GLOBAL ATMOSPHERIC RESEARCH PROGRAM
GATE
ATLANTIC TROPICAL EXPERIMENT

INFORMATION BULLETIN

Editor: Stan Ruttenberg
NCAR. P.O.Box 3000
Boulder, COL 80303
Tel: 303 494 5151 Ext 238
FTS: 303 494 5238

Number 2 26 December 1974

U.S. GATE PROJECT OFFICE REORGANIZATION

A major restructuring of the "old" U.S. GATE Project Office in NOAA has taken place since the completion of the field observation period. Several key personnel have assumed expanded responsibilities and, upon completion of various GATE field reports and other wrap-up requirements, many former members of the GATE staff will be devoting their primary interest to other activities.

Under the reorganization, Doug Sargeant has been appointed Director of the new World Weather Program Office which now includes a revised U.S. GATE Project Office, the new U.S. First GARP Global Experiment (FGGE) Project Office, and World Weather Watch and systems engineering activities.

Jim Rasmussen has assumed the role of the U.S. GATE Project Office with a staff including Bill Murray, Onial Thomas, Loran Weaver, Tina Loughran and Brenda Shaw. Bill Barney is currently supervising preparation of the report of the field phase, and is expected to assume a new assignment within NOAA upon the completion of this responsibility. Others who have been directing full attention to wrap-up activities are the Project Office's NOAA Commissioned Corps personnel, Dick Houlder, Arch Patrick, Sig Petersen, Ray Reilly, Dewey Rushford, Tom Ruszala, Kurt Schnebele and Bob Smart. A few of these officers have completed their work and all will be rotated to new assignments within the next few months. Bud Long and Terry de la Moriniere will continue to work in the ISMG until it phases out at the end of March, 1975. Andy Durkee has already reported to a new U.S. Coast Guard assignment and Glen Garte has assumed a new position within NOAA Headquarters in Rockville.

Contents #2:

The National Center for Atmospheric Research (NCAR) is operated by the private, nonprofit University Corporation for Atmospheric Research (UCAR) under sponsorship of the National Science Foundation

The systems engineering group will continue under the leadership of Orville Scribner, and will be engaged in activities supporting GARP and the World Weather Watch. Ken Foulke, Warren Keenan, George Smidt and Fran Cassel are included in this group. Bernie Zavos has joined the World Weather Program Office to lead the effort in support of U.S. participation in the various aspects of the World Weather Watch and related WMO programs. Cornelius Callahan, Don Seeko and Karen McCarthy will be concentrating on this area.

Walt Telesetsky is the Director of the new U.S. FGGE Project Office, which will include Terry Bryan, Tom Kaneshige, Jim Sparkman and Ed Tiernan as they complete their GATE wrap-up responsibilities. Betty Sonnefeld supports the FGGE Office in addition to the Director of the World Weather Program Office, while Mickey Kluth is now serving as the administrative officer for the office.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA) IN GATE

Tom O'Neill is the NASA GARP Manager under the direction of Morris Tepper, Deputy Director of Earth Observation Programs and Director of Meteorology. The NASA GARP Project Office is at Goddard Space Flight Center, Greenbelt, Maryland, under Harry Press. In the Project Office Al Fleig assists on DST and FGGE and Bob Rados on GATE.

NASA participated in GATE with a CV-990 aircraft, the ship VANGUARD, a Direct Readout Ground Station (DRGS), and the satellites SMS-1, ATS-3, and Nimbus-5. In addition to the scheduled GATE operational observations, experimenters on the CV-990 obtained observations from solar sensors and radiometers (radiation), a hygrometer (water vapor), multi-frequency radars (sea-surface measurements), a microwave radiometer (precipitation) and a polarimeter (cloud parameters). NASA post-GATE activities involves the CV-990 data management, commercial aircraft GATE data, the satellite data, including cloud motion vectors, and coordination with the U.S. GATE Project Office.

NEW NSF GARP/GATE ORGANIZATION

Recently, there has been an organizational change at the National Science Foundation that involves NSF's GATE program. An Office for Climate Dynamics (OCD) has been established under the Assistant Director for National and International Programs. Gene W. Bierly, formerly NSF Coordinator for GARP, has been appointed as the Head of the OCD. The NSF GARP effort has been transferred to the OCD. As a result, Gene's close association with GARP will continue.

To administer the GARP research efforts supported by NSF, Dick Greenfield has been appointed the Program Director for GARP. Therefore, among his other duties, Dick is involved in the NSF sponsored GATE activities. He is currently on leave of absence from the Center for the Environment and Man in Hartford, Connecticut where he is a Senior Research Scientist in the Environmental Sciences Division.

It is appropriate here to acknowledge the contribution that Tom O'Neill (mentioned above in his current capacity of GARP Manager at NASA Headquarters) made to the production of the GATE NEWS, the predecessor to this BULLETIN. Tom was an NCAR staff member on assignment in Washington D. C. as the NCAR GARP Washington Representative. It is also appropriate to pay acknowledgement here to the efforts of Jeannie Kelley, a member of the NCAR GADMAP group, who spent Phases II and III in Dakar and had considerable responsibility there for assembling the statistics of the aircraft program. Upon her return to NCAR, Jeannie lent invaluable assistance to the preparation of issues number 1 and 2 of this BULLETIN.

During the compilation of the material to describe July 10 - *One Day in the Life of Phase I* - we found that some 25 pages will be required. Inasmuch as the summary of Phase III contained in this issue is already voluminous, we have decided to include the July 10 material in No. 3 of the BULLETIN. This material is already on hand and essentially ready for printing, however, so there should be little delay in getting out the next issue. At least this will be our goal: to follow No. 2 with the distribution of Number 3 in early January. No. 3 will also contain the USA policy statement on GATE data availability and use by researchers and a revised and more detailed summary of the B-scale ship radar observations for all three Phases, now being prepared at the U.S. GATE Project Office, and any further information on availability of preliminary GATE data.

GATE DATA AVAILABILITY

Seven reels of 16-mm microfilm have just been received at the U.S. GATE Project Office from the ISMG, containing the following:

- Reel 1 - Preliminary Data Set

  Part A Satellite pictures Phases I, II, and III.
  Part B B-scale ship radar photographs, Phases I and II.
  Part C B-scale ships, surface observations, Phases I and II.

- Reel 2 - GATE aircraft mission catalogue, Phases I, II and III; Mission Scientists' reports; Airborne Mission Scientists' reports; aircraft tracklines; tabulated data sheets.

- Reel 3 - GATE aircraft information Phases I and II.

  Mission documentation: for each aircraft this includes various debriefing reports, instrument status, aircraft scientists' reports, etc.

- Reel 4 - GATE aircraft information Phase III - same as listed above for Reel 3.

- Reel 5 - Experiment Documentation Phases I, II and III.

  Mission Selection Team Reports; daily status of aircraft; daily status of ships; MS and AMS reports (apparently the same as contained in Reel 2).

- Reel 6 - GATE Ships Phases I and II.

  Intercomparison - surface observations; intercomparison and some observations - upper air; intercomparison and some observations - radiation.

- Reel 7 - GATE Ships Phases I and II.

  Chief Scientists' reports; systems status information; data inventories; miscellaneous.

The above abbreviated description of the contents of the reels is as received from ISMG. The reels are being examined at CEDDA, Washington, D.C. to verify their content and to ascertain whether they will serve as masters from which copies can be made for distribution. It is expected that master copies will be placed soon in the WDC archives, NCC, Asheville, N.C. Information on availability and prices will be published in this BULLETIN as soon as we get it from NOAA.

SUMMARY GATE PHASE III 30 August - 19 September

The B-scale ship network for Phase III was altered by the addition of the C-scale network of ships imbedded in the north-east sector of the B-scale array, as shown in the following map. The C-scale observational program included special boundary layer observations with a structure-sonde and pilot-balloon program superimposed on the tethered-balloon program and the basic three-hourly B-scale radiosonde schedule (see ICSU/WMO GATE Report No. 5, *The Boundary Layer Subprogramme* for details). In addition, an oceanographic observation program was conducted using the C-scale array; observations from anchored buoy networks and from shipboard systems included profile measurements of current, temperature and salinity. Special ocean wave measurements from buoys, ships and aircraft were also made during Phase III (see ICSU/WMO GATE Report No. 8, *The Oceanographic Subprogram* for details).

Figure III-1 shows the aircraft missions and for the B-scale area the convective activity, radar coverage, and shipboard observation schedules, in a similar fashion as was done for the other phases in the GATE INFORMATION BULLETIN No. 1. The characteristics of the convective systems were significantly different during Phase III, with several instances of squall line activity occurring in the B-scale area with associated strong winds and heavy rain. On two occasions tethered-balloon systems were lost in the heavy weather. Sufficient spares were available to continue operations. Practically continuous operation of the 5-cm radars was attained until 14 September; thereafter, at least three of the four systems were always operating. The 3-cm radars on the METEOR and PLANET were used almost exclusively for balloon tracking. The 3-cm radar on the VIZE at ship position 1A was the only weather radar in the center of the array. The upper-air schedule called for 8-hourly radiosondes from all B ships and this schedule was largely met by all ships except the RESEARCHER at position 5 (which had to change to a six-hourly schedule from 6 September to the end of the Phase) and the GILLISS at position 7 (which changed to the A/B ship schedule on 13 September); both schedule changes had to be made to conserve the available helium. One significant accomplishment in Phase III was the highly coordinated aircraft and tethered-balloon observational program. The flight program for Phase III was notable for the number of sorties flown and the number of convection and boundary-layer missions accomplished.

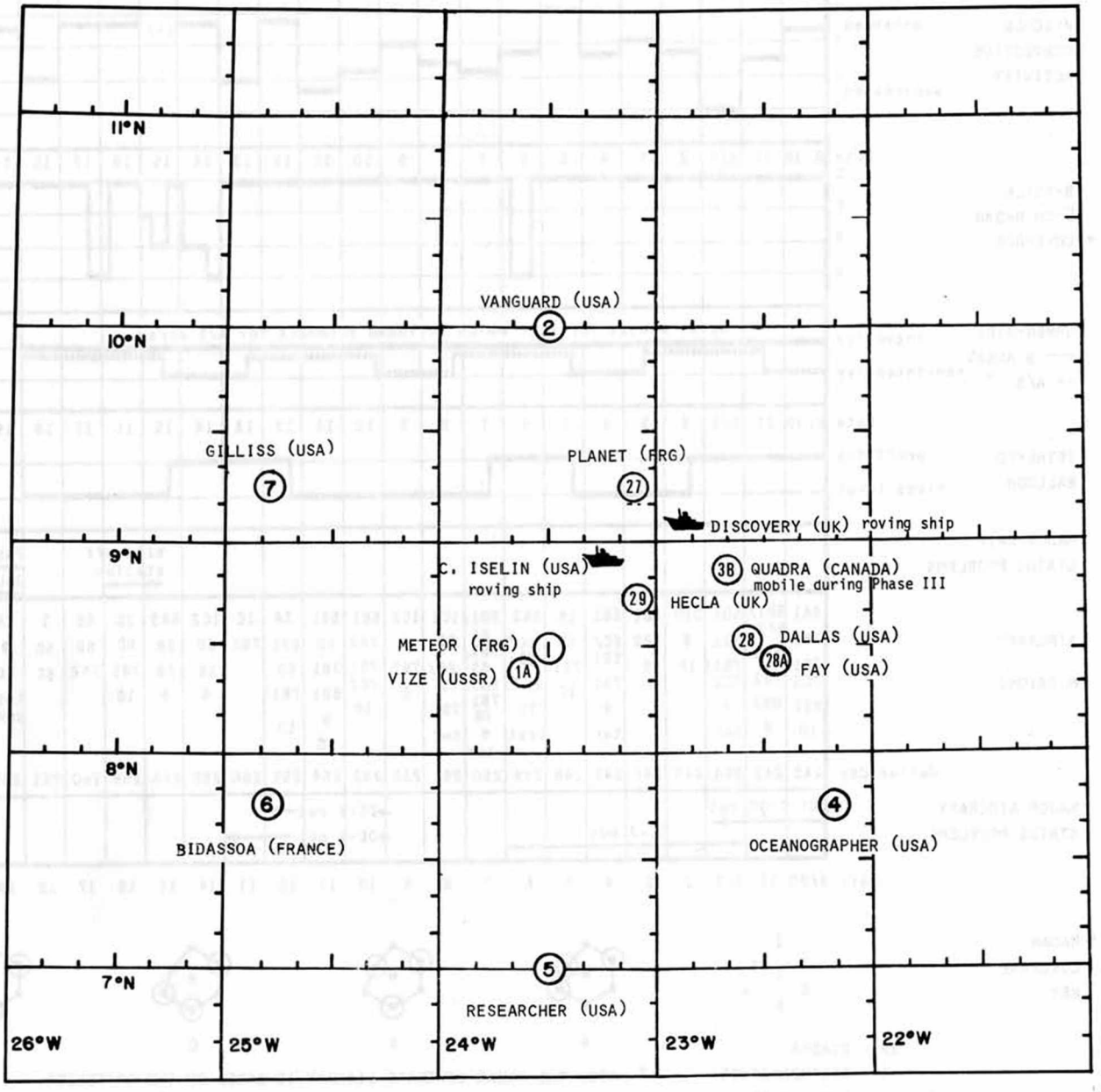
Phase III concluded with intercomparisons of both ship and aircraft systems; in addition, the aircraft completed a tower fly-by program similar to that accomplished in the pre-GATE period.

In summary, the weather systems that were experienced and sampled during the field program certainly should provide the opportunity to attain the GATE research objectives. The wisdom of the sampling techniques and tactics used, and the quality of the data obtained, will be tested in the succeeding months and years of analysis and research.

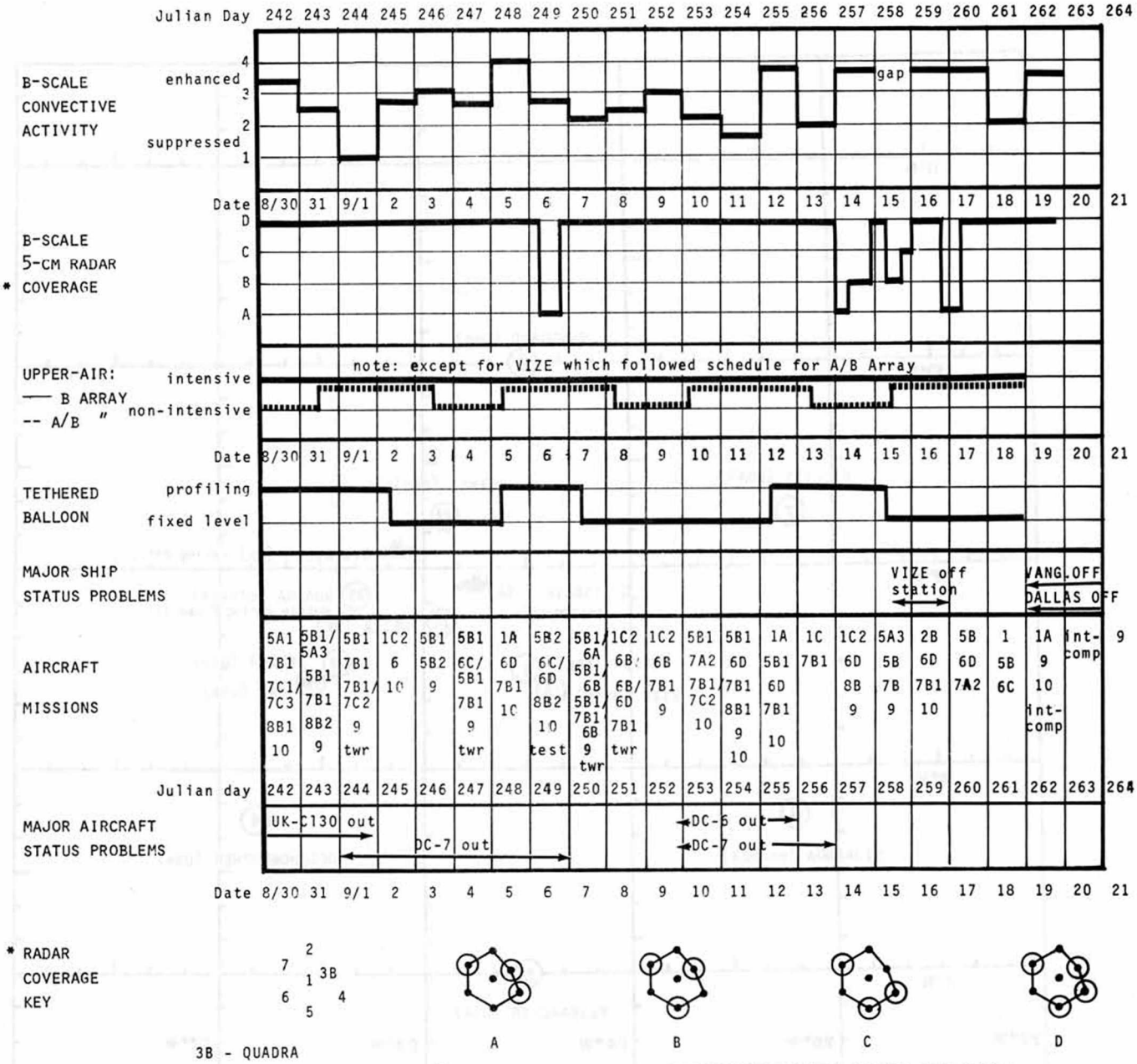
J. Rasmussen
Director
US GATE Project Office, NOAA
Rockville, MD. 20852
(301-496-8841)

Editor's Note:

The reader will note a few minor changes in format in the Summary of Phase III, presented in this issue, with that of Phases I and II, as contained in the first issue of the BULLETIN. Here, we have included mission or flight cancellations in the body of Table III-1, rather than cover these by footnotes. We have also found it desirable to use a variety of base maps for the aircraft mission tracks, since there were many complicated missions in the B and C areas. We have also plotted some dropsonde missions on different charts so that they could be shown in their entirety. You will also note in Figure III-1 a note explaining the criterion used to determine the 5-cm radar coverage, which differs from that used in the previous summaries for the first two phases. Bill Murray of the U.S. GATE Project Office is preparing a revised summary of radar operations for all three phases that more adequately will represent the available coverage. This revised summary will be included in the BULLETIN as soon as it becomes available.



PHASE III AUGUST 30 - SEPTEMBER 19 LOCATION OF B- AND C-SCALE SHIPS
Numbers refer to ship locations as given in the Ship Operation Plan, GATE Report No. 10.



* RADAR COVERAGE KEY

3B - QUADRA
4 - OCEANOGRAPHER
5 - RESEARCHER
7 - GILLISS

* NOTE: THE RADAR COVERAGE DIAGRAM IS BASED ON THE CRITERION THAT A RADAR MUST BE DOWN FOR MORE THAN 2 HOURS IN A 6-HOUR PERIOD TO SHOW AS DOWN.

FIGURE III-1 PHASE III OPERATIONAL SUMMARY

	NO.	DATE	TYPE	MISSION SCIENTIST	AIRBORNE M. S.	DC6	L188	UK130	DC7	IL18M	IL18C	USC130	CV990	WC135	Sabreliner	Queen Air	P3A	MISSION TYPE
◊	232-1	8/20	7B1		Cox										X			RADIATION
◊	234-1	8/22	7B1		Albrecht										X			RADIATION
◊	235-1	8/23	2B		Pennell										X			ITCZ
◊	236-1	8/24	10		Smith, C.										X			SQUALL LINE
◊	237-1	8/25	7B1		Albrecht										X			RADIATION
◊	241-1	8/29	7B1		Starr										X			RADIATION
	242-1A	8/30	5A1	Rasmussen	Cox	X	X		X			X						BOUNDARY LAYER
	242-1B	8/30	8B1	Rasmussen	Mel'nichuck						X							CLOUD PHYSICS
	242-1C	8/30	7B1	Rasmussen	Ter-Mark.					X								RADIATION
	242-1D	8/30	10	Rasmussen	Smith, C.										X			SQUALL LINE
	242-2	8/30	7C1/7C3	Rasmussen	Smith, W.								X					RADIATION
	243-1	8/31	5B1	Hoeber	Pennell											X		BOUNDARY LAYER
	243-2	8/31	7B1	Hoeber	Zhvalev					X								RADIATION
	243-3	8/31	9	Hoeber	Simpson, R.									X				DROPSONDE
	243-4	8/31	7B1	Hoeber	Albrecht										X			RADIATION
	243-5A	8/31	5B1/5A3	Hoeber	Zipser	X	X		X			X						BOUNDARY LAYER
	243-5B	8/31	8B2	Hoeber	Mazin						X							CLOUD PHYSICS
	244-1A	9/1	7B1	LeMone	Cox										X			RADIATION
	244-1B	9/1	5B1	LeMone	Stull											X		BOUNDARY LAYER
*	244-2	9/1	Tower Fly-by				X				⁘							CALIBRATION
	244-3	9/1	7B1/7C2	LeMone	Smith, W.								X					RADIATION
	244-4	9/1	9	LeMone	Simpson, R.									X				DROPSONDE
	245-1	9/2	1C2	Emmanuel	Betts	X	X			X	X	X	X					CLOUD CLUSTER
	245-2	9/2	10	Emmanuel	Grossman										⁘	X		SYNOPTIC
	245-3	9/2	6	Emmanuel	Lazanoff												X	OCEANOGRAPHY
	246-1	9/3	5B1	Gray	Grossman											X		BOUNDARY LAYER
	246-2	9/3	5B2	Gray	Zipser	X	X	X			X	X						BOUNDARY LAYER
	246-3	9/3	9	Gray	Simpson, R.									X				DROPSONDE
	247-1	9/4	6	Ross	Cancelled												⁘	
	247-2	9/4	Tower Fly-by			X					⁘	X				X		CALIBRATION
	247-3	9/4	6C/5B1	Ross	Nicholls			X										OCEANOG/BL
	247-4A	9/4	7B1	Ross	Smith, W.								X					RADIATION
	247-4B	9/4	7B1	Ross	Albrecht										X			RADIATION
	247-4C	9/4	7B1	Ross	Zhvalev					X								RADIATION

TABLE III-1 PHASE III AIRCRAFT MISSIONS ACCOMPLISHED

Mission types shown in column 3 refer to numbering given in GATE Report No. 11, Table 5, pp. 82-83. Type 9 has been added to denote dropsonde missions; type 10 denotes reconnaissance or synoptic mission.

NO.	DATE	TYPE	MISSION SCIENTIST	AIRBORNE M. S.	DC6	L188	UKL130	DC7	IL18M	IL18C	USC130	CV990	WC135	Sabreliner	Queen Air	P3A	MISSION TYPE
247-5	9/4	5B1	Ross	Stull											X		BOUNDARY LAYER
247-6	9/4	9	Ross	Simpson, R.									X				DROPSONDE
248-1	9/5	6D	Pennell	Lazanoff												X	OCEANOGRAPHY
248-2	9/5	10	Pennell	Zipser											X		SQUALL LINE
248-3	9/5	7B1	Pennell	Albrecht										X			RADIATION
248-4	9/5	1A	Pennell	Cox		X	X		X	X	X	X					CLOUD CLUSTER
249-1A	9/6	5B2	LeMone	Betts	X	X					X						BOUNDARY LAYER
249-1B	9/6	8B2	LeMone	Borovikov						X							CLOUD PHYSICS
249-2	9/6	10	LeMone	Kelley										X			SYNOPTIC
249-3	9/6	6C/6D	LeMone	Lazanoff												X	OCEANOGRAPHY
249-4	9/6	Test											X				TEST
250-1	9/7	5B1/6B	Hoeber	Grossman			X										BOUNDARY LAYER
" "	9/7	5B1/6A	Hoeber	Grossman	X												BOUNDARY LAYER
" "	9/7	5B1/7B1	Hoeber	Grossman								X					BOUNDARY LAYER
250-2	9/7	Tower Fly-by							X	X				X			CALIBRATION
250-3	9/7	9	Hoeber	Simpson, R.									X	⁘			DROPSONDE
250-4	9/7	6B	Hoeber	Garcia-Meitin, R.											X		OCEANOGRAPHY
250-5	9/7	Cancelled												⁘			
251-1	9/8	6B/6D	Gray	Lazanoff												X	OCEANOGRAPHY
251-2	9/8	1C2	Gray	Simpson, J.		X	X			X	X	X					CLOUD CLUSTER
251-3	9/8	Tower Fly-by					X	X									CALIBRATION
251-4	9/8	Cancelled							⁘								
251-5	9/8	7B1	Gray	Cox										X			RADIATION
251-6	9/8	6B	Gray	Garcia-Meitin, J.											X		OCEANOGRAPHY
252-1	9/9	1C2	Nicholls	Cox	X	X	X	X			X						CLOUD CLUSTER
252-1A	9/9	7B1	Nicholls	Zhvalev					X			⁘					RADIATION
252-2	9/9	7B1	Nicholls	Albrecht										X			RADIATION
252-3	9/9	9	Nicholls	Stull									X				DROPSONDE
252-4	9/9	6B	Nicholls	Garcia-Meitin, R.											X		OCEANOGRAPHY
253-1	9/10	Cancelled														⁘	
253-2A	9/10	5B1	Alt	Pennell	X		X	⁘									BOUNDARY LAYER
253-2B	9/10	7B1/7C2	Alt	Kuhn								X					RADIATION
253-3	9/10	7A2	Alt	Vasilyev					X	X							RADIATION
253-4	9/10	Cancelled											⁘				
253-5	9/10	10	Alt	Bunting											X		SYNOPTIC
254-1	9/11	5B1	Rasmussen	LeMone											X		BOUNDARY LAYER
254-2	9/11	6D	Rasmussen	Lazanoff												X	OCEANOGRAPHY

TABLE III-1 PHASE III AIRCRAFT MISSIONS ACCOMPLISHED
(CONTINUED)

NO.	DATE	TYPE	MISSION SCIENTIST	AIRBORNE M. S.	DC6	L188	UK130	DC7	IL18M	IL18C	USC130	CV990	WC135	Sabreliner	Queen Air	P3A	MISSION TYPE
254-3	9/11	8B1	Rasmussen	Borovikov		X				X	X						CLOUD PHYSICS
254-4	9/11	7B1	Rasmussen	Cox										X			RADIATION
254-5	9/11	9	Rasmussen	Stull									X				DROPSONDE
254-6	9/11	10	Rasmussen	LeMone											X		SYNOPTIC
255-1	9/12	5B1	Grossman	Simpson, J.											X		BOUNDARY LAYER
255-2	9/12	1A	Grossman	Betts		X	X				X	X					CLOUD CLUSTER
255-3	9/12	6D	Grossman	Lazanoff												X	OCEANOGRAPHY
255-4	9/12	7B1	Grossman	Ter-Mark.					X								RADIATION
255-5	9/12	7B1	Grossman	Poellot										X			RADIATION
255-6	9/12	10	Grossman	Stull											X		SQUALL LINE
256-1	9/13	1C	Borovikov	Nicholls			X			X		X					CLOUD CLUSTER
256-2	9/13	7B1	Borovikov	Zhvalev					X								RADIATION
256-3	9/13	Cancelled												X			
257-1	9/14	1C2	Hoeber	Zipser	X	X	X				X			X			CLOUD CLUSTER
257-1B	9/14	8B	Hoeber	Mazin						X							CLOUD PHYSICS
257-2	9/14	6D	Hoeber	Lazanoff												X	OCEANOGRAPHY
257-3	9/14	9	Hoeber	Reiff									X				DROPSONDE
258-1	9/15	Cancelled														X	
258-2	9/15	5A3	Pennell	Simpson, J.	X	X		X			X						BOUNDARY LAYER
258-3	9/15	5B	Pennell	Zipser											X		BOUNDARY LAYER
258-4	9/15	Cancelled												X			
258-5	9/15	7B	Pennell	Vasilyev					X								RADIATION
258-6	9/15	9	Pennell	Reiff									X				DROPSONDE
259-1A	9/16	6	LeMone	Lazanoff												X	OCEANOGRAPHY
259-1B	9/16	7B1	LeMone	Zhvalev					X								RADIATION
259-2	9/16	10	LeMone	Pennell										X	X		SYNOPTIC (QA flew 2 sorties)
259-3	9/16	2B	LeMone	Betts			X	X		X		X					ITCZ
260-1	9/17	7A2	Vasilyev	Cox	X	X		X		X	X	X					RADIATION
260-2	9/17	6D	Vasilyev	Lazanoff												X	OCEANOGRAPHY
260-3	9/17	5B	Vasilyev	Kelley											X		BOUNDARY LAYER
260-4	9/17	9	Cancelled										X				
260-5	9/17	5B	Vasilyev	Stull											X		BOUNDARY LAYER
261-1	9/18	6C	Grossman	Ter-Mark.					X								OCEANOGRAPHY
261-2	9/18	1	Grossman	Simpson, J.	X	X	X				X			X			CLOUD CLUSTER
261-3	9/18	5B	Grossman	Stull											X		BOUNDARY LAYER
261-4	9/18	Cancelled											X				
262-1	9/19	1U	Kuettner/ Pennell	Stull											X		SQUALL LINE
262-2	9/19	1A	Kuettner/ Pennell	Zipser			X	X		X							CLOUD CLUSTER

TABLE III-1 PHASE III AIRCRAFT MISSIONS ACCOMPLISHED
(CONTINUED)

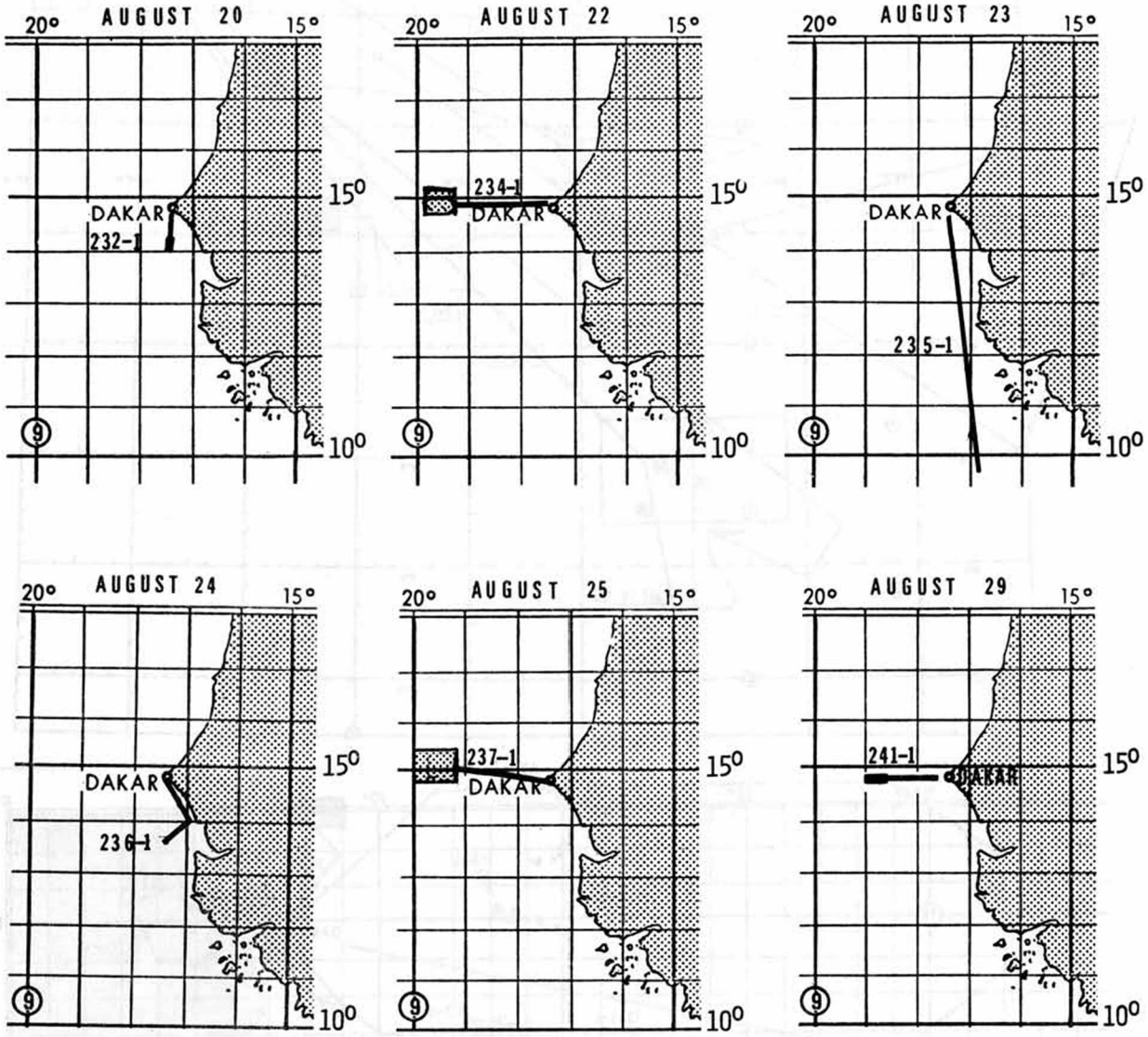
NO.	DATE	TYPE	MISSION SCIENTIST	AIRBORNE M. S.	DC6	L188	UK130	DC7	IL18M	IL18C	USC130	CV990	WC135	Sabreliner	Queen Air	P3A	MISSION TYPE
262-3	9/19	Inter-comp.	Nicholls	Peterson					X			X		X			INTERCOMPARISON
262-4	9/19	10	Kuettner/ Pennell	Grossman											X		SQUALL LINE
262-5	9/19	9	Kuettner/ Pennell	Govind									X				DROPSONDE
263-1	9/20	Inter-comp.	Nicholls	Pennell				X		X	X						INTERCOMPARISON
263-2	9/20	Inter-comp.	Nicholls	LeMone	X	X	X								X		INTERCOMPARISON
264-1	9/21	9	None	Govind									X				DROPSONDE

◊ Phase II - Phase III Interim Missions

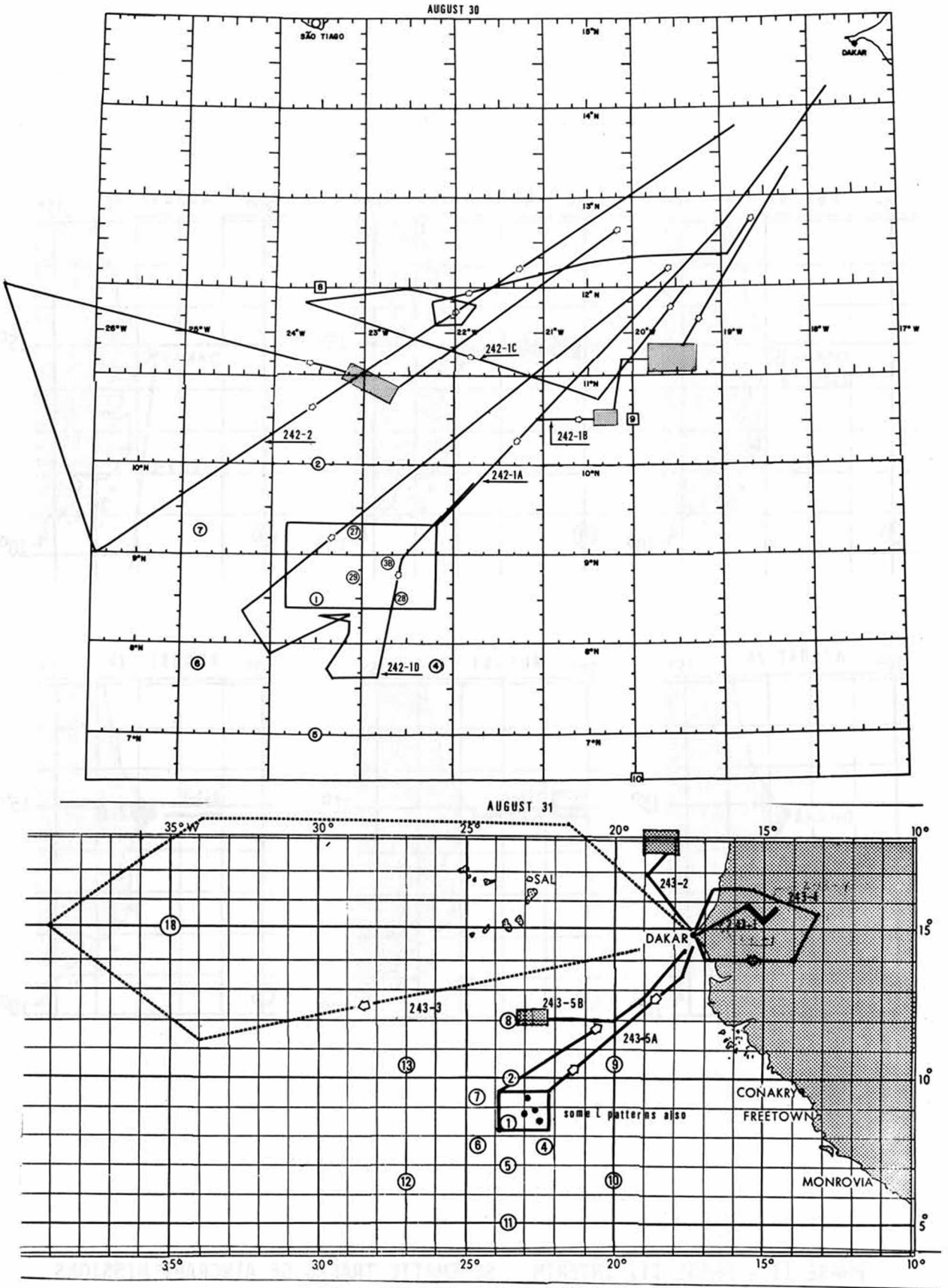
* The dotted symbol ⁖ signifies that the planned sortie for the indicated aircraft was cancelled.

♦ For this particular mission, individual aircraft were assigned different add-on missions; they all carried out the basic mission in coordination, accomplishing the add-on observations after the completion of the coordinated work.

TABLE III-1 PHASE III AIRCRAFT MISSIONS ACCOMPLISHED (CONTINUED)

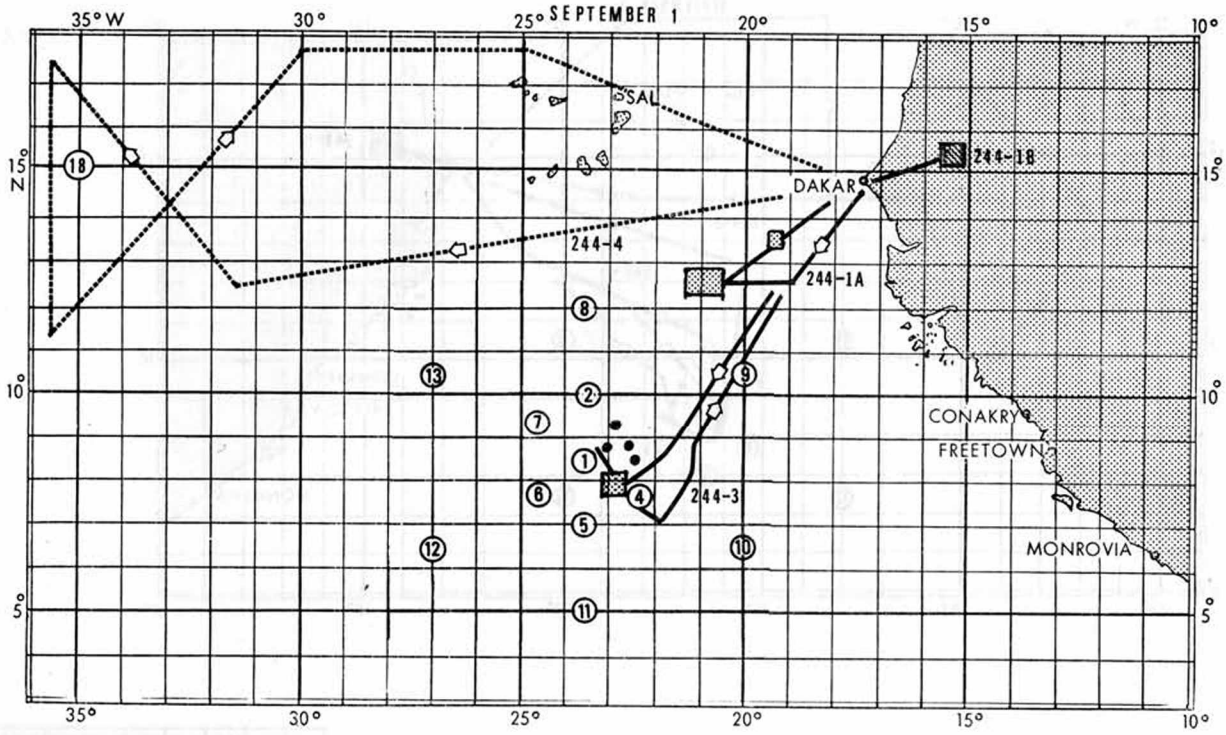


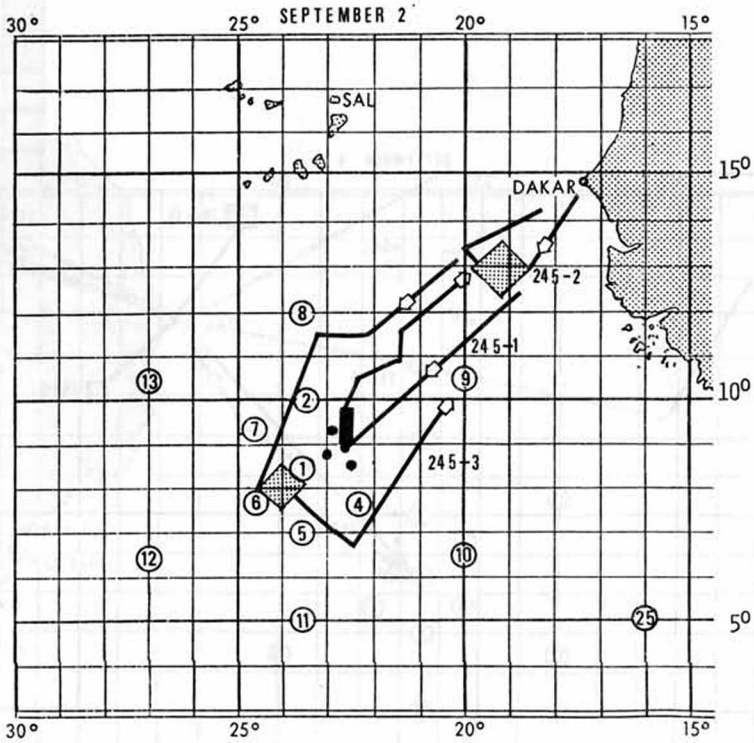
PHASE II - PHASE III INTERIM SCHEMATIC TRACKS OF AIRCRAFT MISSIONS



PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

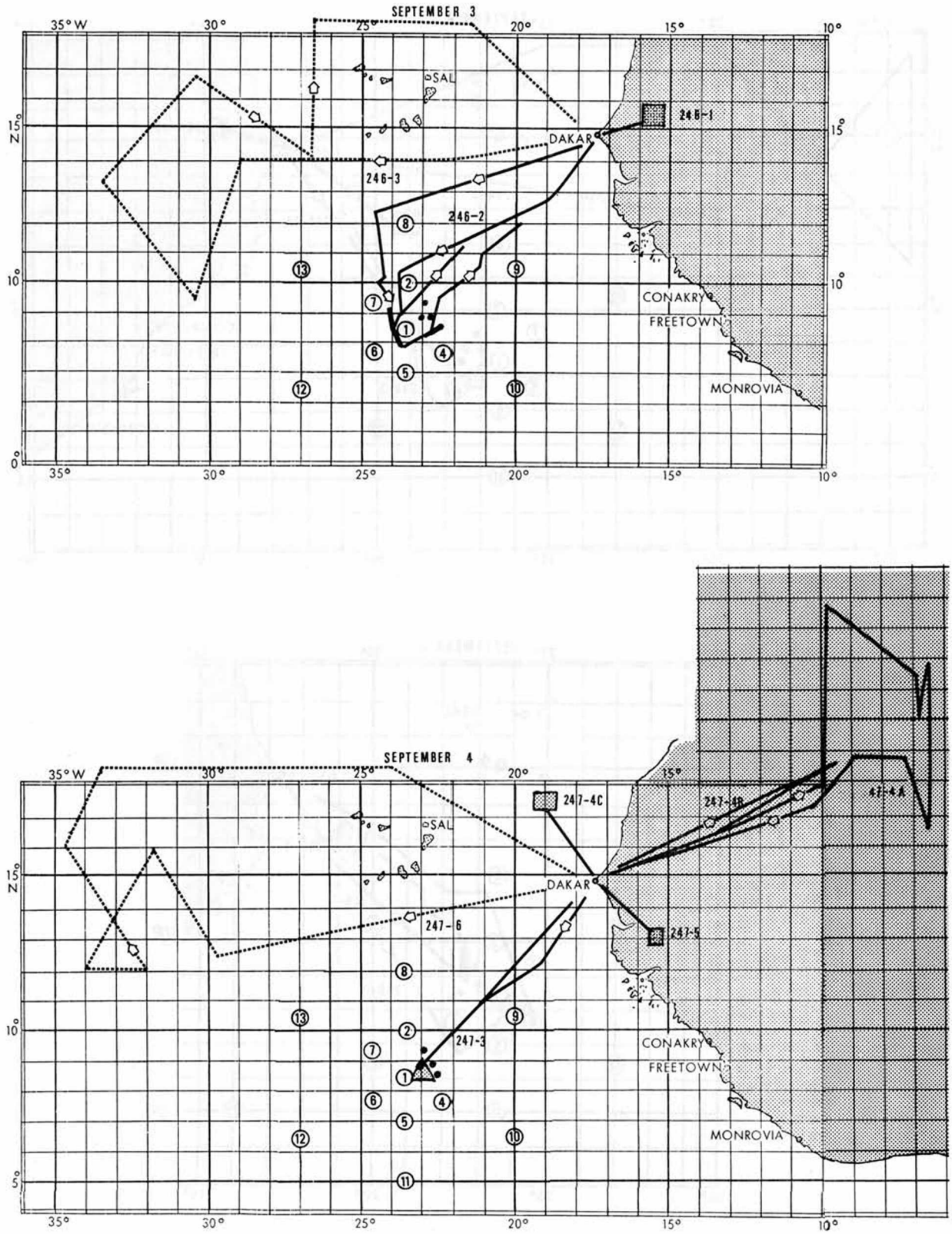
Dashed track denotes dropsonde mission





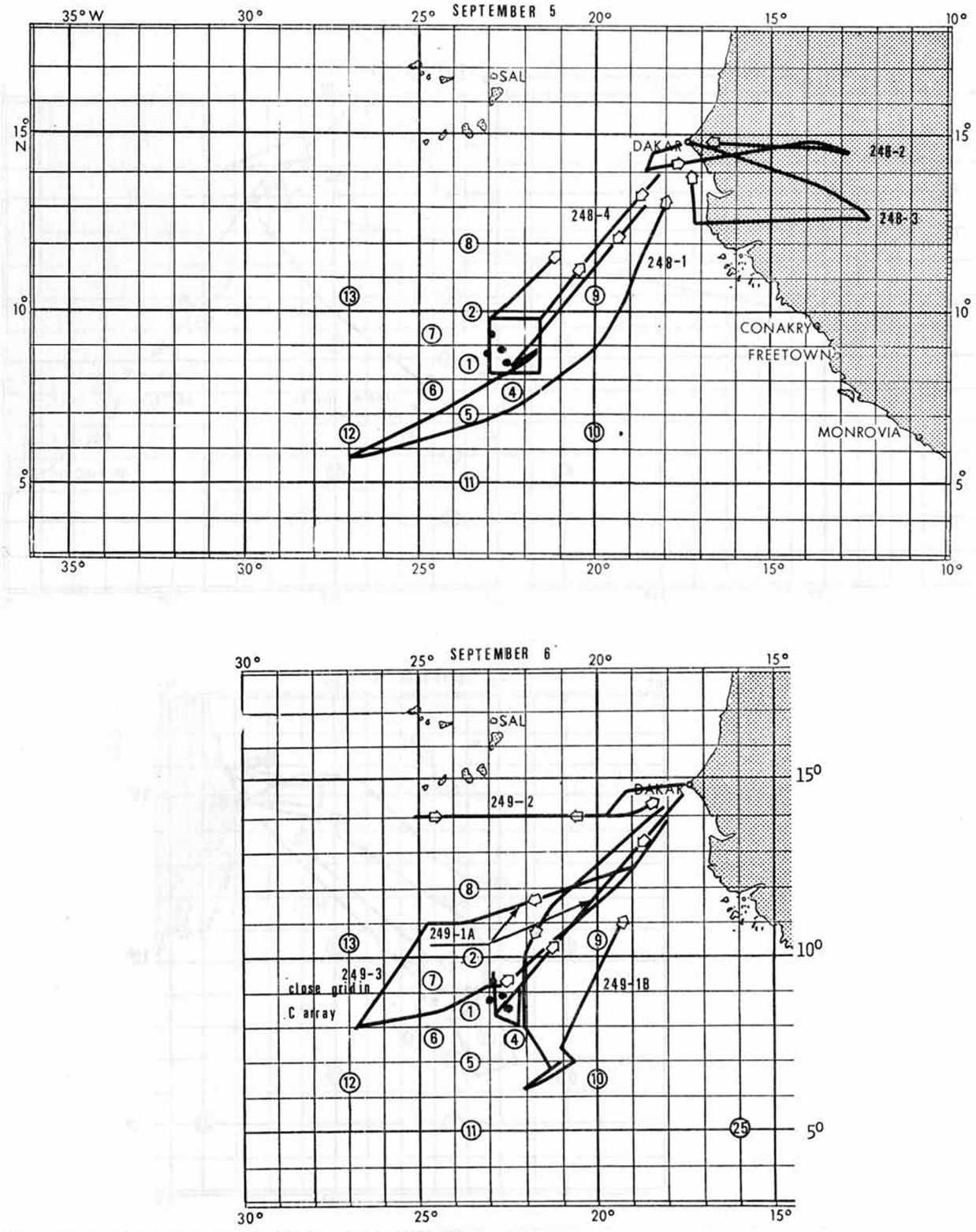
PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

Dashed track denotes dropsonde mission

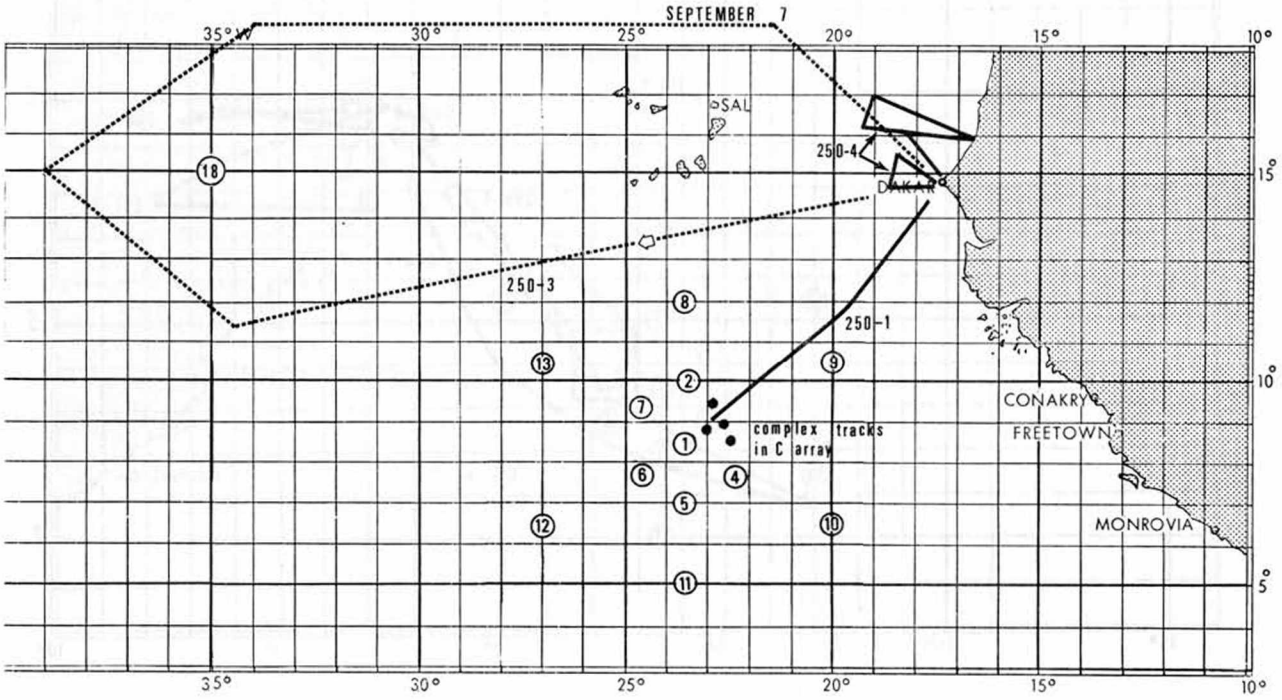


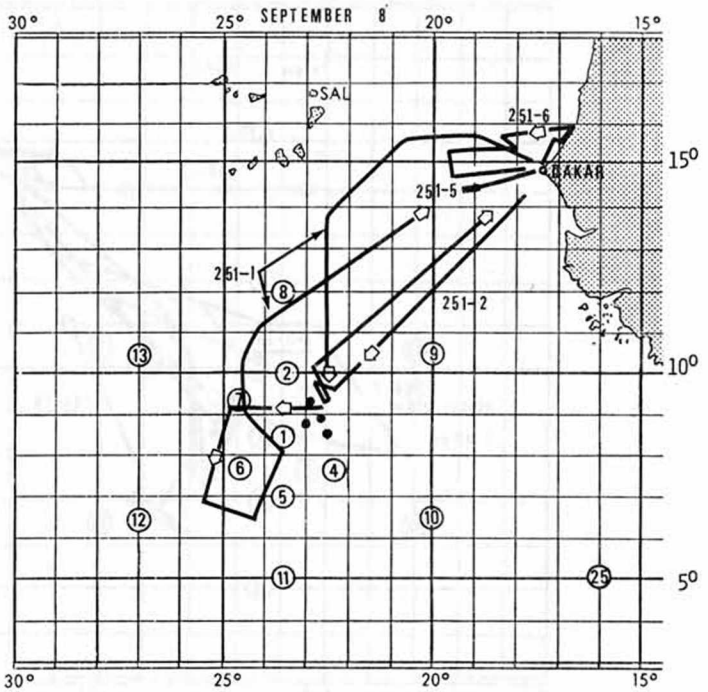
PHASE III SCHEMATIC TRACKS OF DROPSONDE MISSIONS

Dashed tracks denote dropsonde missions



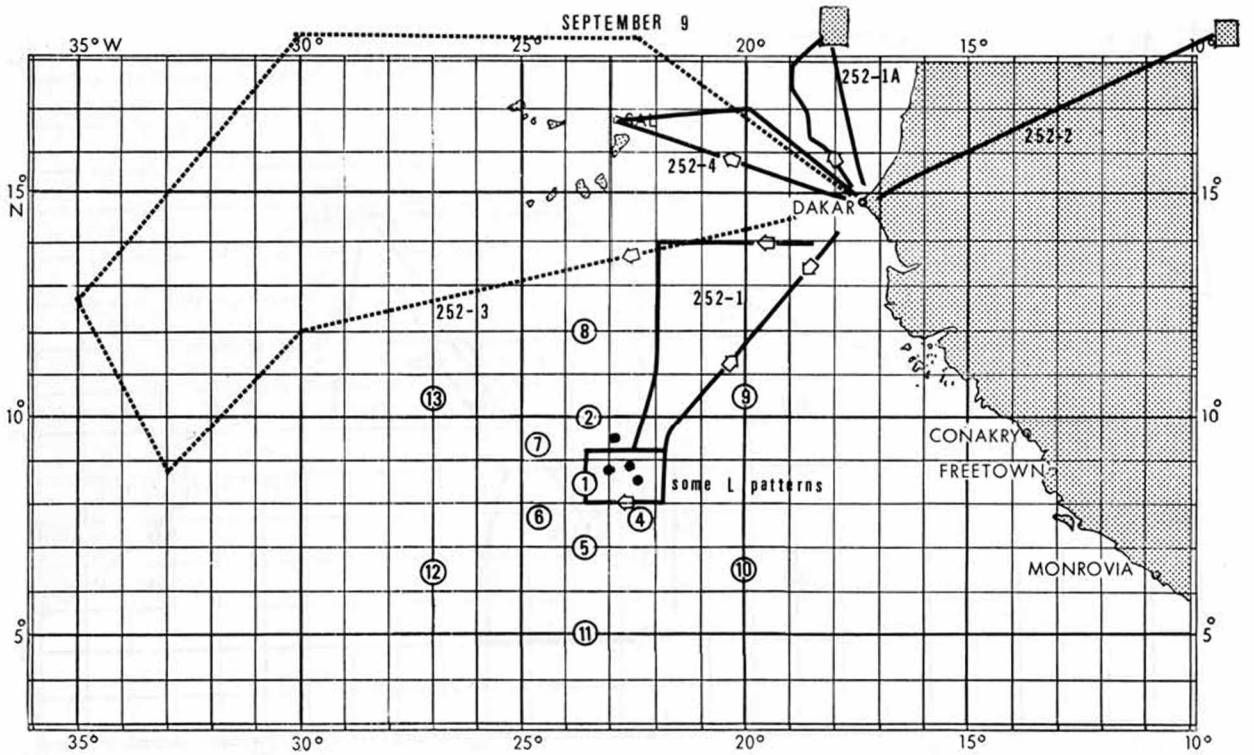
PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

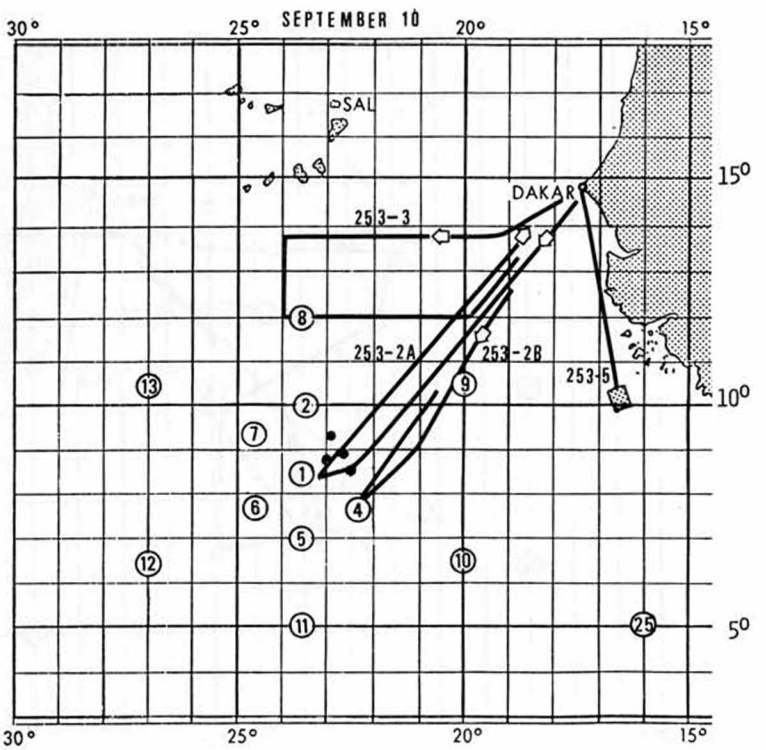




PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

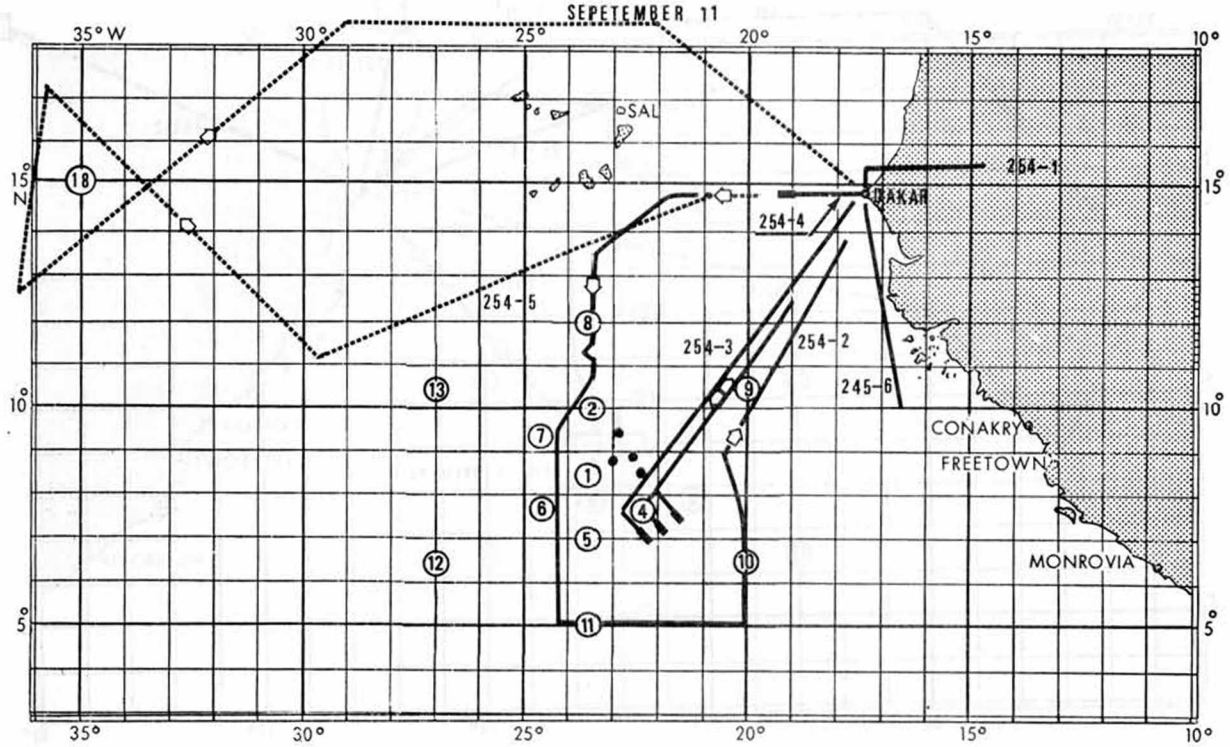
Dashed track denotes dropsonde mission

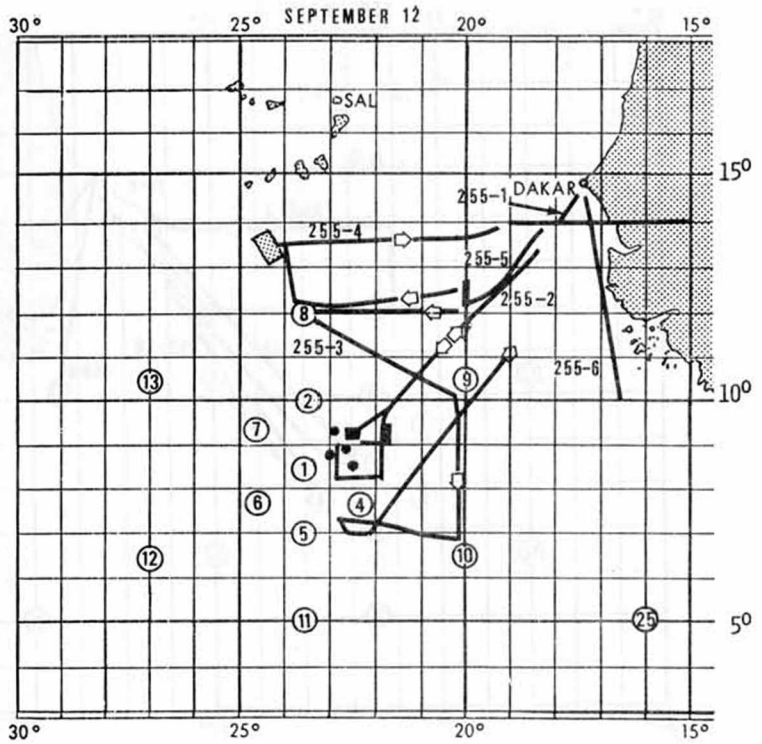




PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

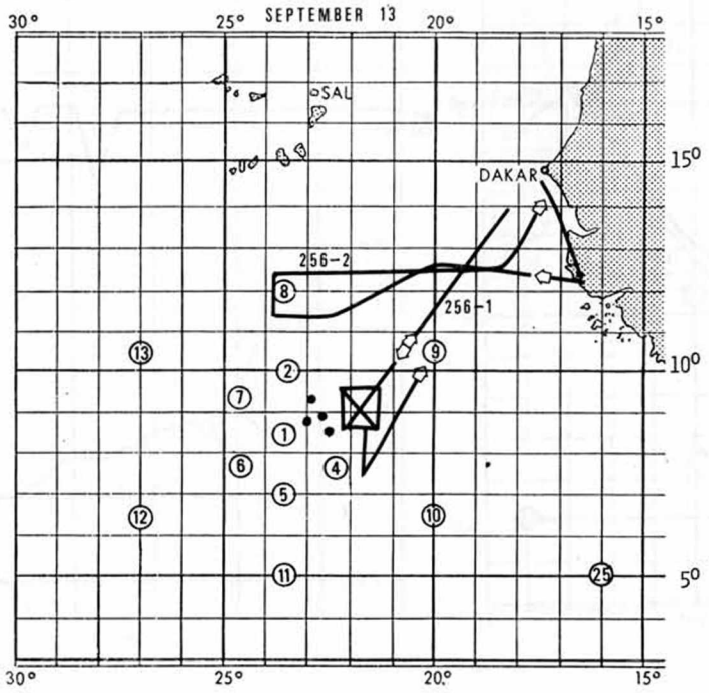
Dashed track denotes dropsonde mission

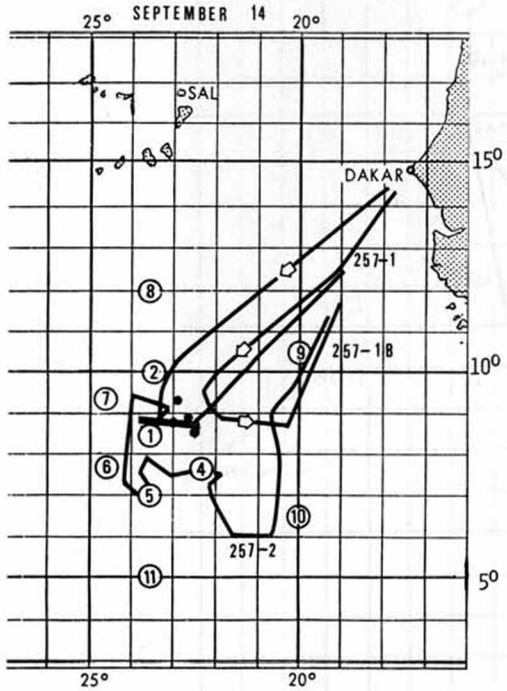


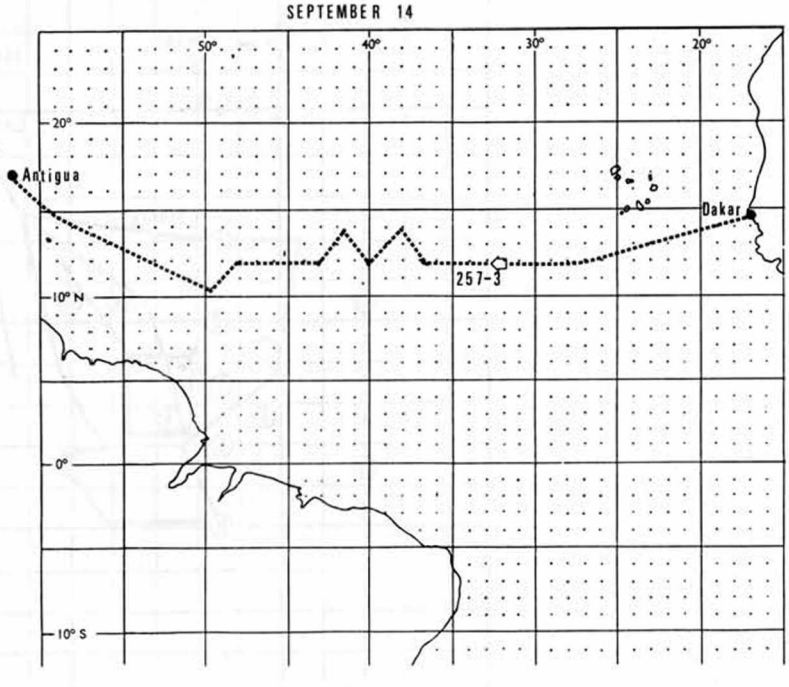


PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

Dashed track denotes dropsonde mission

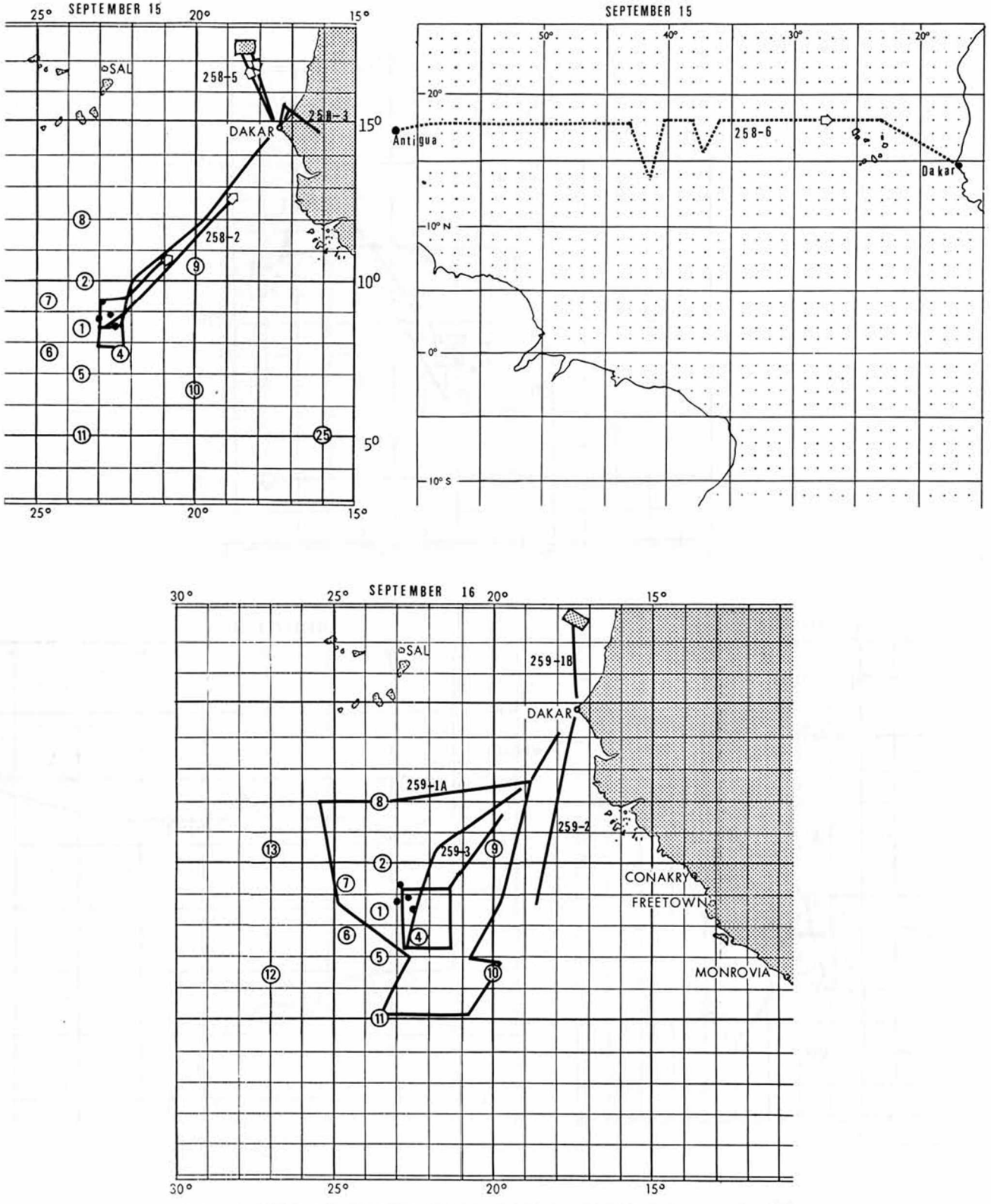






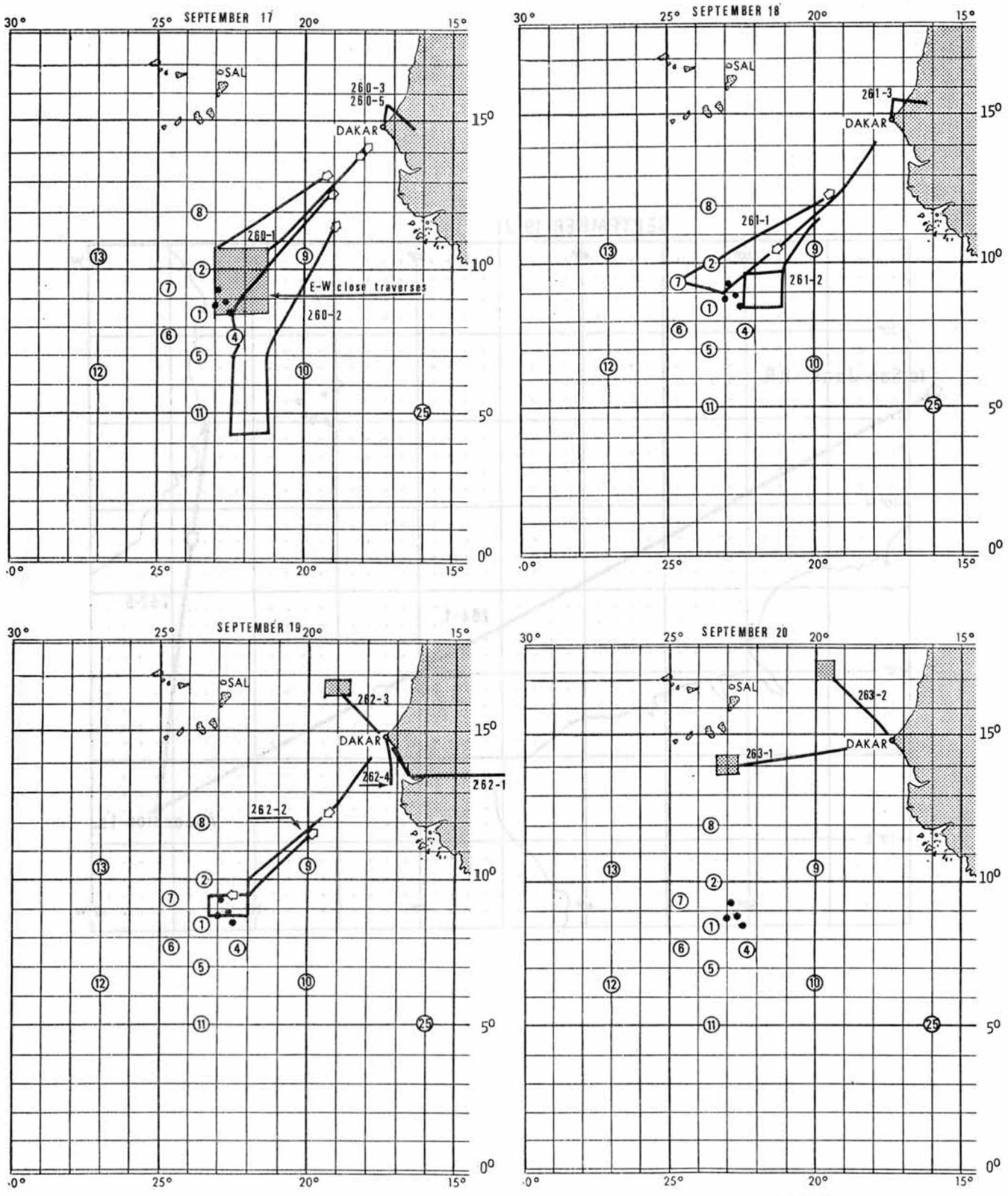
PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

Dashed track denotes dropsonde mission

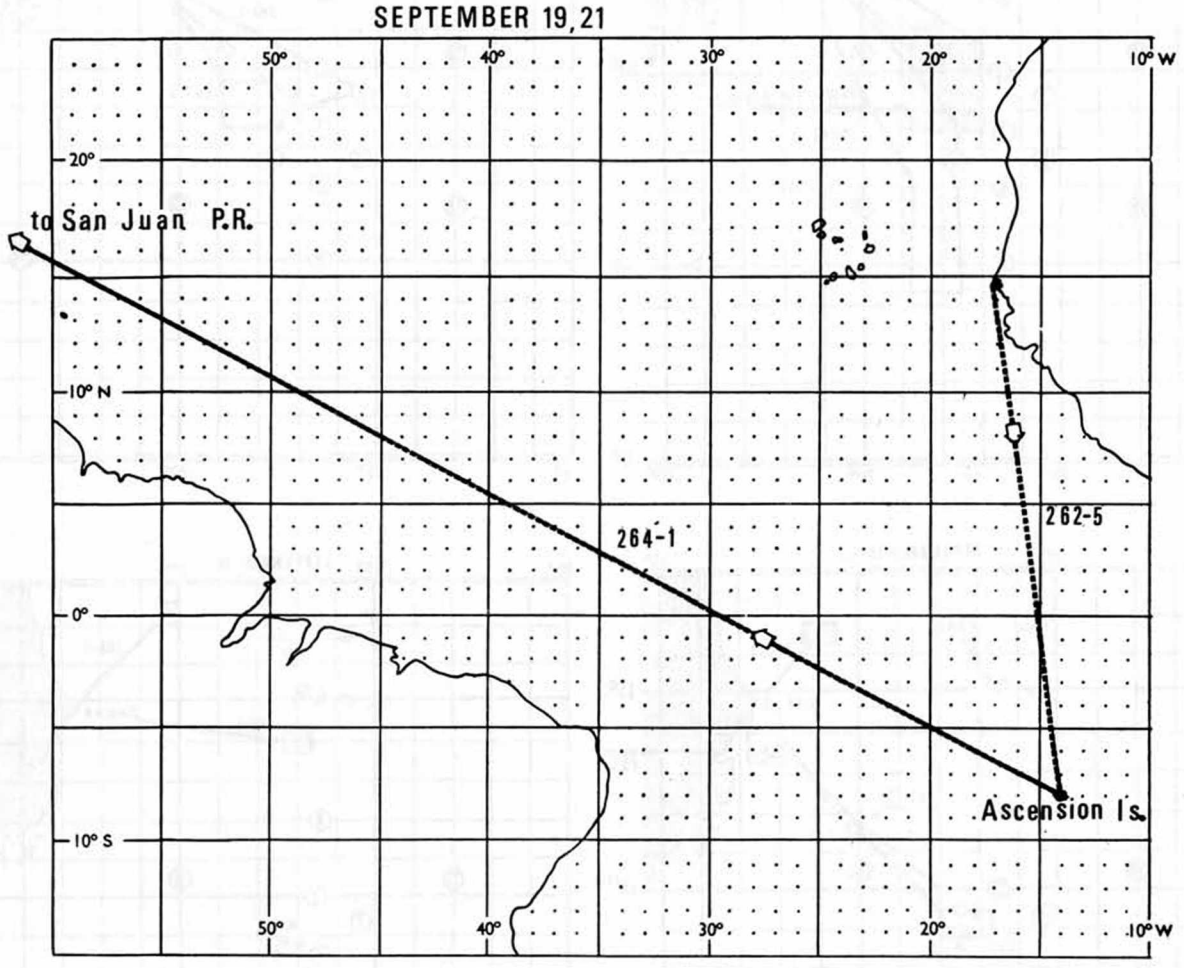


PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

Dashed track denotes dropsonde mission



PHASE III SCHEMATIC TRACKS OF DROPSONDE MISSIONS



PHASE III SCHEMATIC TRACKS OF AIRCRAFT MISSIONS

Dashed tracks denote dropsonde missions

And thus ended the field phase of GATE - four months of intense effort, marked by unparalleled coordination of national efforts, international cooperation on a grand scale, and assignment to an international management team of national resources to meet common goals. We cannot fail to mention, in addition, a camaraderie of shared triumphs and tribulations that will be long remembered by all who participated.

In closing this summary of the field phases of GATE, we must pay tribute to the inanimate component of the field effort - the great ships and airplanes which were worked so hard and which came through so well. As illustrated below in an unposed sketch of the NCAR Electra (L-188), they were more than ready to speed home to rest and refurbishment at the close of Phase III. And their great crews, which made these complex observing platforms function so well, deserved their rest and recuperation no less.