Reviewed options
- UNOLS Executive Secretary review in August 96.
  - Finalized plan
- What's planned
  - Scheduling meeting in September 96.
    - Actual assignment of ships

MILITARY SURVEYS/MARINE SCIENTIFIC RESEARCH

- NAVO conducts worldwide military surveys.
  - Military surveys allow access to a nation's EEZ.
  - Implications on release of data.

- UNOLS conducts marine scientific research
  - Must request access to EEZ's
  - Must share data collected
  - May have foreign observers aboard

- Bottom line is that foreign exclusive economic zones affect research activities not military surveys.

- FY 97 plans are for NAVO/UNOLS work in US EEZ's and broad ocean areas.

PROPOSED SURVEY AREAS

- Long Island, Savannah GA, Jacksonville FL. continental slope stability study.
  - ➥ Oceanography

- Straits of Juan De Fuca USN training area study.
  - ➥ Oceanography

- North Carolina, Onslow Bay seafloor study.
  - ➥ Oceanography

- Southern California - Santa Rosa/Cortes Ridge and Tanner/Cortes Bank USN fleet training range.
  - ➥ Bathymetry/Oceanography

- Gulf of Alaska gravity survey.
  - ➥ Geophysical

- East, West and Gulf coast areas (seasonal variance studies)
  - ➥ Oceanography

NEAR TERM ISSUES

- Data required to IHO standards.
- Data format processing compatibility.
- Security requirements for gravity surveys.
- Data releasability.
- Lack of defined UNOLS/NAVO coordinating processes.

LONG TERM ISSUE - DATA RELEASE

- Military survey data is restricted.
  - Data restrictions due to distinction between military surveys and research activities.

- ACT. 58 LOS authorizes military activities (military surveys).
  - Policy allows data collection in EEZ's without coastal state notification.

- How to conduct military surveys on UNOLS vessels in foreign EEZ's.