

U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.1 OAOWF1 FILE

FLT ID: 970202H	FM: EINN	TO: EINN
FLT NO: 97-020	BLK IN: 0038	ATA: 0033
ETD: 1530	BLK OUT: 1523	RTD: 1533
ETE: 0140	BLK TIME: 9.3	FLT TIME: 9.0
SPONSOR ORG: NOAA	PROGRAM: FASTEX	PURPOSE: SYS SURVEY

OAO PERSONNEL TOP#9 Dropsondes

AC KENNEDY, P ✓	SYS ENG LYNCH, T ✓
CP KENNEL, P ✓	DATA SYS MCMILLAN, S ✓
NAV KOZAK, S ✓	RADAR BARR, S ✓
F TORREY, R ✓ WADE, S ✓	BT/ODW CARPENTER, D ✓
RADIO ROGERS, M ✓	CLD PHYS
FD WHITE, S ✓	DOPPLER

PARTICIPATING SCIENTIST/VISITORS/OAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
JORGENSEN, D #6	SCIENTIST	NSSC
WHERTY, J ✓	↓	11
SHEPHERD, T ✓	↓	11
ROUX, F ✓	↓	CNRS
VILTARD, N ✓	↓	CNRS
MERCIER, L ✓	↓	METEO

PROPOSED/ACTUAL MISSION/REMARKS (RECCO, FIXES, STORM, PENET, NHOP #)

15-23Z FL270 19-30N 57-62W | BOXES
 19-03Z FL270 54-60N 11-22W

1028.8

1028.0 180/6

U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.2 OAOWF2 F11

FLT ID: 970202H

TIME OFF: 1533

TIME ON: 0033

	A/C T/O	WX STN	A/C LAND	WX STN
PRESSURE	1029.7	1028.8	1026.9	1028.0

NO DATA DISPOSITION/DATE/QUALITY

1/SEC FLT LVL TAPES

FAST FLT LVL TAPES

RADAR TAPES

DOPPLER TAPES

~~DBH~~ CASSETTES

HARD COPIES

~~AXBT~~~~AXCP~~~~DBH~~ GPS

PHOTOGRAPHY

	FWD	LS	RS	VERT
ON	1525			
OFF	2102			
RATE				

REMARKS

GPS

plan 38/dropped 8, all
lost signal after 90s

FASTEX FLIGHT #5

FLIGHT #05 H970202

TYPE OF DATA

SENSOR OR OPTION

INE	1
Accelerometer	1
Temperature probe	1
Altitude change option (for vertical winds)	RA159
Static pressure	Rosemount fuselage
Dynamic pressure	Rosemount fuselage
Time source	Micro 99
Constants file	CO2971.CON

Notes:

There were no time/data gaps.

Radar Altitude (APN-159) patched from 1532:21 - 1532:40 and
0032:01 - 0035:00.

Downward spikes in radar altimeter data are a result of overflying land.

SPECIAL NOTE!!! Locations 80, 81 and 82 of record five on the standard tape contain vertical ground, vertical air and vertical speeds, respectively, computed using Dave Jorgensen's vertical wind algorithm. It is recommended that these values be used for vertical wind analysis.

	Takeoff	Landing
	-----	-----
Aircraft static pressure	1029.7 mb	1026.9 mb
Corrected tower pressure	1028.8 mb	1028.0 mb

Flight Meteorologist: Sean White, (813) 828-3310 ext. 3072

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[illegible]

FASTEX AIRCRAFT CHIEF SCIENTIST EVENT LOG

Flight Number: 970202H1 Page 1 of

Date: February 2, 1997 Aircraft ID: 42 Scientist: Jorgensen

Event Log

Time (UTC)	Approx. Location (Lat, Lon)	Event & Comments
15:19:51	Shannon	Engine Start This is mission #5 IOP 9
15:23:34	Shannon	Blockout
15:32:04	52.708 -8.912	takeoff
16:04:57		Radar recording on since 1552Z
16:09:14	53.913 -12.139	500 mb winds agree well with the LAM analysis. Timing of the pattern may be a bit slow since I assumed 200/40 and we actually have a slight headwind with winds no 280/34.
16:14:05		500 mb (5.57 km) altitude TAS is 285 knots
16:16:36	54.180 -12.873	Entering heavy overcast above
16:21:41		Looks like we'll be about one half hour late arriving at pt 1.
16:43:35	55.953 -14.193	Over buoy - turn to 319 to track to pt 1, ETA about 1800 UTC
16:45:32	56.043 -14.311	broken sky above - TA indicates light echo below
16:50:36	56.340 -14.746	small particle images on PMS display - very light echo indicated on TA
17:37:01	59.431 -17.796	precip cells evident on TA to the left max dBZ 25-30
17:54:05	60.555 -19.053	Entered our airspace "box" - climbing up to 22k ft PA ~21 kft RA 427mb
18:04:38	61.121 -20.110	at pt 1 - turn to track west
18:05:37	61.147 -20.239	drop #1
18:07:02	61.161 -20.434	Icelandic coast outlined on LF at 150-200 nm north
18:07:37		lost #1 about 80 seconds into the drop - no return on TA to speak of
18:21:56	61.312 -22.492	drop #2 - bright band now showing up on TA below us - indications of curved bands on LF 100 nm to the south
18:24:53	61.336 -22.901	Drop # 2 died too
18:25:14	61.340 -22.950	drop #3 - replacement for #2 away
18:30:25		sonde #3 also lost signal - maybe problem with reciever - looking into problem
18:36:45	61.433 -24.563	sonde #4 at drop location 3
18:44:07		sonde #4 also lost signal
18:51:38	61.519 -26.707	sonde #5 away at drop location 4
18:52:30		lost signal on sonde #5

19:03:26		holding off on sonde drops until problem is diagnosed. If it isn't fixed by pt 3, then will descend to 5 kft for Doppler run across low center.
19:05:11	61.569 -28.726	more bands evident on LF 100 nm to south. 3 bands spaced by 10-20 miles or so oriented east-west with some curvature to the south
19:05:47	61.570 -28.813	end of leg at pt 2, turning to track south to pt 3 - climb up
19:09:04	61.354 -28.810	more precip being seen by TA - bright band more evident
19:16:51	60.796 -28.730	sonde #5 away at location 4 half-way between pt 2 and pt 3
19:21:51		lost signal on sonde 5 - working on problem under the floor
19:26:46	60.065 -28.673	at point 3 starting spiral descent to 5k ft for run across cloud head band
19:31:23		stopping descent to launch another sonde for a test continuting to spiral at pt 3
19:32:34	60.042 -28.919	sonde #6 away at 13 kft for a test, continuing to spiral and hold at this altitude. Useful as a perl as we're in very light precip.
19:34:47		lost signal on sonde #6 - possible antenna problem. Resuming the descent to 5k ft.
19:39:55	60.050 -28.787	start leg 2 eastbound toward pt 4 at 5k ft. Looks like we'll be cutting through the cloud head band.
19:50:07	60.158 -27.620	start perl #1 to the right
19:53:05		end of perl - resume track to east
19:56:20	60.184 -27.266	band of ~30 dBZ echo 40-50 nm to our south oriented toward 070 - warm frontal band?
20:03:28	60.240 -26.450	band about 40 nm to our south better defined with max dBZ to about 40
20:05:26	60.248 -26.226	start perl #2 in fairly moderate stratiform precip
20:08:08		end of perl resume eastbound track
20:15:55	60.297 -25.405	sloping shear layer on TA - ascending air over the warm front? slope from right (low level) to left (high level) ascending air sloping upward from south to north.
20:23:10	60.338 -24.585	start perl #3 in middle of cloud head band- bands of precip still evident on LF oriented toward 050 or so, max dBZ up to about 40
20:25:02		changed antennas on the dropsonde system will spiral up at the end of the leg to try another test
20:26:12		end of perl, resume eastbound track
20:27:26		too hot for the C-scat - it quit working at 1950 UTC
20:29:53	60.360 -24.212	east-west oriented precip bands now on both sides of track on LF. flight levels winds now 130/37 indicating we're now on the east side of the low center
20:41:55	60.362 -22.894	start perl #4 in moderate precip of cloud head
20:44:20		end of perl, resume eastbound track

20:51:10	60.417 -22.134	large particles on the 2D-P display 2-3 mm diameter or so - aggregates of various shapes
21:06:46	60.451 -20.266	end of leg-at pt 4-climbing spiral and perl to the right in light stratiform precip. Will try another sonde test when we get to 15kft. No contact with 308D as yet
21:14:18	60.471 -20.198	at 15k ft
21:15:46	60.430 -20.327	sonde #7 away
21:17:23		lost contact with sonde. Descending back to 5k ft for rest of pattern-trk south to pt 5
21:35:46		C-scat back up
21:38:40	59.567 -20.369	some turbulence going through a small convective line. TA shows more convective type cell structure
21:46:50	59.176 -20.409	brief contact with 308D before contact lost
21:52:39	58.956 -20.591	going through n-s oriented band
21:53:15		contact with 308D - passed along advice about this n-s band at 20.5W
21:59:01	58.996 -21.230	going through a small line of convective cells that are highly sheared from south to north
22:06:14	59.049 -21.985	going through a group of convective cells oriented N-S. Line only about 20 miles long but max dBZ is about 35-40. Cold air convection?
22:15:05	59.118 -22.922	sfc press down to 983
22:21:16	59.162 -23.570	end of leg, out of endurance turn and climb for trip back to SNN
23:08:38	57.134 -17.198	going through a region of light stratiform precip as we track 122 toward the northern buoy
23:31:31	55.932 -14.200	over buoy, trk toward SNN
23:47:00		radar recording suspended
0:32:40	SNN	land
0:38:14	SNN	blockin

MSA Coordinator Summary Report

970202H IOP9 (Flight 5) on Low 27

Aircraft Involved: P-3, Electra

Summary Description of Mission:

The planned primary mission was a "systematic survey" low 27 center and cloud head region plus a leg or two (with dropsondes) over the Electra investigation region along the occluded frontal precip band farther to the east. The P-3 was to take off about 4 hours ahead of the Electra in order to conduct a dropsonde survey of the cloud head and low region (which was centered near 60N and 24W) which was out of range of the Electra. Four 250 nm long east-west flight

legs were planned at 20-25 kft centered on the cloud head region. The low center was moving toward 050 (from the UKMO LAM forecast), but the precip associated with the cloud head looked to be moving north at about 30 knots. Dropsondes were planned to be deployed about every 63 nm along each of the four flight legs.

At the first dropsonde point at 61 7N, 20 9W, the aircraft lost the sonde signal about a minute after the launch. Subsequent sondes also lost signals, indicating a reception problem on the P-3. On the southbound leg to pt 3, following the failure of sonde 5, we decided to continue the next leg (which should have been right through the middle of the cloud head region) at 5k ft to optimize the Doppler data collection and not waste any more sondes. Executed a spiral (sounding) descent at pt 3 from 21k ft to 5k ft. Following the conclusion of leg 2 another sonde deployment was executed after the aircraft had spiraled up to 15k ft at pt 4. That sonde also lost its signal, and the sonde system was secured for the rest of the flight. The P-3 then returned to 5k ft for the continuation of the Doppler legs. Because of large headwinds (the P-3 went around the low center clockwise, thus always encountering a headwind) and the extra fuel expended at the low altitude, leg 3 had to be terminated early (aircraft went as far west as 23 30W). Lowest surface pressure was 883 mb which matched the UKMO LAM forecast for 21 UTC. Communications with the Electra was established at 2147 UTC, and radar information was relayed concerning the north-south precipitation band north of 58N along about 20W.

Communications:

1. No problems with VHF. HF didn't work at all again.

P-3 Equipment Problems Encountered:

1. Sonde system failed totally, probably due to a bad antenna. 7 sondes were deployed (and lost).

Coordination Problems

1. Due to the endurance limitation of the P-3, no coordinated patterns could be set up with the Electra, although information was passed to them concerning precip location.

Evaluation:

1. Very good Doppler work was performed on the cloud head region. 4 "perls" were executed in very active precip regions. Interesting banded structure was seen in the cloud head.

--Dave Jorgensen & Frank Roux

DATE : 2 FEB 97

TO : Chief, AOC Flight Operations

FROM : Pilot/Flight Director, Aircraft N 420K ON 0038 BLOCKTIME
OFF 1523 9.3

SUBJECT: Hazardous Duty

PURPOSE OF FLIGHT: FASTEX

Hazardous Duty Pay is required for flight made on 2 FEB 1997
(DATE)

Request based on RAINBANDS AND ASSOCIATED
WITH CYCLONE AND COLD FRONTS

Personnel on board authorized Hazard Pay:

TORREY, R

WADE, S

ROGERS, M

LYNCH, T

MCNICAN, S

BARR, J

CARPENTER, D

PILOT/FLIGHT DIRECTOR: LCDR S. R. WHITE

APPROVED: _____ DISAPPROVED: _____

CHIEF, AOC FLIGHT OPERATIONS: _____

NOAA N42RF

Mission ~~4~~ 970125H

S

Mission: Systematic Survey with dropsondes (M-1)

Other possible modules: Cold Frontal Rainbands (M-4)

Altitude: 27,000 ft or highest practical

- Takeoff: ~1530 UTC
- Overfly met buoy 62105 at 55.97N 14.20W on way to IP.
- A USAF C-130 will proceed from 55N, 25W to 60N, 30W from ~1400 UTC to ~1800 UTC at FL24. P-3 should be at (or above) FL25, or stay east of 23W until 1800 UTC (37 TEAL supposedly will monitor 122.925 mHZ to coordinate 1st leg).

PART A:

23 sondes

- Begin survey pattern at point 1: 61 7.2N -20 9.4W
- Deploy dropsondes ~63 miles along each leg and each corner (~12 minutes).
- Complete initial survey at ~2152 UTC.

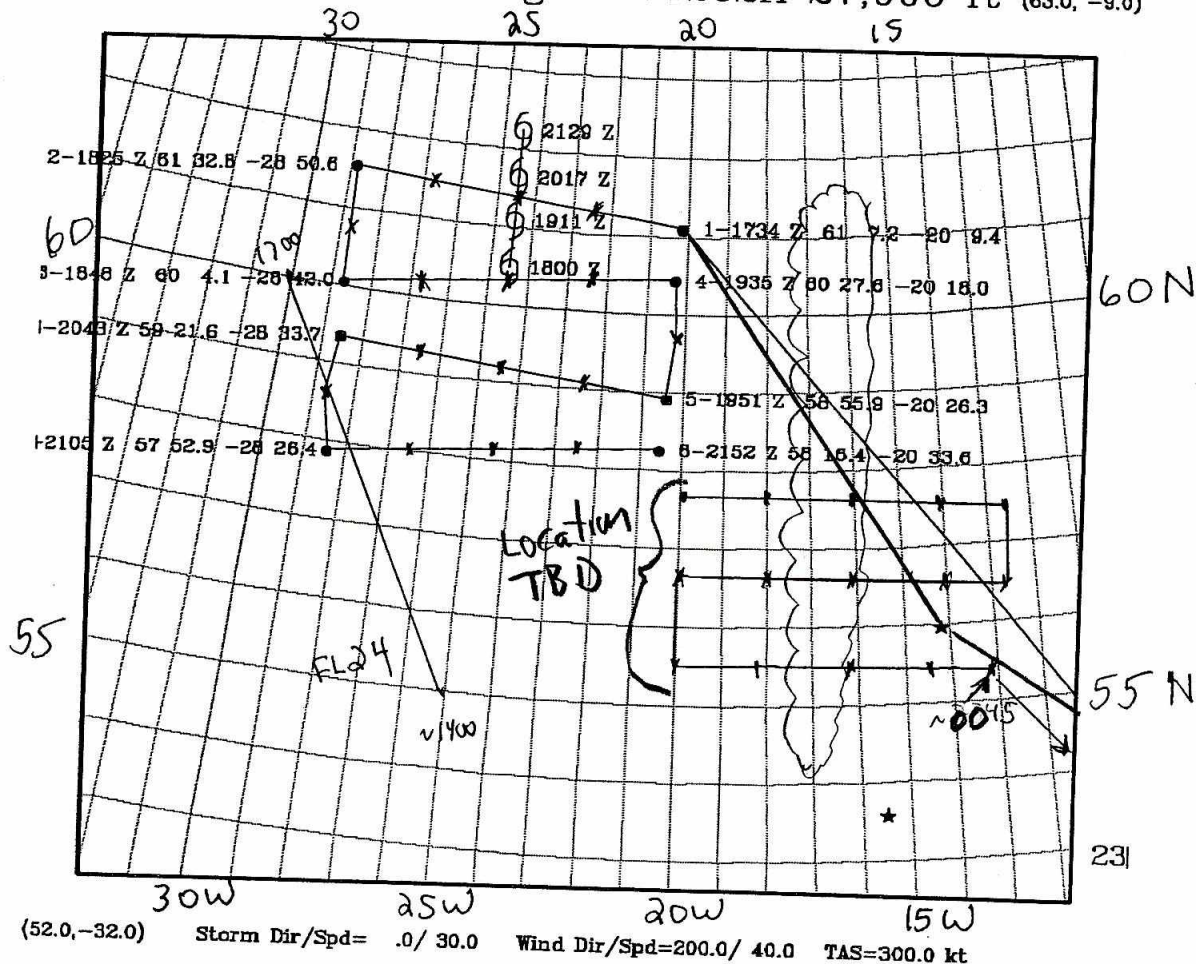
PART B:

15 sondes

- Link up with N308D and perform second "survey" pattern centered on precip zone. Center of pattern should be located near the center of the Electra "box" pattern. Number of legs and leg length will be determined by the width of the precip zone and remaining endurance.
- If time available: overfly buoy at 55.97N 14.20W before return to SNN.

Call Signs are P-3: "NOAA-42", Electra: "308 Delta", USAF C-130: "37 TEAL"
VHF frequencies: 122.925 or 123.05

FASTEX P-3 Flight 970202H 27,000 ft (63.0, -9.0)



USAF C-130 FL24
P3 east 23W until 1800Z
37 Teal
122.925

250 nm legs, 100 nm separation
Part 1 - 23 drops, ~63 miles apart
Part 2 - 250 nm legs, 60 nm separation
15 drops ~60 nm apart
(coordinated with Electra)
~38 drops mdes

FASTEX P-3 Flight 970202H 27,000 ft

Location of Airport: 52.70 -8.92

Assumptions:

Storm Location: 60.500 -24.500 1st leg mid-run time:18.00 UTC

Leg length: 250.0 nm TAS: 300.0 kt

Wind Direction: 200.0 Wind speed: 40.0 kt

Storm Direction: 0.0 Storm Speed: 30.0 kt

Dist to 1st point: 625.3 nm Take-off time: 15.65 (1539 UTC)

GS: 324.0 kt Trk: 323.9

Point # 1 Distance from center: 50.0 nm

Lat: 61 7.2 Lon:-20 9.4 Time: 17.57 (1734 UTC)

Trk: 275.7 GS: 292.7 kt Dist: 251.2 nm Dt: 51.2 min Mid Run Time:1800

At mid run time, storm position is: 60.50 -24.50

Point # 2 Distance from center: 50.0 nm

Lat: 61 32.8 Lon: -28 50.6 Time: 18.43 (1825 UTC)

Distance from storm: -50.0 nm

Point # 3 Distance from center: -50.0 nm

Lat: 60 4.1 Lon:-28 42.0 Time: 18.80 (1848 UTC)

Trk: 84.3 GS: 319.4 kt Dist: 251.2 nm Dt: 47.0 min Mid Run Time:1911

At mid run time, storm position is: 61.10 -24.50

Point # 4 Distance from center: -50.0 nm

Lat: 60 27.6 Lon: -20 18.0 Time: 19.59 (1935 UTC)

Distance from storm:-150.0 nm

Point # 5 Distance from center:-150.0 nm

Lat: 58 55.9 Lon:-20 26.3 Time: 19.86 (1951 UTC)

Trk: 275.7 GS: 292.7 kt Dist: 251.2 nm Dt: 51.2 min Mid Run Time:2017

At mid run time, storm position is: 61.65 -24.50

Point # 6 Distance from center:-150.0 nm

Lat: 59 21.6 Lon: -28 33.7 Time: 20.72 (2043 UTC)

Distance from storm:-250.0 nm

Point # 7 Distance from center:-250.0 nm

Lat: 57 52.9 Lon:-28 26.4 Time: 21.10 (2105 UTC)

Trk: 84.3 GS: 319.4 kt Dist: 251.2 nm Dt: 47.0 min Mid Run Time:2129

At mid run time, storm position is: 62.24 -24.50

Point # 8 Distance from center:-250.0 nm

Lat: 58 16.4 Lon: -20 33.6 Time: 21.88 (2152 UTC)

