

Rogers

## Lead Project Scientist

### Preflight

- ☒ 1. Participate in general mission briefing.
- ☒ 2. Determine specific mission and flight requirements for assigned aircraft.
- ☒ 3. Determine from field program director whether aircraft has operational fix responsibility and discuss with AOC flight director/meteorologist unless briefed otherwise by field program director.
- ☒ 4. Contact HRD members of crew to:
  - a. Assure availability for mission.
  - b. Review field program safety checklist
  - c. Arrange ground transportation schedule when deployed.
  - d. Determine equipment status.
- ☒ 5. Meet with AOC flight director and navigator at least 3 hours before take-off for initial briefing.
- ☒ 5. Meet with AOC flight crew at least 2 hours before take-off for crew briefing. 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).
- ☒ 7. Before take-off, brief the on-board GPS dropsonde operator on times and positions of drop times.
- ☒ 7. Make sure each HRD flight crew members have life vests
- ☒ 7. Perform a headset operation check with all HRD flight crew members. Make sure everyone can hear and speak using the headset.
- ☒ 8. Collect "mess" fee (\$2.00) from all on-board HRD flight crew members.

### 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 Lead Project Scientist Form.
- ☒ 5. Check in with the flight director to make sure the mission is going as planned (i.e. turns are made when they are supposed to be made).

### Post flight

- ☒ 1. Debrief scientific crew.
- ☒ 2. Report landing time, aircraft, crew, and mission status along with supplies (tapes, etc.) remaining aboard the aircraft to MGOC.
- ☒ 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. Obtain a copy of the radar DAT tapes. Turn in with completed forms.
- ☒ 6. Obtain a copy of the all VHS videos from aircraft cameras (3-4 approx.). Turn in with completed forms.
- ☒ 7. Obtain a copy of CD with all flight data. Turn in with completed forms.
- ☒ 8. Determine next mission status, if any, and brief crews as necessary.
- ☒ 9. Notify MGOC as to where you can be contacted and arrange for any further coordination required.
- ☒ 10. Prepare written mission summary using Mission Summary form (due to Field Program Director a week after the flight).

### Lead Project Scientist Check List

Storm or Project Gulf suspect area Experiment name IFEX - Genesis  
 Date 7/23/05 Aircraft N42RF Flight ID 050723H

#### A. Participants:

| HRD                              |                    | AOC                    |                       |
|----------------------------------|--------------------|------------------------|-----------------------|
| Function                         | Participant        | Function               | Participant           |
| Lead Project Scientist           | <u>Rogers</u>      | Flight Director        | <u>Flaherty</u>       |
| Radar                            | <u>Dodge</u>       | Pilots                 | <u>Tebeest, Silah</u> |
| Workstation                      | <u>Stern/Dodge</u> | Navigator              | <u>Gallagher</u>      |
| Cloud Physics                    | <u>—</u>           | Systems Engineer       | <u>—</u>              |
| Photographer/Observer<br>/Guests | <u>—</u>           | Data Technician        | <u>MacMillan</u>      |
| Dropwindsonde                    | <u>Stern</u>       | Electronics Technician | <u>M. Rogers</u>      |
| AXBT/AXCP                        | <u>Dodge</u>       | Other                  | <u>—</u>              |

#### B. Take-off and Landing Times and Locations:

Take-Off: 161604 UTC Location: MacDill

Landing: 005853 UTC Location: MacDill

Number of Eye Penetrations: —

#### C. Past and Forecast Storm Locations:

| Date/Time | Latitude | Longitude | MSLP | Maximum Wind |
|-----------|----------|-----------|------|--------------|
|           |          |           |      |              |
|           |          |           |      |              |
|           |          |           |      |              |
|           |          |           |      |              |
|           |          |           |      |              |

#### D. Mission Briefing:

Survey pattern into strong tropical wave emerging off Yucatan peninsula. Conduct modified diamond pattern paralleling coast of Yucatan. Fly at 12,000ft. 17 scans, 4 BT's planned for drops.

E. —Equipment Status (Up ↑, Down ↓, Not Available —, Not Used O)

| Equipment        | Pre-Flight | In-Flight | Post-Flight | # DATs / Cds<br>/Expendables/<br>Printouts |
|------------------|------------|-----------|-------------|--------------------------------------------|
| Radar/LF         | ↑          |           |             |                                            |
| Doppler Radar/TA | ↑          |           |             |                                            |
| Cloud Physics    | O          |           |             |                                            |
| Data System      | ↑          |           |             |                                            |
| GPS sondes       | ↑          |           |             |                                            |
| AXBT/AXCP        | ↑          |           |             |                                            |
| Ozone instrument | ↑          |           |             |                                            |
| Workstation      | ↑          |           |             |                                            |
| Videography      | ↑          |           |             |                                            |

REMARKS: 2 1/2 hour delay of takeoff due to INE problems.



# Lead Project Scientist Event Log

Date 7/23/05 Flight 050723H LPS Kug-93

| Time     | Event          | Position                    | Comments                                                                                                                                                                                  |
|----------|----------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 161604   | takeoff        | MacDill AFB                 | takeoff from MacDill                                                                                                                                                                      |
| 1744     | situation      | 25° 15' 85° 41'             | indications that a low-level<br>a/c from vis. imagery has emerged off shore<br>and is located at about 20N 92W. Some<br>convection flaring up over Yucatan and NW<br>of suspected center. |
| ① 175126 | drop 1         | 22° 40' 86° 48'             | FL 143 @ 19 kt; SF 90° @ 14 kt                                                                                                                                                            |
| 175017   | turn, at 1P    | 22° 43' 86° 50'             | at 1P, turn to track 141                                                                                                                                                                  |
| 1757     | FL obs         | 22° 22' 86° 31'             | widespread haze, cumulus<br>humilis<br>NE of tip of Yucatan                                                                                                                               |
| 1801     | 8F winds       | 22° 7' 86° 19'              | SF winds 20 kts                                                                                                                                                                           |
| 1813     | turn           | 21° 29' 85° 46'             | turn to track 226; FL winds<br>126° @ 24 kt                                                                                                                                               |
| ② 181526 | drop 2         | 21° 27' 85° 48'             | FL 122° @ 24 kt; SF 86° @ 16 kt                                                                                                                                                           |
| 181930   | FL winds       | 21° 9' 86° 7'               | FL 122° @ 27 kt                                                                                                                                                                           |
| 182739   | turn           | 20° 44' 86° 35'             | 004 track; FL 134° @ 28 kt                                                                                                                                                                |
|          |                | off Yucatan coast           |                                                                                                                                                                                           |
| ③ 182855 | drop 3         | 20° 48' 86° 39'             | FL 136° @ 27 kt; SF 99° @ 18 kt                                                                                                                                                           |
| 184052   | turn           | 21° 46' 86° 38'             | turn to track 265; FL 138° @ 25 kt                                                                                                                                                        |
| ④ 184206 | drop 4         | 21° 48' 86° 40'             | FL 137° @ 24 kt; SF 94° @ 14 kt                                                                                                                                                           |
| 184515   | FL obs         | 21° 47' 86° 58'             | clouds left of a/c over land,<br>thick cloud layer ahead (W of<br>a/c)                                                                                                                    |
|          |                | along N coast of<br>Yucatan |                                                                                                                                                                                           |
| 185516   | turn           | 21° 42' 87° 49'             | turn to track 330                                                                                                                                                                         |
| ⑤ 185559 | drop 5         | 21° 45' 87° 51'             | FL 146° @ 29 kt; SF 80° @ 20 kt                                                                                                                                                           |
| 191041   | turn           | 22° 53' 88° 23'             | turn to track 215                                                                                                                                                                         |
| ⑥ 191206 | drop 6 (combo) | 22° 52' 88° 29'             | FL 135° @ 23 kt; SF 91° @ 18 kt                                                                                                                                                           |

SST 28.3

axis of 18.57 93.28  
wind shift

19.4 93.2 - NHC position

## Lead Project Scientist Event Log

Date 7/23/05 Flight 050723H LPS Rogers

| Time     | Event             | Position        | Comments                                                                               |
|----------|-------------------|-----------------|----------------------------------------------------------------------------------------|
| ⑫ 210617 | drop 12           | 18° 57' 93° 28' | FL 1510 12kt <del>no</del> no winds                                                    |
| ⑬ 211047 | drop 12a (backup) | 18° 56' 93° 28' | SF 263° @ 21kt                                                                         |
| 211301   | FL obs            | 18° 55' 93° 59' | 0 <sub>0</sub> , 0 <sub>0</sub> dropped 10kt + 5K, respectively,<br>at 2104 UTC        |
| 212002   | obs               | 18° 55' 94° 33' | many individual deep convective<br>elements                                            |
| 212607   | turn              |                 | turn to 360 track                                                                      |
| 212925   | turn              | 19° 7' 95° 2'   | turn to 340 track to<br>shoot up through gap in<br>2 convective lines                  |
| ⑭ 212707 | drop 13           | 18° 58' 95° 2'  | SF 329° @ 18 kt                                                                        |
| ⑮ 215145 | drop 14 (combo)   | 20° 39' 95° 7'  | FL 22° @ 9kt; <sup>fast fall</sup> SST 29.8                                            |
| ⑯ 215624 | drop 14a (backup) | 20° 57' 94° 57' | FL 65° @ 6kt; SF 44° @ 27kt                                                            |
| 221036   | ocean obs         | 21° 47' 94° 26' | broad area of convective strat.<br>rain N/W of center point;<br>FL winds 66° @ 20 kts. |
| 222203   | turn              | 22° 29' 94° 0'  | turn to 068; SF winds 34kt                                                             |
| ⑰ 222258 | drop 15           | 22° 30' 93° 57' | FL 90° @ 14 kts; SF 73° @ 16 kt                                                        |
| ⑱ 224504 | drop 16 (combo)   | 23° 4' 92° 27'  | FL 123° @ 23 kts; SF 94° @ 23kt; SST 28.0                                              |
| 224756   | obs               | 23° 8' 92° 15'  | generally clear to left, cumulus<br>congestus to south of plane                        |
| 005848   | land              | MacDill         | land at MacDill                                                                        |
|          |                   |                 |                                                                                        |
|          |                   |                 |                                                                                        |
|          |                   |                 |                                                                                        |
|          |                   |                 |                                                                                        |
|          |                   |                 |                                                                                        |



21 90.2

## Lead Project Scientist Event Log

Date 7/23/05 Flight 050723H LPS Rogers

|   | Time   | Event          | Position                        | Comments                                                                                                                                                                                       |
|---|--------|----------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | 193246 | FL obs         | Near NW tip of Yucatan          | E-W line of convection, with 5 m/s updrafts                                                                                                                                                    |
| ⑦ | 193325 | drop 7         | near NW tip of Yuc.             | PL 1480 @ 16 kt, SF 87° @ 29 kt                                                                                                                                                                |
|   | 193914 | radar          | 21° 40' 89" 44';<br>NW of Yuc.  | 32-36 dbZ echoes on TA<br>radar 15 km SSW of a/c                                                                                                                                               |
|   | 195151 | SF winds       | NW of Yucatan                   | SF winds 30-35 kt,                                                                                                                                                                             |
|   | 195201 | turn           |                                 |                                                                                                                                                                                                |
| ⑧ | 195316 | drop 8 (combo) | NW of Yucatan (21° 37' 90" 48') | SF 98° @ 24 kt; SST 28.9                                                                                                                                                                       |
|   | 195835 | radar          | 21° 29' 90" 47'                 | approaching line of convection<br>along NW coast of Yucatan;<br>possible echoes of 40 dbZ                                                                                                      |
|   | 200028 | obs            | 20° 56' 90" 45'                 | large temp. fluctuations; b/w<br>7 & 17°C; corresponded w/ SF<br>RR's of ~20 mm/h and<br>W of 5 m/s                                                                                            |
|   | 201138 | turn           | 20° 36' 90" 41';<br>turn 8      | turn at pt. 8, track 240                                                                                                                                                                       |
| ⑨ | 201234 | drop 9         | 20° 33' 90" 46'                 | FL 139 @ 19 kt; SF 111° @ 32 kt                                                                                                                                                                |
|   | 202021 | climb          | 20° 18' 91" 17'                 | climb to 16,000' b/c of<br>restricted airspace                                                                                                                                                 |
| ⑩ | 203227 | drop 10        | 20° 2' 91" 5'                   | FL 146 @ 14 kt; SF 112° @ 16 kt                                                                                                                                                                |
|   | 203713 | obs.           | 19° 38' 91" 47'                 | Extrapolate sfc. press. down. to 1007 mb;<br>timing of drop coincides w/ <del>drop</del><br>a 10K increase in $\theta_e$ and a 4 K increase<br>in $\theta$ at flight level (at about 2023 UTC) |
| ⑪ | 204639 | drop 11        | 18° 57' 91" 47'                 | SF 129° @ 10 kt                                                                                                                                                                                |
|   | 204519 | turn           | 18° 59' 91" 42'                 | turn to 270                                                                                                                                                                                    |

**Mission Summary**  
**Storm name**  
**YYMMDDA# Aircraft 42RF**

**Scientific Crew (4RF)**

Lead Project Scientist Rogers  
Radar Scientist Dodge  
Cloud Physics Scientist —  
Dropwindsonde Scientist stern  
Boundary-Layer Scientist Dodge  
Workstation Scientist Dodge / stern  
Observers —

**Mission Briefing:** (include sketch of proposed flight track or page #) survey pattern  
into suspect system emerging from Yucatan into Bay of Campeche.  
Fly modified diamond pattern to map out circulation, thermal field of system.

**Mission Synopsis:** (include plot of actual flight track) Modified survey pattern as a result  
of takeoff delay. Trimmed eastern portion to save time. Enroute decided to modify pattern  
to save more time and drops. During the pattern NHC issued a special statement saying  
system was becoming a depression. Upon looking at satellite visible image, modified  
pattern to go a little further west along Mexican coast, since it appeared that the center  
was very far south. Final pattern ended up being a circle around circulation center.

**Evaluation:** (did the experiment meet the proposed objectives?) Yes. Mapped out wind +  
thermal fields around a developing T.D. 16 sondes were released, 4 BT's,  
spaced around circulation center. Was only able to close off a surface circulation  
right along Mexican coast, but convection was firing within circulation further  
north, suggesting repositioning is possible further north. Follow-on mission  
Planned tonight will document evolution of this  
convection; planned follow-on mission tomorrow will  
examine response of vortex to this convection.

**Problems:** (list all problems)  
Only problem was with a  
242 hrs. delayed takeoff due to IWR problems. 2 sondes failed; BT, 5 FMR  
worked well.

**Expendables used in mission:**

GPS sondes: 18

AXBTs: 4

Sonobuoys: 0

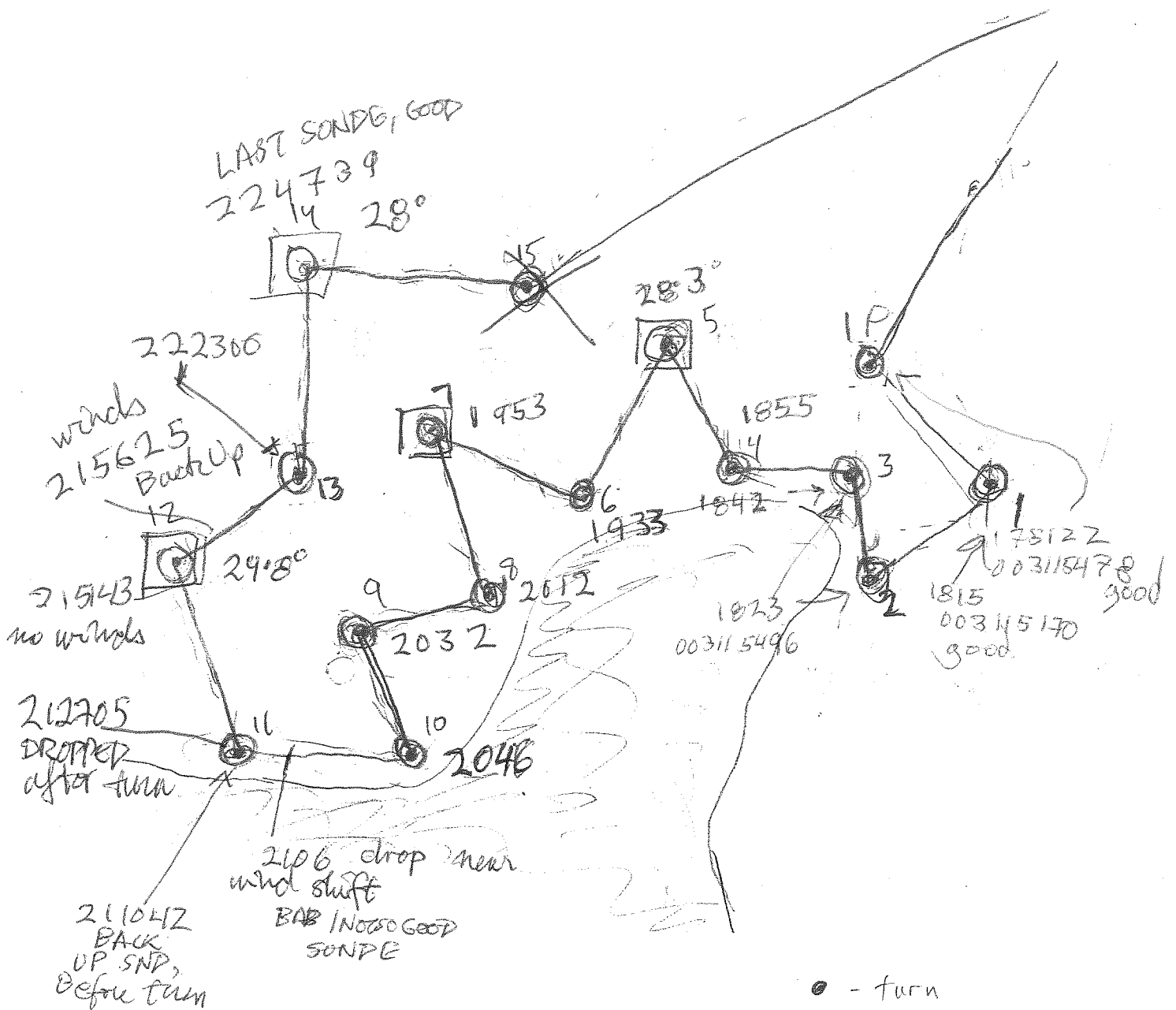


● - turn

○ - FPS

□ - BT





- - turn
- - GPS
- - BT

SONDES

050723H

THIS LIST  
does NOT include  
test sonde soon  
after T/O

① 175122 22°40'7" 86°49'1"  
003115478 GOOD 3642 m GA

② 181525 21°23' 85°52' 3643 m  
003115170 good

③ 182855 20°47'9" 86°39'1"  
3641  
003115496

④ 1842 21°48' 86°42' 3645  
LATE WINDS  
003115129

⑤ 185557 21°44'7" 87°51'8" 3636 m  
003115172

⑥ SND/BT#1 1910 22 52.9 3642  
88 28.7  
27.1 BT3

⇒ 28.3 90 m MLD (6 sec?)

⑦ 193315 21°31'6" 89°20'5" 3616  
in amongst convection.

NHC made it 907

② 050723H Sondes

8 SNP/B7#2 1953 16

28.9°C (AFTER CORR) 21°51.7' 90°51' 3637 m

20s to drop to 25°C then stayed for several min

9 201124

20°34.8' 90°44.7' 3625  
good winds

2021 climbing to 15000 to enter Mexico Navy Area

10 203227 20°01.5' 91°4~~4~~ 49°8' 4856 m

11 204638 18°57' 91°47.9' 5142 m

2105 descending to 11 k'

210612 18°56' 93°28' 4524 m

near wind shift. FLT LEVEL winds ~2 KTS  
SONDE not looking too good

211042 18°57' 93°48.5' 3649 m  
good and

2126 turn to Head N

212705 18°58' 95°01.7' 3653 m



050723H (3) SONDES etc

SNB BT<sub>3</sub> 215147 28°39' 95°07.6' 3652m

WINDS NO GOOD

29°8°C MLD ~15s  
= 225m

BACKUP SONDE (after turn to NE at 2153)

215625 20°57.3 94°57.9 3657m  
SONDE

~~no~~ winds in and out

222300 22°30' 93°57' 3664  
SND

22458 23°04 92°27' 3673m

winds good

28°C (after Corr)

~224739 BT splash

~15s MLD → 225m

BT<sub>4</sub>  
(LAST  
SONDE)