Rogers
050922I

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 form 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 Rita **Experiment name** NHC tasking, RAINEX, Ocean module
Date 9/22/05 **Aircraft** N43RF **Flight ID** 050922I

A. Participants:

HRD		AOC	
Function	**Participant**	**Function**	**Participant**
Lead Project Scientist	Rogers	Flight Director	Mayeaux
Radar	Jorgensen-NSSL	Pilots	Tebeest, Nelson
Workstation	Murillo	Navigator	Gallagher
Cloud Physics	—	Systems Engineer	Lynch
Photographer/Observer /Guests	Oort, Zhao-RSMAS	Data Technician	San Soucie, Barr
Dropwindsonde	Murillo	Electronics Technician	San Soucie
AXBT/AXCP	Uhlhorn, Wadsh/SPA	Other	

B. Take-off and Landing Times and Locations:

Take-Off: 1313 UTC Location: MacDill AFB
Landing: 2212 UTC Location: MacDill AFB

Number of Eye Penetrations: 5

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind

D. Mission Briefing:

Combination NHC-tasked fix/SFMR/HRD-VM Ocean module/RAINEX mission into Hurricane Rita, a category-5 storm in the central Gulf. Fly fig-4 pattern, 105 nm legs, IP NE of storm. Fly at 10,000 ft pressure altitude. Drop NHC sondes at SF wind max in eyewall, at center. Drop RAINEX sondes at FL wind max in eyewall, and if there is a secondary wind max that is developing. Drop 18 BT's to map out SST's and subsurface temp. structure, hopefully to correspond with where AF dropped drifting buoys yesterday. 9 of those BT's will be combo drops, using HRD sondes.

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

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

REMARKS:

Lead Project Scientist Event Log

Date 9/22/05 **Flight** 050922I **LPS** Rogers

Time	Event	Position	Comments
1313	takeoff	MacDill AFB	takeoff from MacDill
1356	radar	132 nm NE of IP	in outer bands of Rita, line of cells
1406	radar	86 nm from IP	eye center dimly visible on LF, possible double eyewall w/ inner eye half-open
1410	winds	160 nm NE of center	FL 50kt, SF 40kt
1427	BT drop	at IP, 105 nm NE	29° SST
1428	winds	100 nm NE of center	FL 60kt, SF 45kt
H 1439	drop 1, BT	55 nm NE	FL 90 kt, SF 70 kt
R 1447	drop 2	NE eyewall, FL max	GPS 105 kt
N 1448	drop 3	NE eyewall, SF max	GPS wind max 89 kt
N 1450	drop 4, fix, BT	25°18' 88°38'	extrap 909 mb, GPS 913 mb, 28.2°C SST
1451	obs	eye	peak FL 135 kt, SF 105 kt, eye still clear today, good stadium effect, low-level clouds more prevalent thru LF, inner eyewall open on SE side
N 1456	drop 5	SW eyewall, SF max	GPS 128 kt @ 98 m
R 1458	drop 6	" " , FL max	GPS 87 kt @ 10 m
1500	winds	outside SW eyewall	peak FL 115 kt, SF 105 kt
1502	BT		SST - no SST
R 1505	drop 7	40 nm SW eyewall	FL 85kt, possible 2nd wind max
H 150940	drop 8, BT	50 nm SW of eye	SST 28.4°C
H 1516	drop 9, BT	85 nm SW of eye	FL 50kt, SF 40kt, SST 29.2°C
H 1524	drop 10, BT	105 nm SW of eye	FL 50 kt, SF 30 kt, SST 29.6°C
1536	radar	on downwind leg	no rain on S side outside of outer band

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	Time	Event	Position	Comments
001	1550	turn	105 nm SE of eye	turn to next inbound leg
	1551	winds	105 nm SE of eye	FL 60kt, SF 35 kt
	1551	BT	105 nm SE of eye	SST 28.8°C
Bob call 206-498-5930 H	1601	drop 11, BT	60 nm SE of eye	FL 75kt, SF 50kt, 28.7°C SST
	1606	radar	40 nm SE of ctr	Concentric eyewalls, inner 20 nm, outer 50 nm diameter, band connects up with outer band about 30 nm E of ctr
R	1610	drop 12	30 nm SE of ctr	drop in outer eyewall, FL 105 kt, SF 80 kt
R	1614	drop 13	SE inner eyewall	FL 120 kt
N	1614	drop 14	SE inner eyewall	FL 110 kt
	1615	~~eyewalls~~ winds	eye	peak FL 120kt, SF 90kt
N	1619	drop 15, fix		extrap 911 mb, GPS 915 mb
N	1624	drop 16	NW inner eyewall	SF 110 kt
R	1625	drop 17	NW inner eyewall	FL 135 kt
	1626	winds	outside NW eyewall	peak FL 135kt, SF 115kt
	1627	BT	70 nm NW of eye	SST 28.9°C
R	1631	drop 18	35 nm NW of eye	FL 100kt, SF 70kt, tried to find outer eyewall but no real evidence of secondary wind max on NW side (or NE side)
H	1635	drop 19, BT	50 nm NW of eye	FL 70 kt, SF 60 kt, SST 28.4
H	1642	drop 20, BT	75 nm NW of eye	FL 70kt, SF 40 kt, SST 28.8
H	1649	drop 21, BT	105 nm NW of eye	FL 60 kt SF 40 kt, SST
	1652	pattern	197 nm NW of eye	finished fig-4, deviating WSW to avoid buoys dropped by AF
	1653	BT	in ocean pattern	SST

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	Time	Event	Position	Comments
	1658	BT	pt. 01 in ocean module	SST 29.3
	1708	BT	pt. 02	SST 28.9
	1716	BT	pt. 03	SST 28.7
	1721	BT	pt. 04	SST 29.4
	1735	radar	42 nm SW of eye	bands wrapping around SW side, outer eyewall about 25 nm out, inner eyewall still appears open on SE side
R	1739	drop 22	SW outer eyewall	FL 90kt, SF 80kt, no LD
R	1741	drop 23	NW of region	FL 100kt, SF 75kt, no LD
	1744	obs; wind	eye	peak FL 120kt, SF 90kt on SW
N	1745	fix, drop 24	25° 34' 89° 01'	extrap 910 mb, GPS 914 mb
N	1753	drop 25	NE inner eyewall	FL 110kt, SF 100kt
R	1756	drop 26	NW of region in NE	FL 100kt, SF 80kt
	1758	obs	38 nm NE of ctr	classic concentric eyewall pattern on LF
	1759	winds	42 nm NE, fctr	peak FL 125kt, SF 100kt
	1803	pattern, radar	50 nm NE of ctr	LF was down, so could not get drop on NE outer eyewall, there was very little reflection in FL winds though
	1816	radar	90 nm NE of ctr	many bands on NE side; bumpiest all flight, 11 m/s updraft, 4 m/s downdraft
	1827	winds	on downwind leg NW of ctr	FL 70kt, SF 50kt
	1847	turn	105 nm NW of ctr	turn to track 135

AA 1135 2:16 D
3:12 A

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	Time	Event	Position	Comments
R	1907	drop 27	inner edge of NW outer eyewall	peak FL 118kt, SF 85kt in outer eyewall
R	1909	drop 28	moat region b/w NW outer & inner eyewall	FL 110kt, SF 88kt; 88kt drop, uFL winds across outer eyewall,
N	1911	drop 29	inner edge of inner NW eyewall	peak FL 130kt, peak SF 120kt in NW
N	1912	fix, drop 30		extrap 910mb, GPS 913mb
N	1915	drop 31	SE inner eyewall	FL 120kt, SF 90kt on SE
R	1919	drop 32	moat region in SE	moat region in SE quad
R	1921	drop 33	SE outer eyewall	peak FL 110kt, SF 80kt in SE outer eyewall
	1925	obs, winds	SE of outer eyewall winds across inner eyewall b/w NW and SE quad.; 120kt on NW, 85kt on SE; reflectivity gradient in outer eyewall much sharper than previously in flight; min SLP has come down a bit too	marked asymm. ~~600~~ in SF
	2016	pattern	105 nm NE of eye	finished S-N downwind leg, now turning back toward SW for final fix, FL 70kt, SF 55kt
	2038	winds	inside outer NE eyewall	peak FL 120, SF 90kt in outer eyewall
N	2041	drop 34	inside inner NE eyewall	
N	2044	drop 35, fix	25°48' 89°27'	extrap 910mb; GPS 911mb
N	2047	drop 36	inside inner E eyewall	FL 120kt, SF 90kt
	2052	winds	outside inner E eyewall	peak FL 120kt, SF 90kt in both inner + outer eyewall
	2222	landing	MacDill AFB	land at MacD.

Mission Summary
Storm name
YYMMDDA# Aircraft 4~~3~~RF

Scientific Crew (4~~3~~RF)

Lead Project Scientist Rogers
Radar Scientist Jorgensen
Cloud Physics Scientist ——
Dropwindsonde Scientist Murillo
Boundary-Layer Scientist Walbrun, Walsh-SFA
Workstation Scientist Murillo
Observers Dart, Zhao

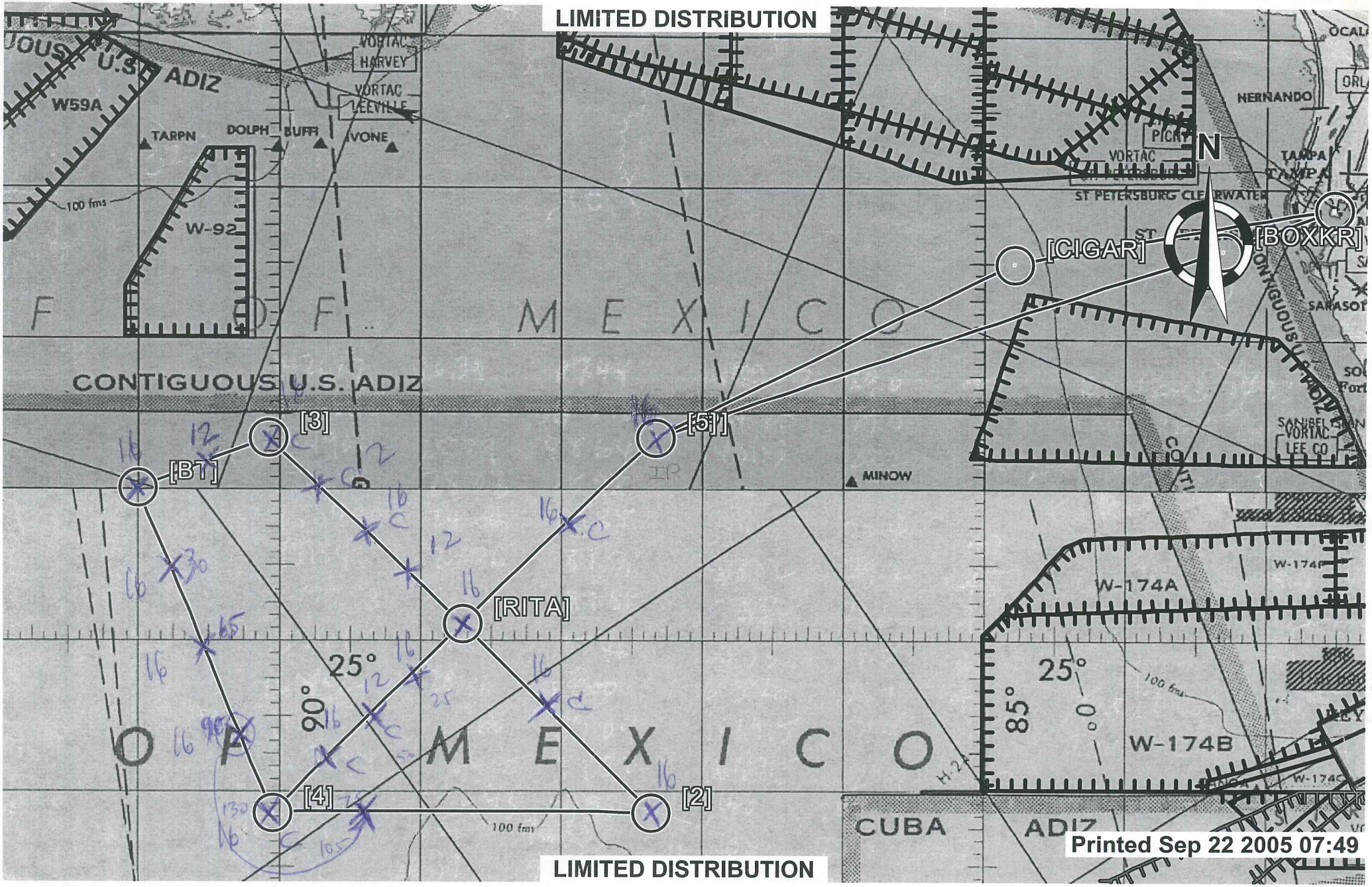
Mission Briefing: (include sketch of proposed flight track or page #) see previous

Mission Synopsis: (include plot of actual flight track) Flew fig-4 pattern for NHC. Was able to extend leg on NW side to fly over some of the grid laid out by AF previous day. Repeated figure-4 after that, beginning on SW instead of NE side. After finishing up that fig. 4 on SE side, came northeast down wind leg to a point NE of storm, then flew last pass inbound, out to E, RTB. Flew at 10kft press. Dropped 8 MRD sonde/BT combos plus 10 more BT's. Dropped 14 RAINEX sondes at FL wind max in inner eyewall, along inner edge of outer RB, and w/in moat regions. Dropped NHC sondes at FL wind max, center on all 4 penetrat.

Evaluation: (did the experiment meet the proposed objectives?) Mission was successful. Noted some weakening to storm. Peak FL winds were 135kt in NE eyewall, peak SFC winds were 120kt in NW eyewall. Storm developed classic concentric eyewall pattern. By the end of the flight, the reflectivity gradients had sharpened up significantly and FL winds in inner & outer eyewall were comparable. SSTs ahead of storm were 29-29.5°C with deep ML. NRL P-3 used 43 & 42 DF to guide thru storm, flew excellent pattern in moat region b/w eyewalls, circumnavigated twice. 43 dropped sondes along inner edge of outer eyewall & in moat regions.

Problems:(list all problems) None: 2 RAINEX sondes failed, and there was persistent globalstar dropouts.

Expendables used in mission:
GPS sondes : 36 (14 NHC, 14 RAINEX, 8 MRD)
AXBTs : 18
Sonobuoys: 0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CONTIGUOUS U.S. ADIZ
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W-174B
W-92
W59A
TARPN
DOLPH
BUFFI
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VORTAC LEEVILLE
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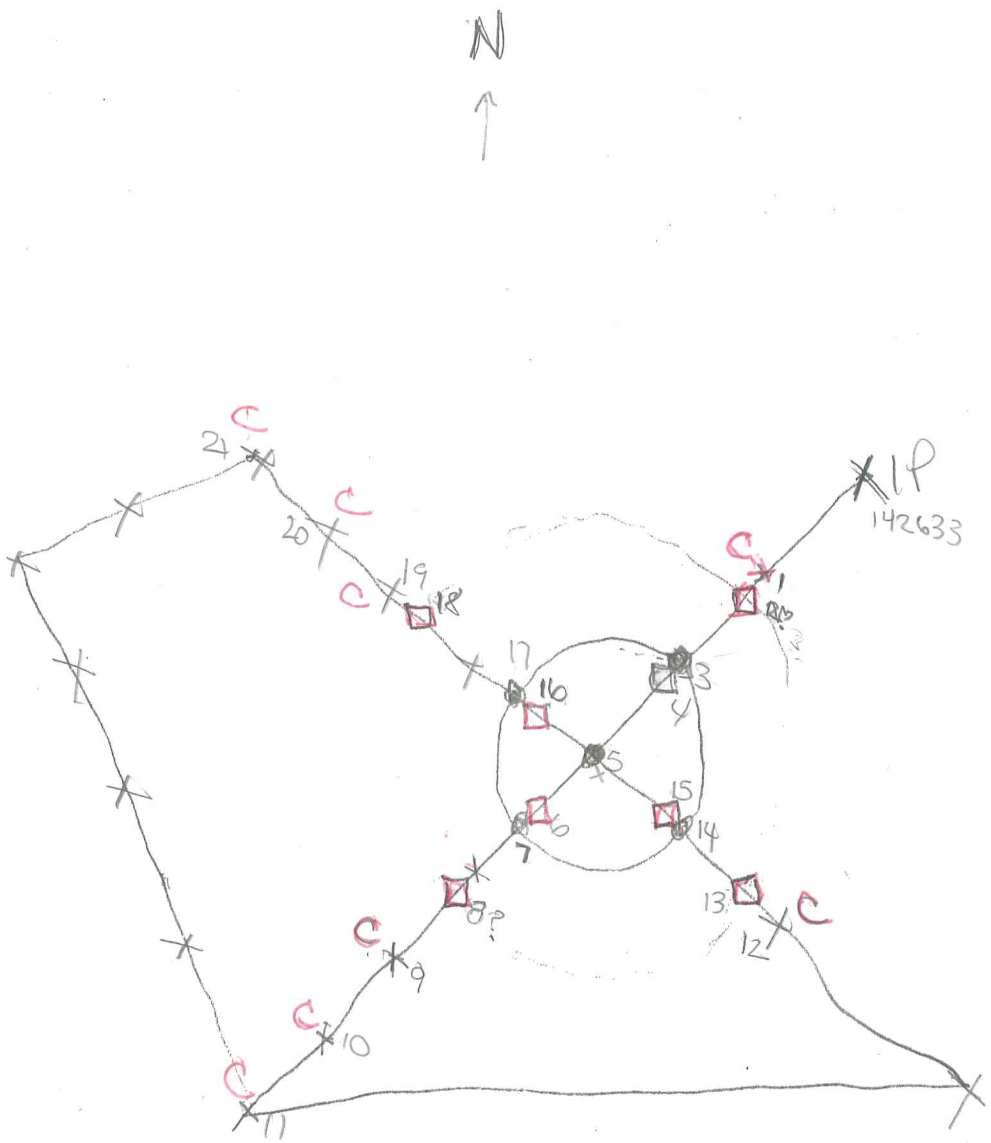
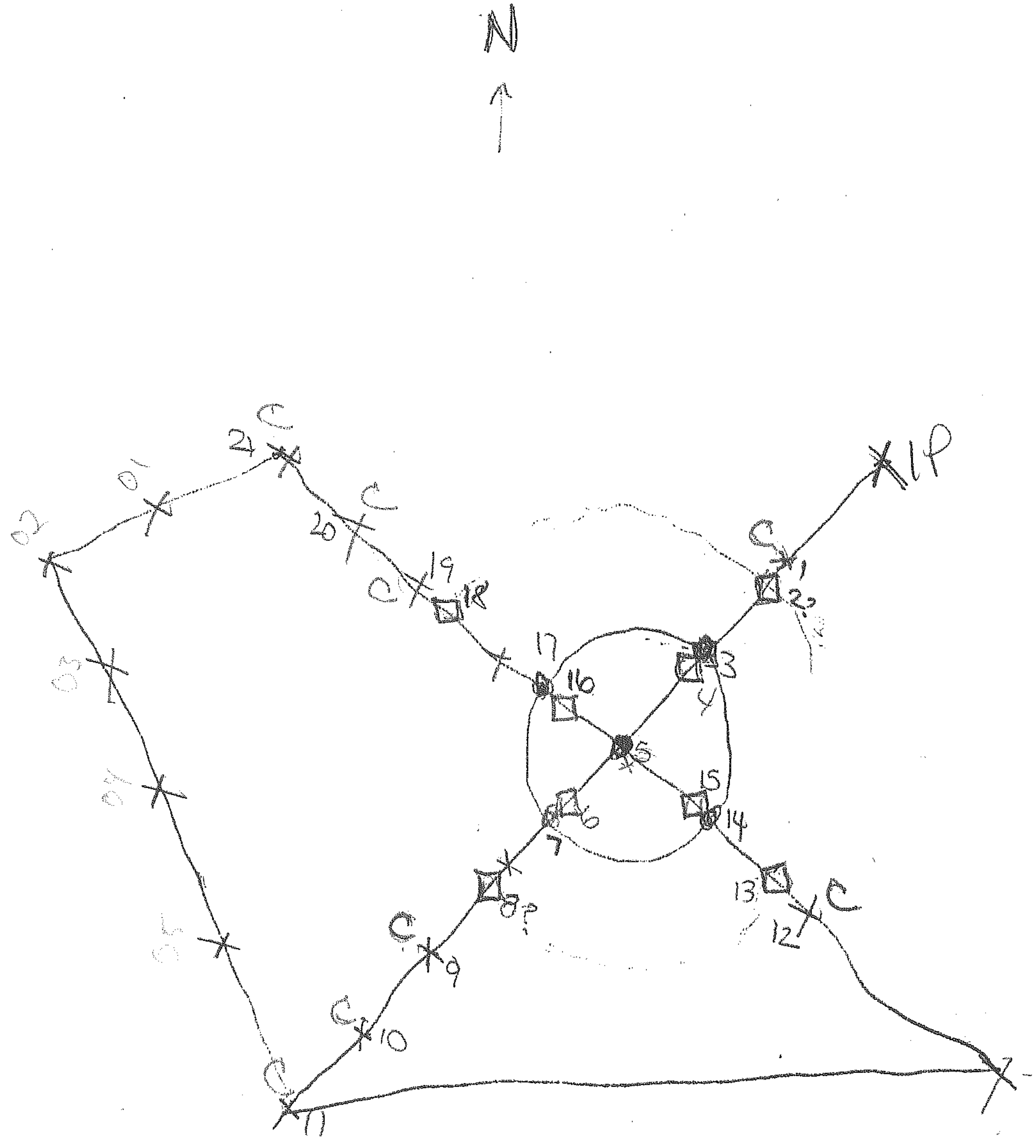


X = BT

● - NHC drop

▭ - RAIN drop

C = combo BT & drop



X = BT

● - NHC drop

⊠ - RAIN drop

C = combo BT & drop