

19910908I1-LPS

Form E-2
Page 1 of 5

On-Board Lead Project Scientist Check List

Date 8 SEPT 91 Aircraft 43 Flight ID 910908I

A. Participants

HRD Electrification Experiment OAO

Function	Participant	Function	Participant
Lead Proj. Sci.	<u>Willis/Burpee</u>	Flight Director	<u>Damiano</u>
Cloud Physics	<u>P. Black</u>	Pilots	<u>Ticknor/Kennedy/Plager</u>
Radar	<u>Roux, Hamache</u>	Navigator	<u>White</u>
Workstation		Sys. Engr.	<u>Leyva</u>
Photographer		Data Tech.	<u>Lynch Prades-Berges</u>
Omegasonde		El. Tech.	<u>Lynch</u>
AXBT/AXCP		Other	

Take-Off 155730Z Location Bermuda Landing 0052Z Location Bermuda

B. Past and Forecast Storm Locations

Date/Time	Latitude	Longitude	MSLP	Max. Wind

C. Mission Briefing

Briefing conducted by Marks who bailed out of the flight at the last second

survey

determine point ②

② → ① → ② then climb

E.2 Lead Project Scientist (On-Board)

E.2.1 Preflight

- _____ 1. Participate in general mission briefing.
- _____ 2. Determine specific mission and flight requirements for assigned aircraft.
- _____ 3. Determine from CARCAH or field program director whether aircraft has operational fix responsibility and discuss with AOC flight director/meteorologist and CARCAH unless briefed otherwise by field program director.
- _____ 4. Contact HRD members of crew to:
 - a. Assure availability for mission.
 - b. Arrange ground transportation schedule when deployed.
 - c. Determine equipment status.
- _____ 5. Meet with AOC flight crew at least 90 minutes before takeoff, provide copies of flight requirements and provide a formal briefing for the flight director, navigator, and pilots.
- _____ 6. Report status of aircraft, systems, necessary on-board supplies and crews to appropriate HRD operations center (MGOC in Miami or FGOC at remote recovery location).

E.2.2 In-Flight

- _____ 1. Confirm from AOC flight director that satellite data link is operative (information).
- _____ 2. Confirm camera mode of operation.
- _____ 3. Confirm data recording rate.
- _____ 4. Complete Form E-2.

E.2.3 Postflight

- _____ 1. Debrief scientific crew.
- _____ 2. Report landing time, aircraft, crew, and mission status along with supplies (tapes, etc.) remaining aboard the aircraft to the appropriate HRD operations center (MGOC or FGOC).
- _____ 3. Gather completed forms for mission and turn in at the appropriate operations center. [Note: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]
- _____ 4. Obtain a copy of the 10-s flight listing from the AOC flight director. Turn in with completed forms.
- _____ 5. Determine next mission status, if any, and brief crews as necessary.
- _____ 6. Notify the appropriate operations center (FGOC or MGOC) as to where you can be contacted and arrange for any further coordination required.

D. Equipment Status

Equipment	Pre-Flight	In-Flight	Post-Flight
Aircraft	✓	✓	✓
Radar/LF	✓	{ a few problems	✓
Radar/TA (Doppler)	✓	{ see logs	✓
Cloud physics	✓	overheated 1913 some problems after that	precip probe broken data system problem to be repaired
Data system	✓	{ one crash down 8/30-2140	✓
Omegasondes	✓	✓	✓
AXBT/AXCP	NA		
Workstation	NA		
Photography	✓		✓

REMARKS: 1. straight line across center, turn 1633
2. start turn 1639 radar down, ADU bad T

+2.7°C outside
GA 4407

E. I. Proposed Flight Pattern (sketch or designate by number)

see attached pattern prepared by Frank Marks

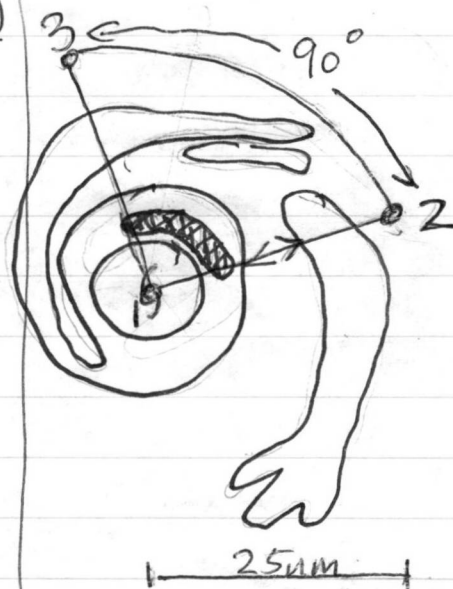
E. II. Actual Flight Pattern

- ① consisted of many radial legs across the most convective parts of the eyewall at altitudes ranging from 15000 to 3000 ft. in increments of 2,000 ft. 1639-2348 Z
- ② one eye fix at 10,000 ft at 2108 Z
- ③ concluded with partial circumnavigation of the eyewall, 5-10 nm outside the highest reflectivities, at 5000 ft - requested by Frank Roux for the French antenna. 0000-0020 Z

1 pattern (25nm legs)

1-2	25nm
2-1	25nm
1-2	25nm
2-3	38nm
3-1	25nm
138nm	
<u>(45min)</u>	

repeat 2-3 times



select azimuth
for radials based
on reflectivity
then

1-2 repeat (25nm)
at three alt.
-15000 ($\pm 1^\circ$)
-17000 (0°)
-19000 or as high
as possible

25nm leg distance is selected
based on eye structure

the - at highest
altitude downward
to 3 and return to 1

1 pattern (40nm legs)

1-2	40nm
2-1	40nm
1-2	40nm
2-3	62nm
3-1	40nm
222nm	
<u>(56min)</u>	

repeat 2-3 times

Lead Project Scientist Event Log

1 of 4

Date 8 Sept 1991

Flight

Electrification
Hurricane Claudette

LPS

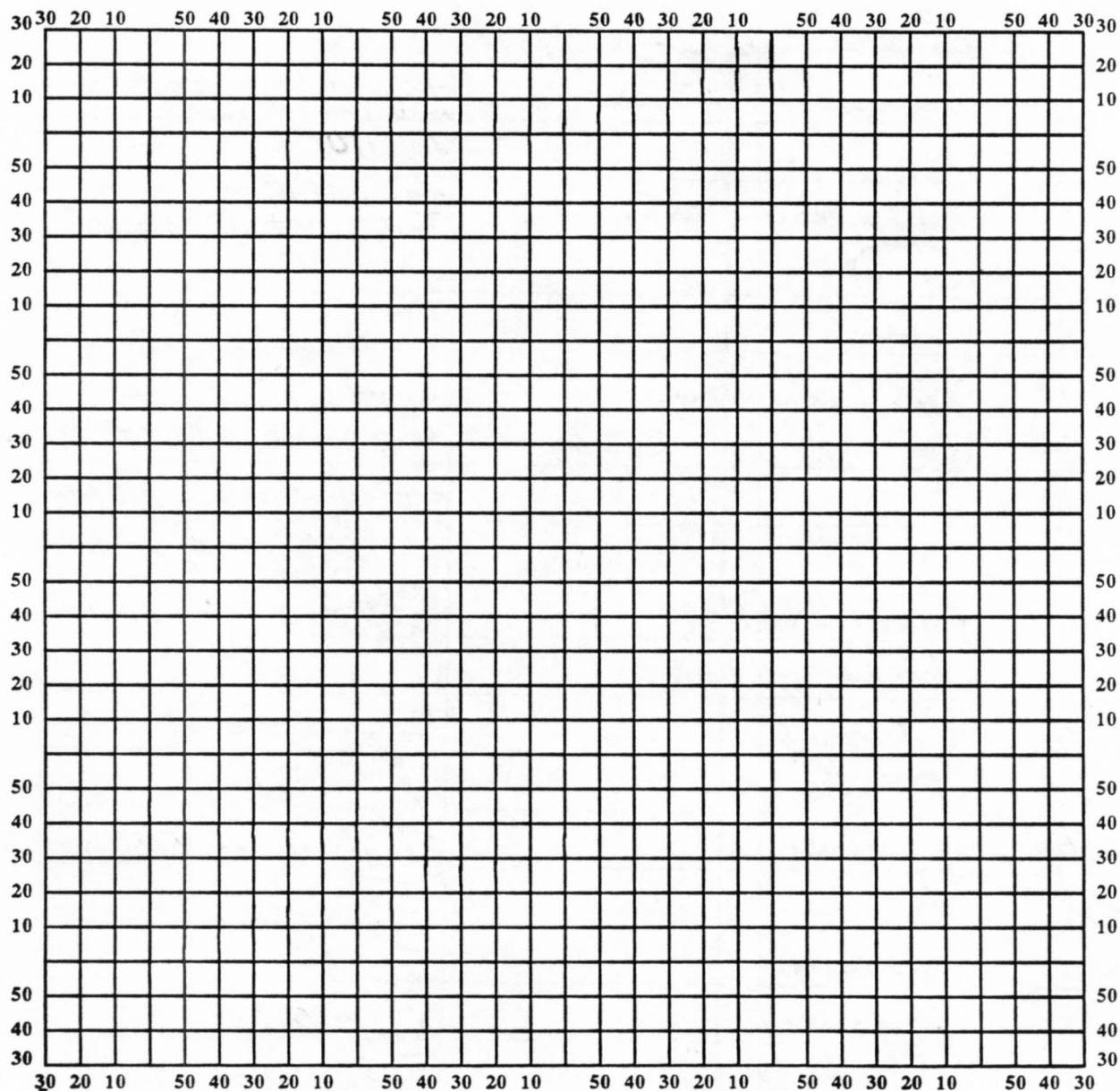
Willis Burpee

	Time	Event	Position	Comments
①		straight line across eye	eye 30°43'N 63°14'W	
	1639	start inbound	25 mm NE of center	+2.7°C outside GA 4407 max wind 110 kts T _{eye} +10.0°C 045-225° orientation
②				
	1650	start outbound	center	max wind 110 kts point ② 25 mm NE of center T _{outside} ~ +3.0
	1656	(climb)		
	1659	inbound		T ~ 0.0°C GA 4858 V _{max} ~ 105 kts
③		circle in eye to repair former tape		T _{eye} ~ 6.5°C
	173145	end circle	966 mb	former and radar repaired shifted 20° to left
				convective area in eye has moved down wind V _{max} 90 kts
	1738	end outward radial		shift to 020-200° orientation T ~ -1.0°C
	1741	start inbound		
④	1750	end inbound		T _{eye} ~ 6.0°C
	1751	start outbound		V _{max} 90 kts
	1756	end outbound		(climb) to GA 5180 m
	1758	start inbound		
⑤	1808	end inbound		T _{eye} 4.0°C
	1809	start outbound		V _{max} ~ 80 kts
	1814	end outbound		start downwind
	182340	start inbound		V _{max} ~ 75 kts 270 → 090° radial
	182830	start orbit in eye		new former film
	1857	and climb end orbit		(climb) to GA 5790 m
	185820	begin outward		340° - 160° T _{eye} ~ -0.5°C
	1904	end outward		T ~ -4.5°C
⑥	1906	start inward	31°10'N 63°8'	T _{eye} ~ -0.5°C
	1913	end inbound		

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes

Date _____ Aircraft _____ Observer _____



Note: Label full degrees according to location of flight area.

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Lead Project Scientist Event Log

Date 8 Sept 91

Flight Electrification
Hurricane Claudette

LPS Willis Burpee

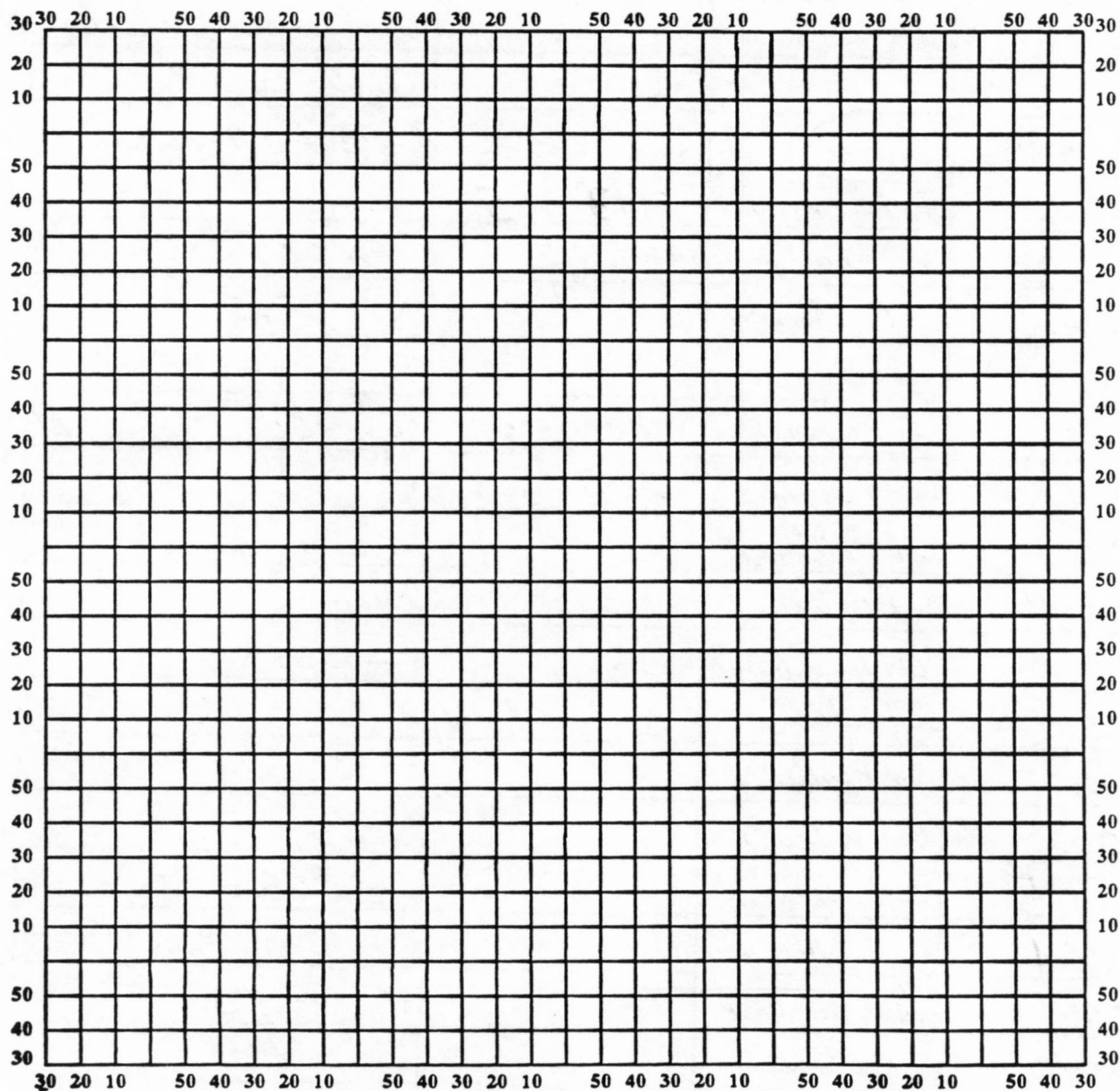
Time	Event	Position	Comments
1913	start outbound		cloud physics overheated, orbit outside eyewall
1918	<u>descend</u>	1938	GA 4540 T ~ 0.5°C
1929	start inbound	31°13' 63°5'	140-320
1939	end inbound	wind center	T _{eye} ~ 8.5°C
1941	start outbound		V _{max} 75 kts
1948	end outbound	1958	<u>climb</u> GA 5155 m
1951	start inbound	31°13' 63°5'	T _{eye} ~ 2.0°C V _{max} 75 kts
1958	end inbound	1958 31°17' 63°3'	
2000	start outbound		
2004	end outbound		<u>climb</u>
2008	begin inbound	2014	GA 5758
2014	end inbound	31°17'N 63°00'W	
2017	start outbound		
2021	end outbound		climb
2025	begin inbound		GA 6368 T ~ -6.5°C
2030	end inbound		w _{max} + 15 m s ⁻¹
2037	start outbound		T _{eye} ~ -1.5°C
2042	end outbound		
	orbit for formvar film change		
205430	begin descent to 10,000 ft for 2100 Z fix about 80 km north of storm center		

⑪ 2108 O.D.W. drop in eye from 10,000 ft.
climb to 15,000 ft

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes

Date _____ Aircraft _____ Observer _____



Note: Label full degrees according to location of flight area.

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Lead Project Scientist Event Log

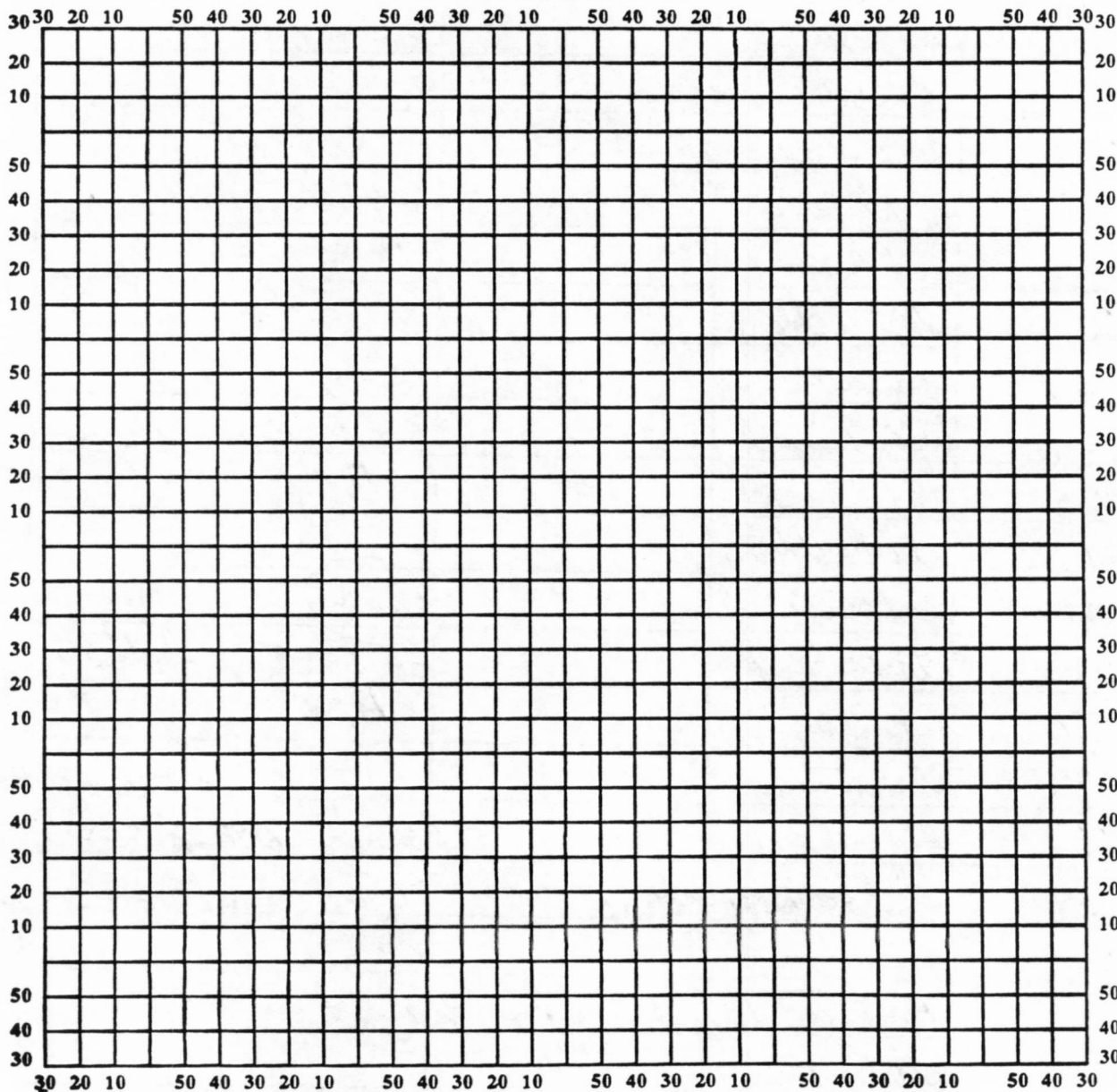
Date 8 Sept 91 Flight Hurricane Claudette LPS Willis Burpee

	Time	Event	Position	Comments
	2127	start outbound		GA = 4560
	213028	data system crash		
	2140	data system up		
	2145	start inbound		GA 4566 100 km north of center
(12)	2158	end inbound		15,000 ft
	2200	start outbound		
	2207	end outbound		(climb)
	2209	begin inward		GA 5140 on lightning strike
	2215	end inward		17,000 ft
(13)	2217	start outbound		
	2221	end outbound		(climb)
	2225	start inbound		GA 5735 lightning distance
	2230	end inbound		18,000
(14)	2232	start outbound		lightning distance
	2237	end outbound		(climb) GA 6360 GA 6360
	2241	start outbound inbound		21,000 ft lightning distance
(15)	2247	end inbound		
		orbit for forward film change		
	2318	start outbound		
	2323	end outbound		(climb) radome up
				23,000 ft

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes

Date _____ Aircraft _____ Observer _____



Note: Label full degrees according to location of flight area.

Electrification Experiment

Flight

Hurricane Claudette

LPS

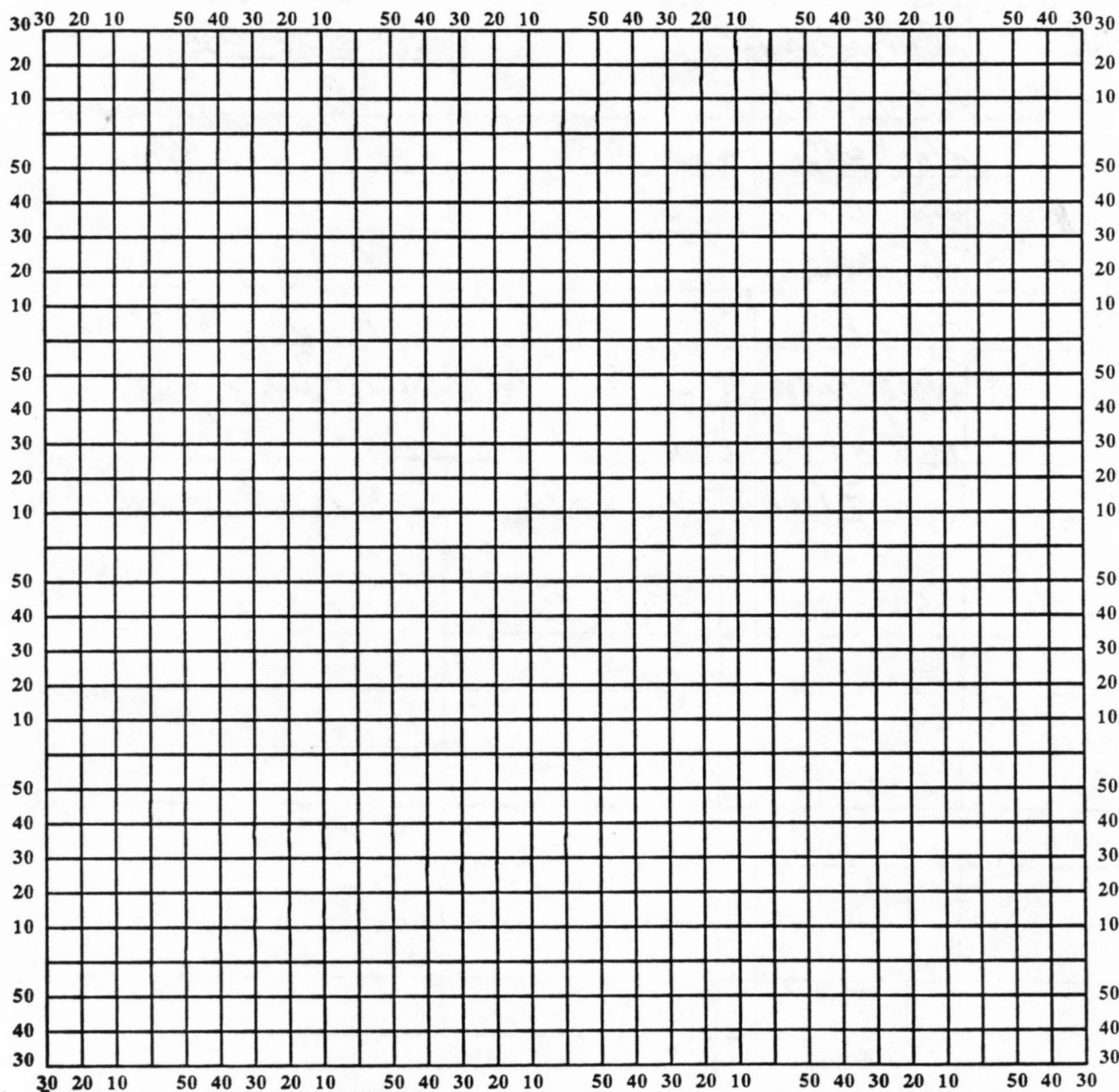
Willis Burpee

[illegible]

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes

Date _____ Aircraft _____ Observer _____



Note: Label full degrees according to location of flight area.

Lead Project Scientist Event Log

Date _____ Flight _____ LPS _____

[illegible]

Lead Project Scientist Event Log

Date _____ Flight _____ LPS _____

Time	Event	Position	Comments
1625			$V_{MAX} = 75 \text{ kt}$ NW
1628		3043 6314	center
1630			$V_{MAX} = 115 \text{ kt}$ SE
1640			270° turn at pt 2
1641			get ready to drop 010W
1644			$V_{MAX} = 110 \text{ kt}$ NE
1647		3051 6319	center
1653			$V_{MAX} = 100 \text{ kt}$, grapple shown
1701			just inside eye wall $V_{MAX} = 100 \text{ kt}$
1702			center in eye - fix formvar
1733	and center - head out NE		tape + radars
1730			B 31° 00' 6316' center
1736			$V_{MAX} = 90 \text{ kt}$ too far upwind of heavy rain
1752	head out @	$TA = 2.3$ in eye	
1757	turn + climb		
1801	$RA = 5/21$	$TA = 0.0$	
180430			$V_{MAX} = 100 \text{ kt}$
		3103 6314	
180930	headout	$TA = 1.1$	
1811			heavy grapple $w_2 = 8 \text{ m/s}$
181340	turn head W, to SW	$TA = -1.2$	$V_{MAX} = 85 \text{ kt}$

downwind at 60 km radius

1823 turn inboard upwind side of 50 dBZ echo

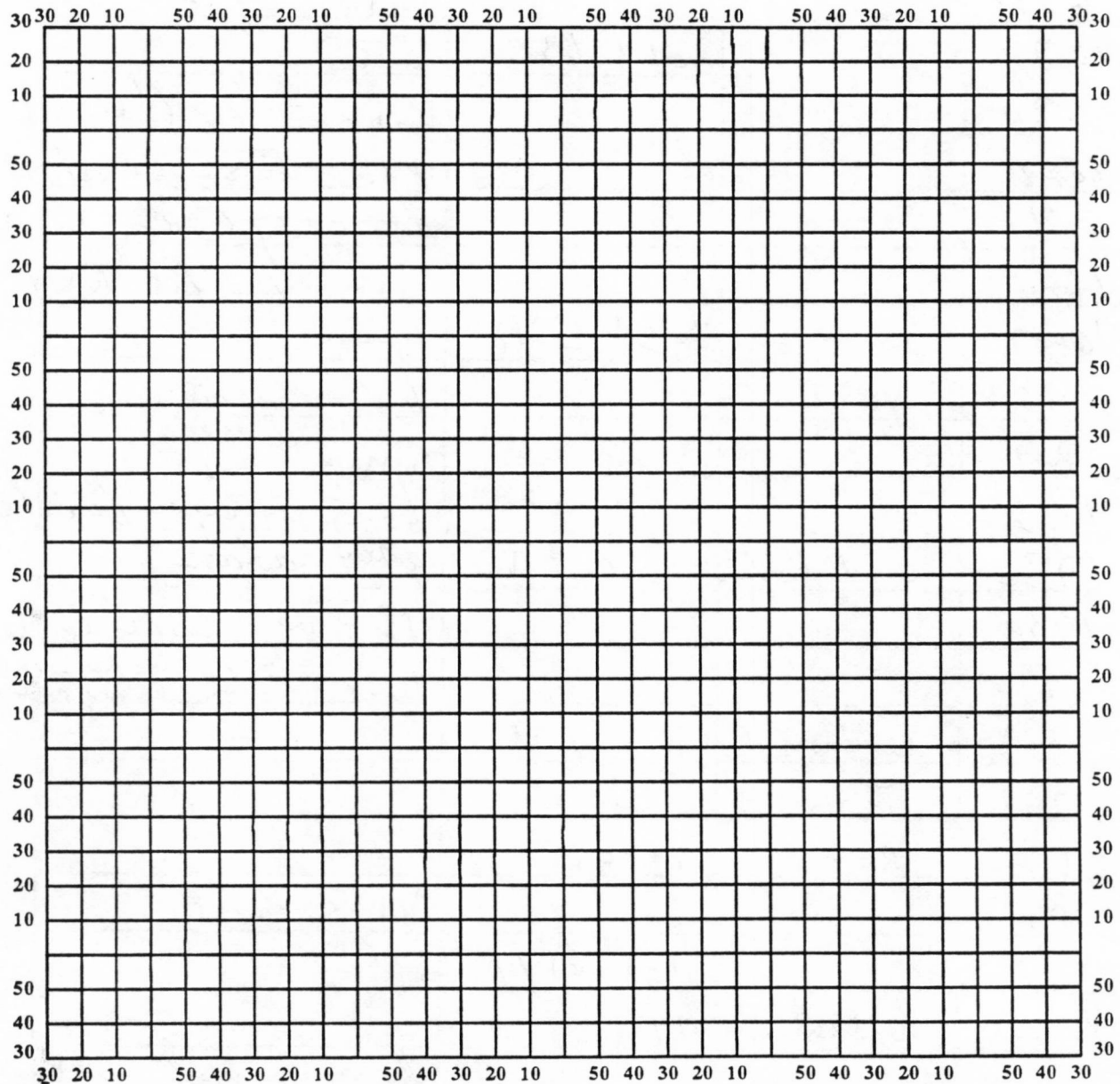
182630 $V_{MAX} = 77 \text{ kt}$

1828

Hurricane Recco Plotting Chart

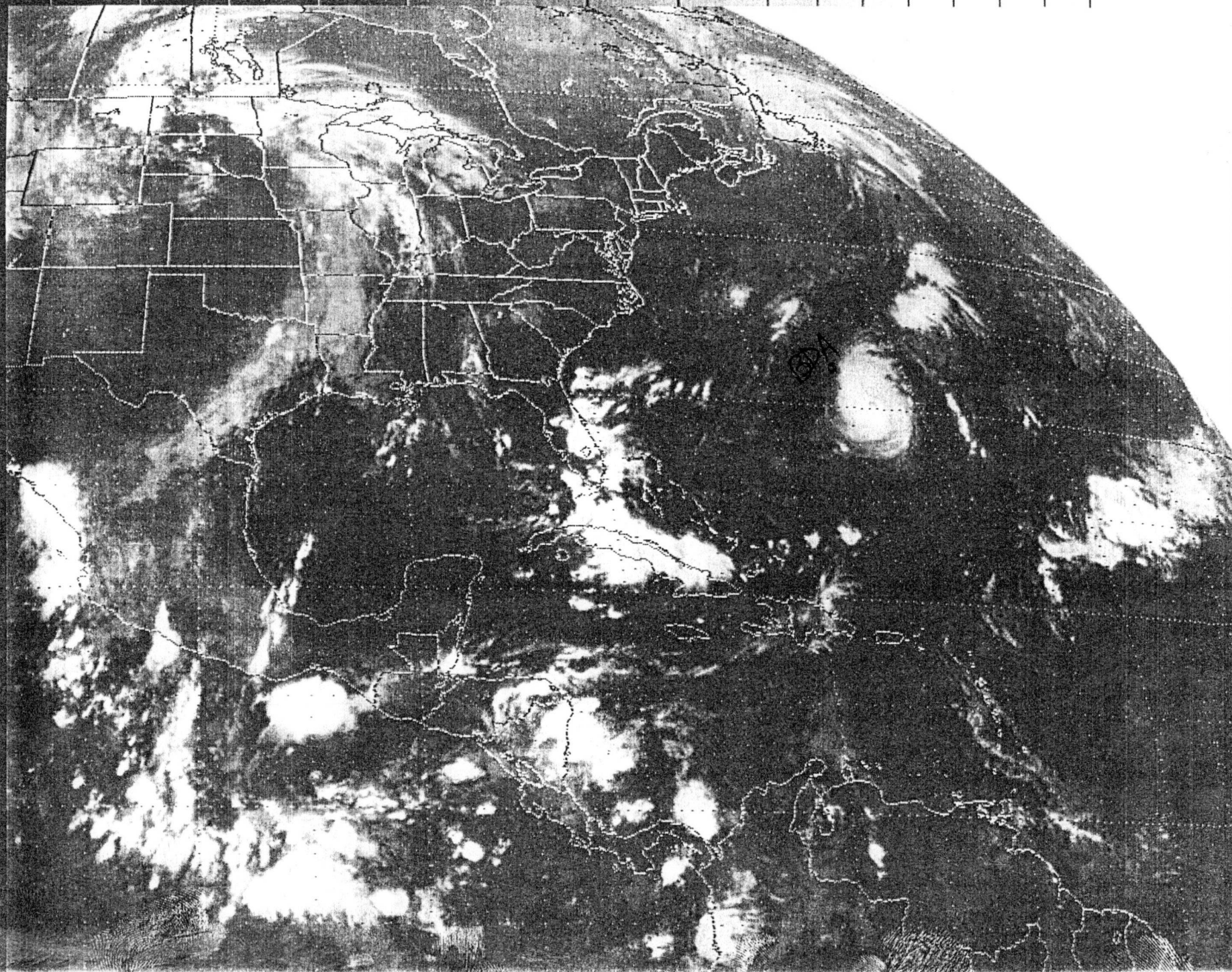
True at 25° Latitude, in Degrees and Minutes

Date _____ Aircraft _____ Observer _____



Note: Label full degrees according to location of flight area.

1301 08SE91 29E-4ZA 01052 24911 CCO



34KT

CPA 70NM ESE 09/00L

115 SE

