



Chemical Inventory

Daniel Brothers

What Types of Chemicals are used on the NDCMP

- Silver Iodide (AgI)
- Ammonium Iodide (NH_4I)
- Sodium Perchlorate (NaClO_4)
- Paradichlorobenzene (Moth Crystals)
 - 1 Can = 20 Units
- Raw Acetone
- 20 g Ejectable Flares (EJC)
- 75 g Burn-in-Place Flares (BIP)
- Distilled Dihydrogen Monoxide

Flares & Chemical Inventory

- Losses such as spills or dud flares
 - How many times do you try a flare before it is considered a dud?
 - TWO
 - What do you do with duds? Throw them away?
 - No!!! Set them aside for pick up by ARB staff.
 - How about burned BIPs?
 - Throw them out.
 - And what about ejectable casings?
 - Save them for ARB staff to pick up.
 - How do you report lost/spilled chem?
 - Call Dan and confess.

Chemical Inventory

- Initial Chemical Inventory should be completed BEFORE filling burners.
- Inventory DOES NOT include mixed chemical or flares on the airplane.
- The PIC(s) will be held responsible for inventory.
- When do we send in weekly inventory?
 - Every Monday BEFORE BRIEFING (17:00 Z)!
- Write down Chem Transactions on legal pad provided and leave in chem shed.

Questions?



Pilot Aircraft Recordkeeping System (PARS)

Daniel Brothers



General Information

- ⊗ Paperwork is required by law.
- ⊗ From June 1 through the end of project a flight form and map are required for every flight the plane makes.
- ⊗ Keep it professional. All records are open to the public.
- ⊗ If/when PARS doesn't work, paper flight forms and maps will be expected, so be prepared. It will happen to someone over the course of the summer.
 - ⊗ Paper forms are provided in the packets given to pilots when they pick up their iPads.

Paperwork

- ⊗ Mission Summary
 - ⊗ Required for every flight
 - ⊗ Should be a synopsis of the mission. What happened. What was seen.
 - ⊗ If “Other” than what was the reason for the flight?
 - ⊗ Most commonly a reposition flight
 - ⊗ What kind of “Maintenance”? Burner check or something else?
 - ⊗ If “Recon” than why no seeding?
 - ⊗ Common Abbreviations are ok, but avoid less common ones.
 - ⊗ BIS for Bismarck is fine, 08D for Stanley is not.

Paperwork

- ⊗ There are 5 possible purposes on project
- ⊗ Recon – An operational mission where no seeding occurred.
- ⊗ Rain – Rain enhancement, typically characterized by only using one burner and no BIPs.
- ⊗ Hail – Hail suppression, typically uses two burners and possibly BIPs.
- ⊗ Other – Miscellaneous ARB flights, usually reposition flights after missions.
- ⊗ Maintenance – WMI flights, usually burner checks and test flights after repairs.

What's the Purpose?

- ⊗ Seed 7 is launched to top, but only observes short fair weather cumulus. RTBs without seeding.
 - ⊗ Recon
- ⊗ Seed 2 aggressively lights one burner on the towering cumulus over Rhame.
 - ⊗ Rain
- ⊗ Seed 5 conducts a burner check because they haven't flown in a while.
 - ⊗ Maintenance

What's the Purpose

- ⊗ Seed 4 lights both burners and lights some flares.
 - ⊗ HAIL
- ⊗ Seed 1 had to land in Dickinson after a flight. Their return flight to Bowman.
 - ⊗ Other

Paperwork



FLIGHT REPORT - CLOUD BASE AIRCRAFT
NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD
 SFN 11816 (6/2000)

PAGE # 1 OF 1

ENGINES OFF
21:29
 ENGINES ON
20:24
 TOTAL TIME
1:05

FOR OFFICE USE ONLY

HOURS	
1 GEN	2 GEN
EJCTBL	BIP

DATE (YYMMDD)		DISTRICT		SEED #	PILOT				COPILOT				PURPOSE	R - Rain	C - Reconnaissance
11/05/25		2		4	Daniel Brothers				Mark Schneider				H	H - Hall	M - Maintenance
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
TIME (HH:MM)	EVENT #	VORTAC CODE*	VOR (deg)	DME (nm)	CLD BASE (kt)	ALTITUDE (kt)	UPDRAFT (ft/min)	TEMP (°C)	WINGTIP GEN (#)	PRECIP CODE**	# BIP FLARES	BIP FLARE YIELD (g)	REMARKS		
20:24		8	078	54	.	.		28	0				Engines On Stanley		
20:30		8	078	54	.	.		28	0				Takeoff, Burners 100%		
20:38	1	8	042	29	8.5	8.0	500	12	1	2			Ragged Bases, Right Burner On		
20:46	2	8	035	22	9.0	8.0	100	10	0	2			Lost inflow, Reposition, Burner Off		
20:55	3	8	164	2	8.0	7.0	700	11	2	3			Shelf Cloud, Both Burners On		
21:03	4	8	166	5	8.0	7.5	700	9	2	4	1	75	Steady Inflow, Green Tint, Flare		
21:12	5	8	115	11	8.5	7.5	0	9	0	2			Lost inflow, burners off, RTB		
21:25		8	173	53	.	.		25	0				Land Watford City		
21:29		8	173	53	.	.		25					Engines Off		
:					.	.									
:					.	.									
:					.	.									
:					.	.									
:					.	.									
:					.	.									

*VORTAC CODES
 1. Bismarck 5. Stanley
 2. Devil's Lake 6. Jamestown
 3. Dickinson 7. Minot
 4. Bowman 8. Williston

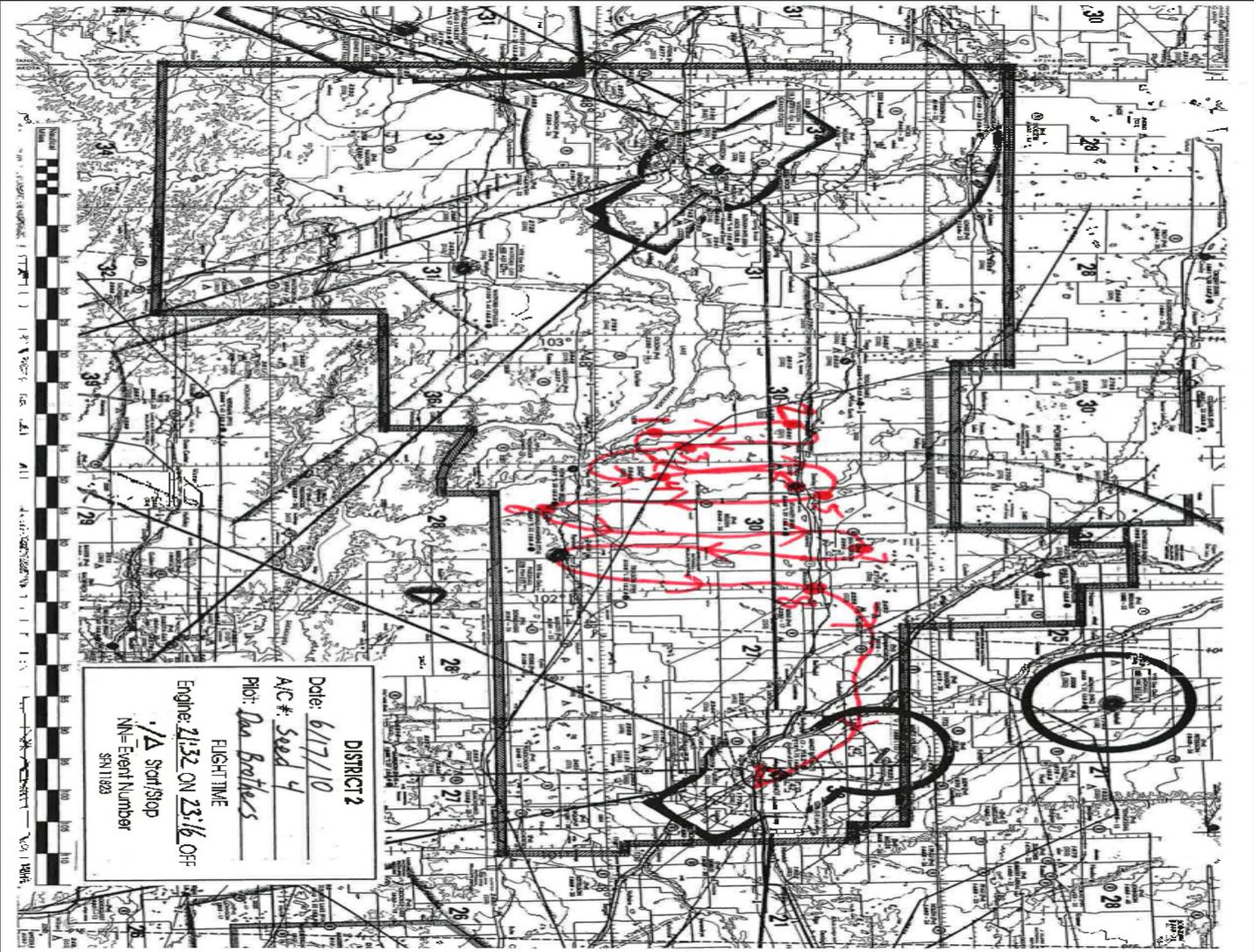
**PRECIPITATION INTENSITY
 0 - no precipitation observed
 1 - virga only, precip not to ground
 2 - rain shaft to surface, light
 3 - rain shaft well established, but can be seen through
 4 - heavy rain shaft, cannot be seen through

MISSION SUMMARY
 Launched to development NE of Williston. Initially seeded for rain using one burner. Inflow was quickly lost, and we repositioned to a storm over Williston. The storm developed a nice shelf and green tint so one BIP was used. As the storm died we RTBed to Watford City.

Paperwork

- ⊗ Everybody is provided with some maps for each district.
- ⊗ There needs to be a map for every flight.
 - ⊗ If the GPS stops working for PARS you may need to draw the map for a flight form that is on the iPad. Be prepared for the possibility.
- ⊗ Maps are drawn with the red felt tip pen provided.
- ⊗ Events on the map should match events on the form.
- ⊗ Fill in the info box with Date, A/C (Seed # is fine), Pilot, Engines On and Engines Off time.
- ⊗ Keep maps neat and readable. Again, records are open to the public. Be professional.

Paperwork



Old PARS



Old PARS Equipment



palmOne

TUNGSTEN | E2

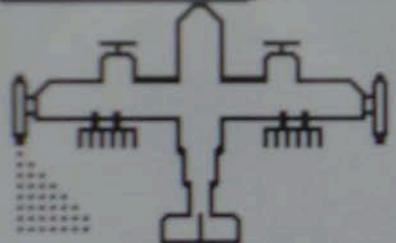
Base Seeder Flight

100%

Engines On
0.3 hours

3D
Accuracy

Engines Off



Rcvd
844

Flare
0

InitRec - 4 Cur - 14

041608 17:04:06
46.81689 - 100.7783

Remarks
8 min

**Left
Burner
9 min**

Both
Burners

Right
Burner
0 min





FLIGHT REPORT
 NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD
 SFN 50864(12/2014)

ENGINES OFF 02:42:15	HOURS 2.02		PAGE # 1	OF 2
ENGINES ON 00:41:00	DRY ICE RATE 0	1 GEN 0.00	2 GEN 0.87	
TOTAL TIME 02:01:15	DRY ICE (lbs) 0.00	EJCTBL (grams) 0	BIP (grams) 450	

DATE June 2, 2005		DISTRICT 1	SEED # 1	PILOT Jason Akina				COPILOT					PURPOSE H	R - Rain H - Hail O - Other M - Maintenance C - Reconnaissance
Time (HH:MM)	EVENT #	LATITUDE (deg)	LONGITUDE (deg)	CLD BASE (kft)	ALTITUDE (KFT)	UPDRAFT (FT/MIN)	TEMP (°C)	PRECIP CODE**	DRY ICE (sec)	FLARES		WINTIP GEN (#)	REMARKS	
										EJC	BIP			
00:41:00		46.18383	-103.4268		2.8					0	0	0	Engines on in Bowman.	
00:51:15		46.17180	-103.3990		3.3					0	0	0		
00:58:10		46.17375	-103.3086	8	7.2	0				0	0	0		
01:05:00	1	46.36952	-103.1195		8.8	500	10	1		0	0	2	Two burners on.	
01:13:13	2	46.39356	-103.0816		8.3	0				0	0	0	Two burners off.	
01:21:52		46.09642	-103.2415		8.0	0				0	0	0		
01:24:28	3	46.00716	-103.2847		8.1					0	0	2	Two burners on.	
01:26:07	4	45.96891	-103.3281		8.3	400		2		0	1	2	BIP lit.	
01:32:30	5	46.00535	-103.3277		8.9	200				0	1	2	BIP lit.	
01:40:46	6	46.03755	-103.2380	9	9.1	700				0	1	2	BIP lit.	
01:45:56	7	46.08233	-103.1682		9.5	0				0	1	2	BIP lit.	
01:54:26	8	46.01844	-103.0616		9.6	800	10			0	1	2	BIP lit.	
02:02:17	9	46.21321	-102.9349	8	8.8	600				0	1	2	BIP lit.	

**PRECIPITATION INTENSITY 0 - No Precipitation 1 - virga only, precip not to ground 2 - rain shaft to surface, light 3 - rain shaft well established, but can be seen through 4 - heavy rain shaft, cannot be seen through	MISSION SUMMARY launched to the S part of the district to seed a line of new development moving in from the SW. this new line started to developed and run up through the N part of the district. I approached the cell by seeding in the front part of the cell flying N and S tucked up against the shelf cloud. It was probably the biggest shelf I ve seen since being with WMI. proceeded to seed in front of the cell till the end of the W buffer then RTB to the south around the storm.
--	--



FLIGHT REPORT
 NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD
 SFN 50864(12/2014)

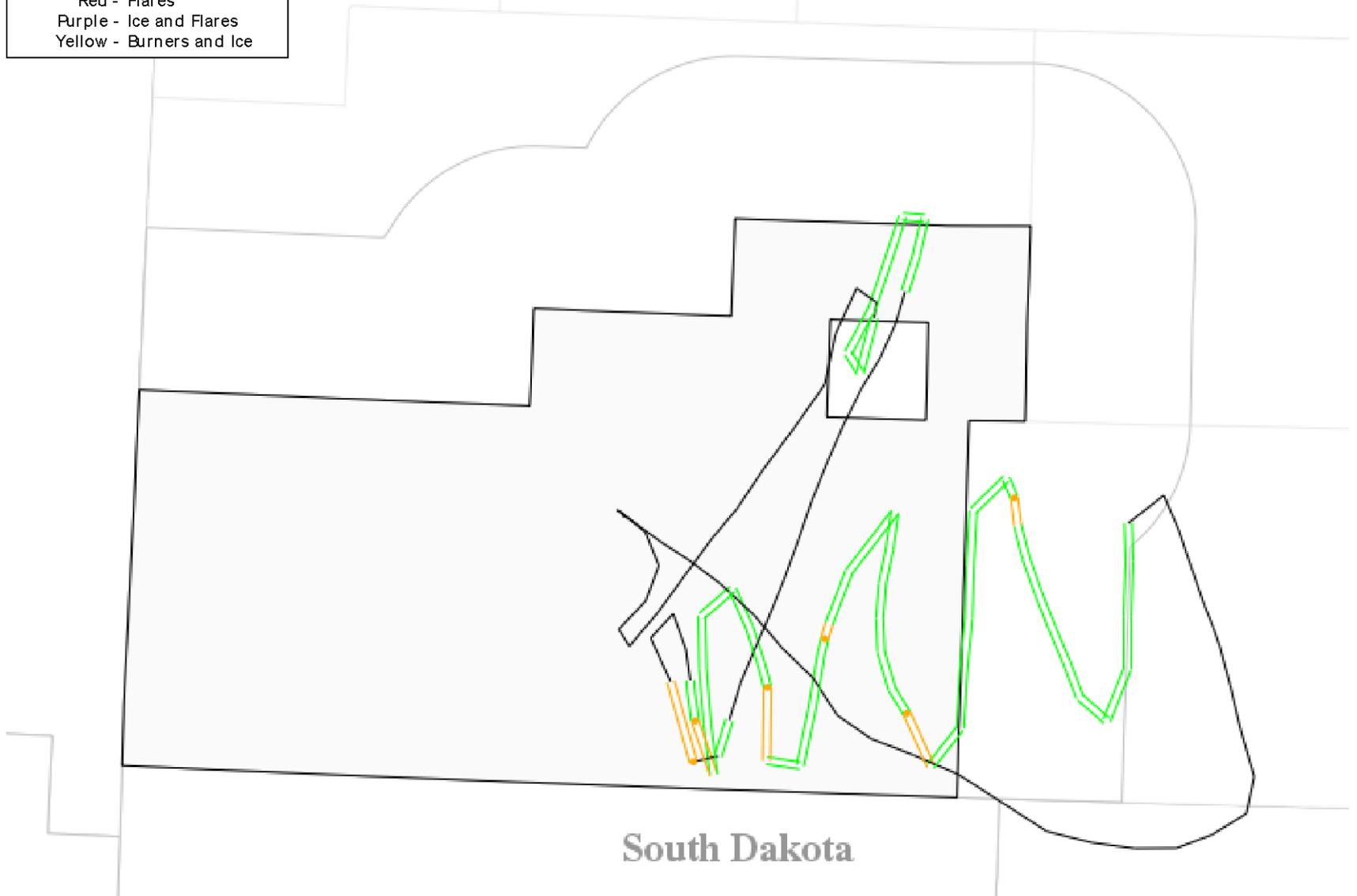
ENGINES OFF 02:42:15	HOURS 2.02		PAGE # 2	OF 2
ENGINES ON 00:41:00	DRY ICE RATE 0	1 GEN 0.00	2 GEN 0.87	
TOTAL TIME 02:01:15	DRY ICE (lbs) 0.00	EJCTBL (grams) 0	BIP (grams) 450	

DATE June 2, 2005		DISTRICT 1	SEED # 1	PILOT Jason Akina				COPILOT					PURPOSE H	R - Rain H - Hail O - Other M - Maintenance C - Reconnaissance
Time (HH:MM)	EVENT #	LATITUDE (deg)	LONGITUDE (deg)	CLD BASE (kft)	ALTITUDE (KFT)	UPDRAFT (FT/MIN)	TEMP (°C)	PRECIP CODE**	DRY ICE (sec)	FLARES		WINTIP GEN (#)	REMARKS	
										EJC	BIP			
02:12:30	10	46.19355	-102.7903		9.3	0				0	0	0	Two burners off.	
02:16:38		46.12243	-102.6910		9.3	0				0	0	0		
02:17:29		46.09520	-102.6750		9.3	0				0	0	0		
02:28:17		45.96544	-102.9941		7.3					0	0	0		
02:38:58		46.18854	-103.4312		2.8					0	0	0		
02:42:15		46.18464	-103.4266		2.8					0	0	0	Engines off in Bowman.	

**PRECIPITATION INTENSITY 0 - No Precipitation 1 - virga only, precip not to ground 2 - rain shaft to surface, light 3 - rain shaft well established, but can be seen through 4 - heavy rain shaft, cannot be seen through	MISSION SUMMARY launched to the S part of the district to seed a line of new development moving in from the SW. this new line started to developed and run up through the N part of the district. I approached the cell by seeding in the front part of the cell flying N and S tucked up against the shelf cloud. It was probably the biggest shelf I ve seen since being with WMI. proceeded to seed in front of the cell till the end of the W buffer then RTB to the south around the storm.
--	--

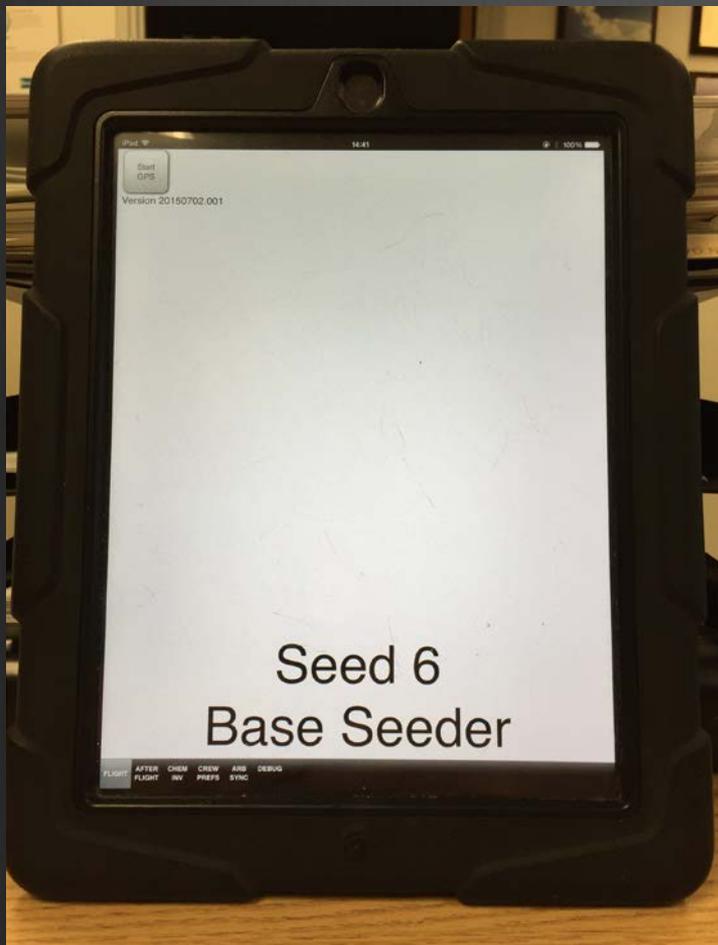
Seed 1 on 6/2/05 at 00:41:00z

- One Green - One Burner
- Two Green - Two Burners
- Orange - Burners and Flares
- Blue - Dry Ice
- Red - Flares
- Purple - Ice and Flares
- Yellow - Burners and Ice

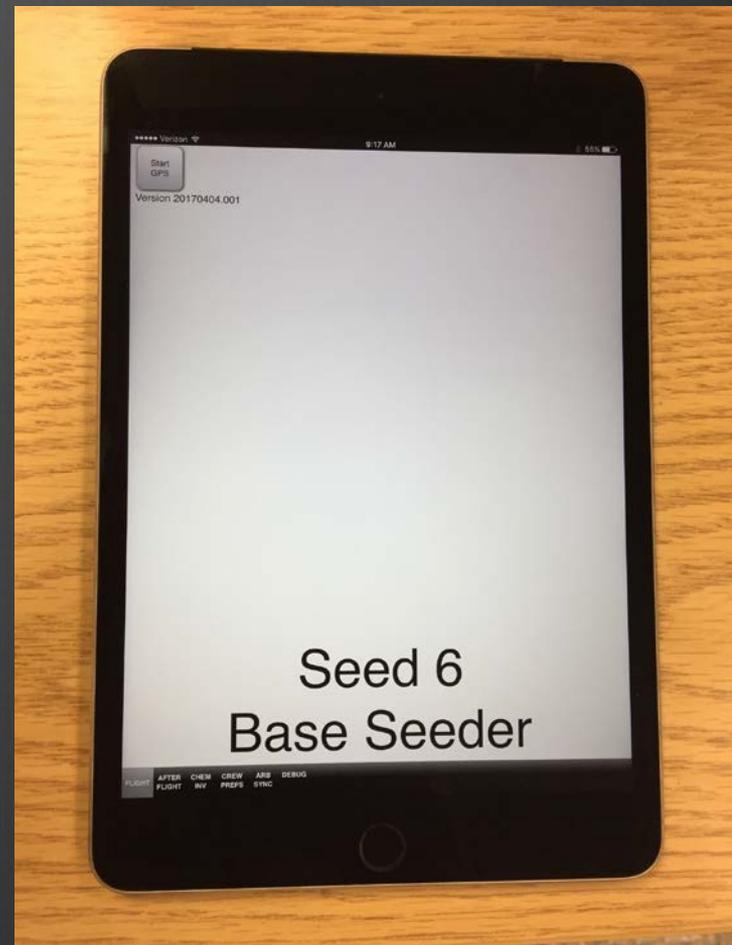


New PARS

iPad (3rd Gen)



iPad Mini (4th Gen)





FLIGHT REPORT
 NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD
 SFN 50864(12/2014)

ENGINES OFF 00:54:35	HOURS 1.86		PAGE # 1	OF 2
ENGINES ON 23:03:01	DRY ICE RATE 0	1 GEN 0.00	2 GEN 1.19	
TOTAL TIME 01:51:34	DRY ICE (lbs) 0.00	EJCTBL (grams) 0	BIP (grams) 150	

DATE June 19, 2015		DISTRICT 1	SEED # 1	PILOT Vadim Alekseev				COPILOT Zach Santee				PURPOSE H	R - Rain H - Hail O - Other M - Maintenance C - Reconnaissance
Time (HH:MM)	EVENT #	LATITUDE (deg)	LONGITUDE (deg)	CLD BASE (kft)	ALTITUDE (KFT)	UPDRAFT (FT/MIN)	TEMP (°C)	PRECIP CODE**	DRY ICE (sec)	FLARES		WINTIP GEN (#)	REMARKS
										EJC	BIP		
23:04:23		46.16983	-103.3038		2.9					0	0	0	Engines on in Bowman.
23:14:28		46.12606	-103.5557		6.6					0	0	0	
23:23:26		46.13757	-104.0315	8	7.2	400	19	4		0	0	0	
23:25:29	1	46.22966	-104.0407	8	7.0	700	19	4		0	0	2	Two burners on.
23:26:16	2	46.26484	-104.0426	8	6.8	700	19	4		0	1	2	BIP lit.
23:36:18		46.16854	-103.9714		8.0					0	0	2	
23:37:13	3	46.20853	-103.9636	8.5	8.2	800	19	4		0	1	2	BIP lit.
23:47:36		46.10335	-103.9900	8.5	8.6	800	15	3		0	0	2	
00:08:48		46.04565	-103.7454		8.8					0	0	2	
00:18:54		46.02869	-103.5730		9.5					0	0	2	
00:23:37		46.03232	-103.4734	9.5	9.2	700	10	3		0	0	2	
00:33:42		46.03102	-103.4444		8.8					0	0	2	
00:36:51	4	46.01844	-103.3630	10	9.5		15	1		0	0	0	Two burners off.

**PRECIPITATION INTENSITY 0 - No Precipitation 1 - virga only, precip not to ground 2 - rain shaft to surface, light 3 - rain shaft well established, but can be seen through 4 - heavy rain shaft, cannot be seen through	MISSION SUMMARY We launched to check out a storm on the MT border. It was a well defined supercell. We had good consistent inflow of 800 ft/min. We seeded for a little over an hour and then returned to base to refuel and rechm.
--	---



FLIGHT REPORT
 NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD
 SFN 50864(12/2014)

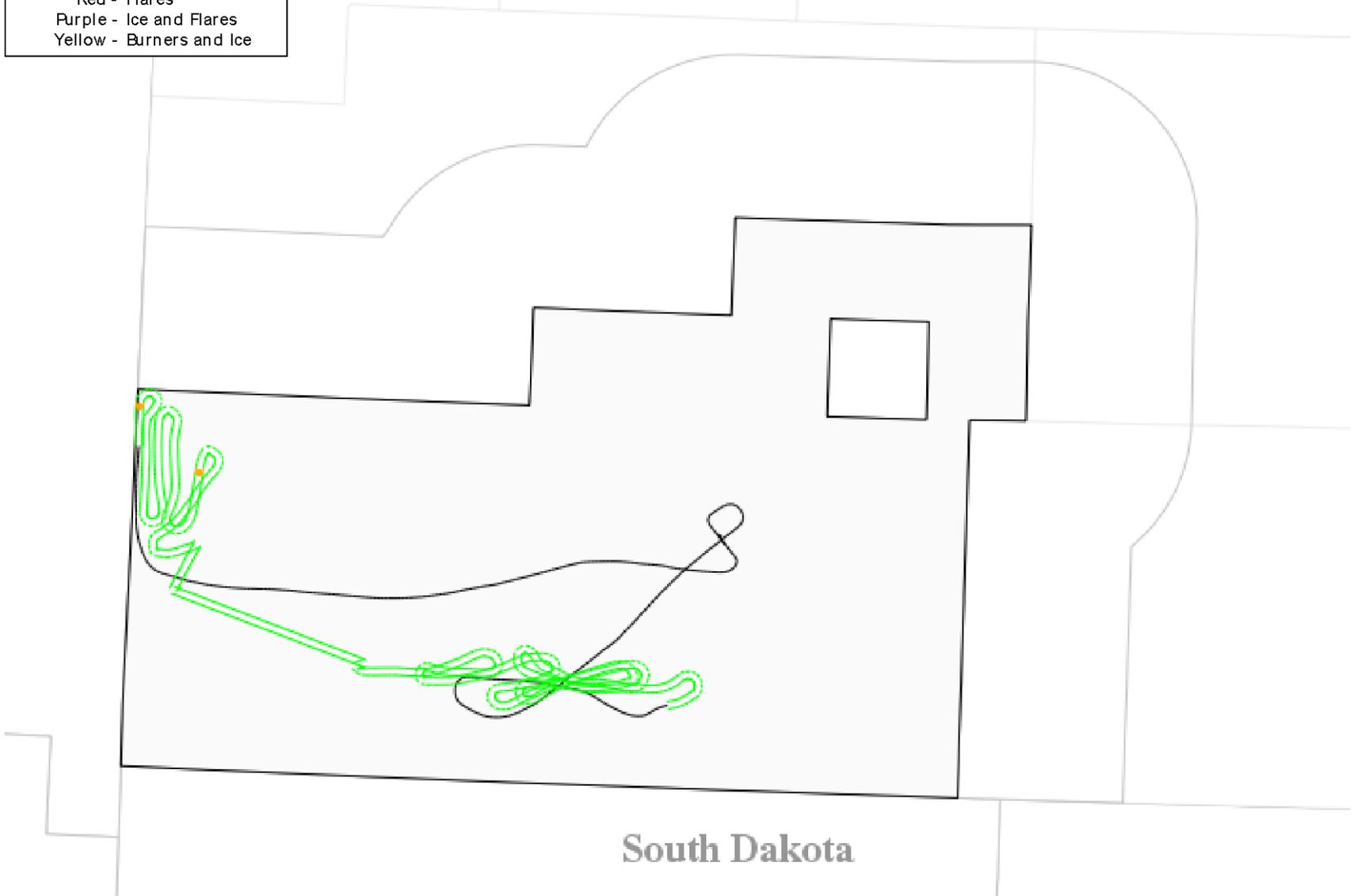
ENGINES OFF 00:54:35	HOURS 1.86		PAGE # 2	OF 2
ENGINES ON 23:03:01	DRY ICE RATE 0	1 GEN 0.00	2 GEN 1.19	
TOTAL TIME 01:51:34	DRY ICE (lbs) 0.00	EJCTBL (grams) 0	BIP (grams) 150	

DATE June 19, 2015		DISTRICT 1	SEED # 1	PILOT Vadim Alekseev				COPILOT Zach Santee				PURPOSE H	R - Rain H - Hail O - Other M - Maintenance C - Reconnaissance
Time (HH:MM)	EVENT #	LATITUDE (deg)	LONGITUDE (deg)	CLD BASE (kft)	ALTITUDE (KFT)	UPDRAFT (FT/MIN)	TEMP (°C)	PRECIP CODE**	DRY ICE (sec)	FLARES		WINTIP GEN (#)	REMARKS
										EJC	BIP		
00:46:55		46.12352	-103.3694		4.8					0	0	0	
00:54:35		46.17124	-103.3038		2.9					0	0	0	Engines off in Bowman.

**PRECIPITATION INTENSITY 0 - No Precipitation 1 - virga only, precip not to ground 2 - rain shaft to surface, light 3 - rain shaft well established, but can be seen through 4 - heavy rain shaft, cannot be seen through	MISSION SUMMARY We launched to check out a storm on the MT border. It was a well defined supercell. We had good consistent inflow of 800 ft/min. We seeded for a little over an hour and then returned to base to refuel and rechem.
--	--

Seed 1 on 6/19/15 at 23:03:01z

- One Green - One Burner
- Two Green - Two Burners
- Orange - Burners and Flares
- Blue - Dry Ice
- Red - Flares
- Purple - Ice and Flares
- Yellow - Burners and Ice



Apps

- Good Reader
 - NDCMP Documents



- Foreflight
 - Available June 1
 - I'll send an email with log in info when setup



- Go ToMeeting
 - Video Chat service for briefings



- Other

PARS

- ⊗ iPad should always be charged and ready to go.
- ⊗ Bring the charging cord with you.
- ⊗ Battery lasts longer with lower screen brightness.
- ⊗ Location Services On for Safari
- ⊗ WiFi OFF when running PARS
- ⊗ Don't Overheat iPad. Don't leave on dash of car or plane

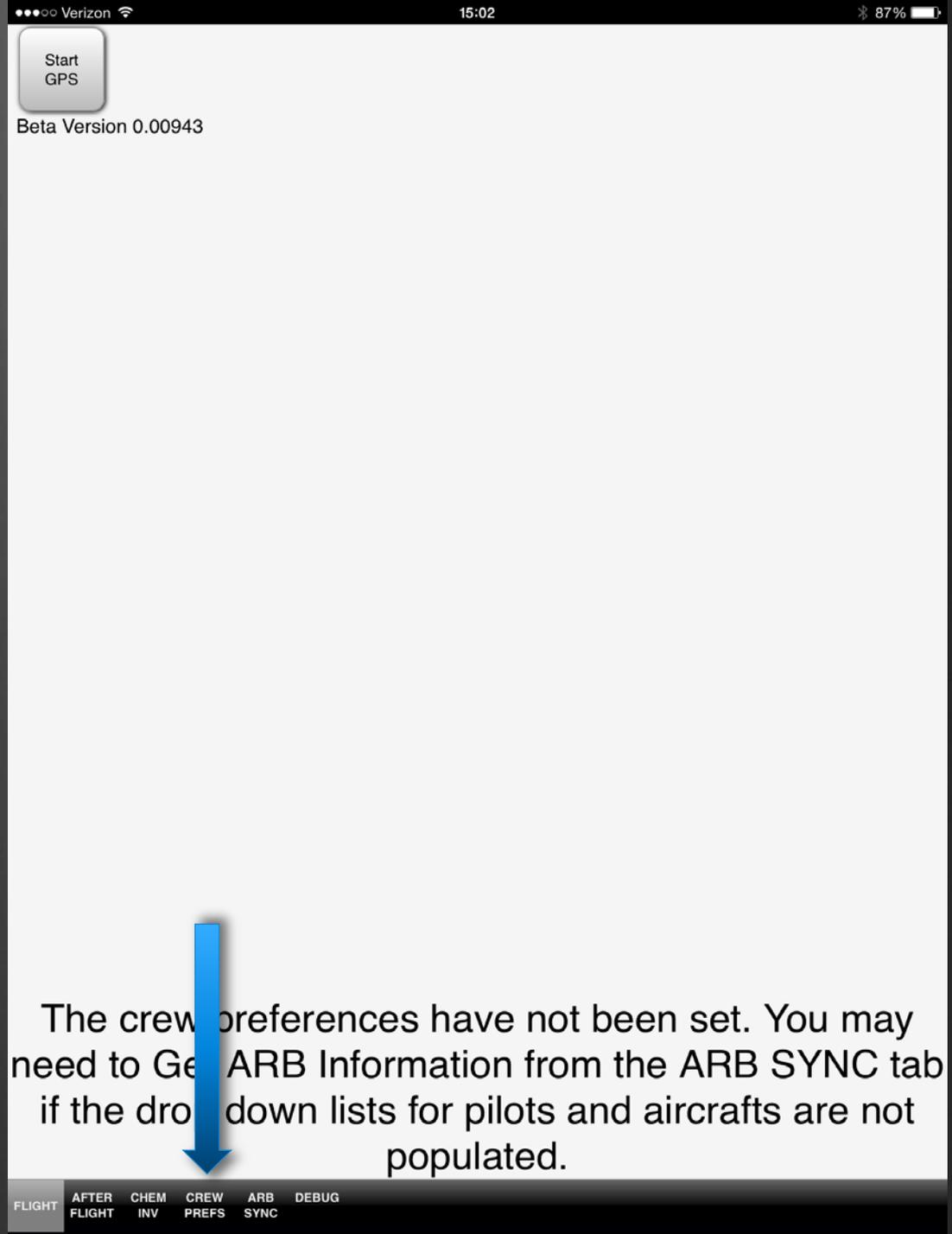
PARS

- ⊗ GPS Flight Tracking WILL NOT WORK if you are not in the PARS app with the screen on.
- ⊗ Select PARS!
- ⊗ Always allow PARS to use current location. That's the GPS!
 - ⊗ PARS is a web-based application, so you ALWAYS give Safari permission to use GPS as well, if asked.
- ⊗ Turn off Cellular Data in settings.

PARS Homepage

Crew Preferences may not be set the first time you open PARS, or the preferences may not be accurate.

First Select Crew Prefs to set the Security Key



CREW PREFS

The Security Key is required to Download and Upload info to the Flight Database

Should already be set, but check to make sure.

If you need the Security Key, call Dan.

Next Select ARB SYNC to download the most up-to-date info from ARB. (Must be connected to Wi-Fi)

CREW PREFS

Default Pilot: Jody Fischer

Default CoPilot: Daniel Brothers

Aircraft Type: Base

Seed Number: Seed 1

Default Airport: Bowman

District: D1

Security Key: 960-536-731-890 Set

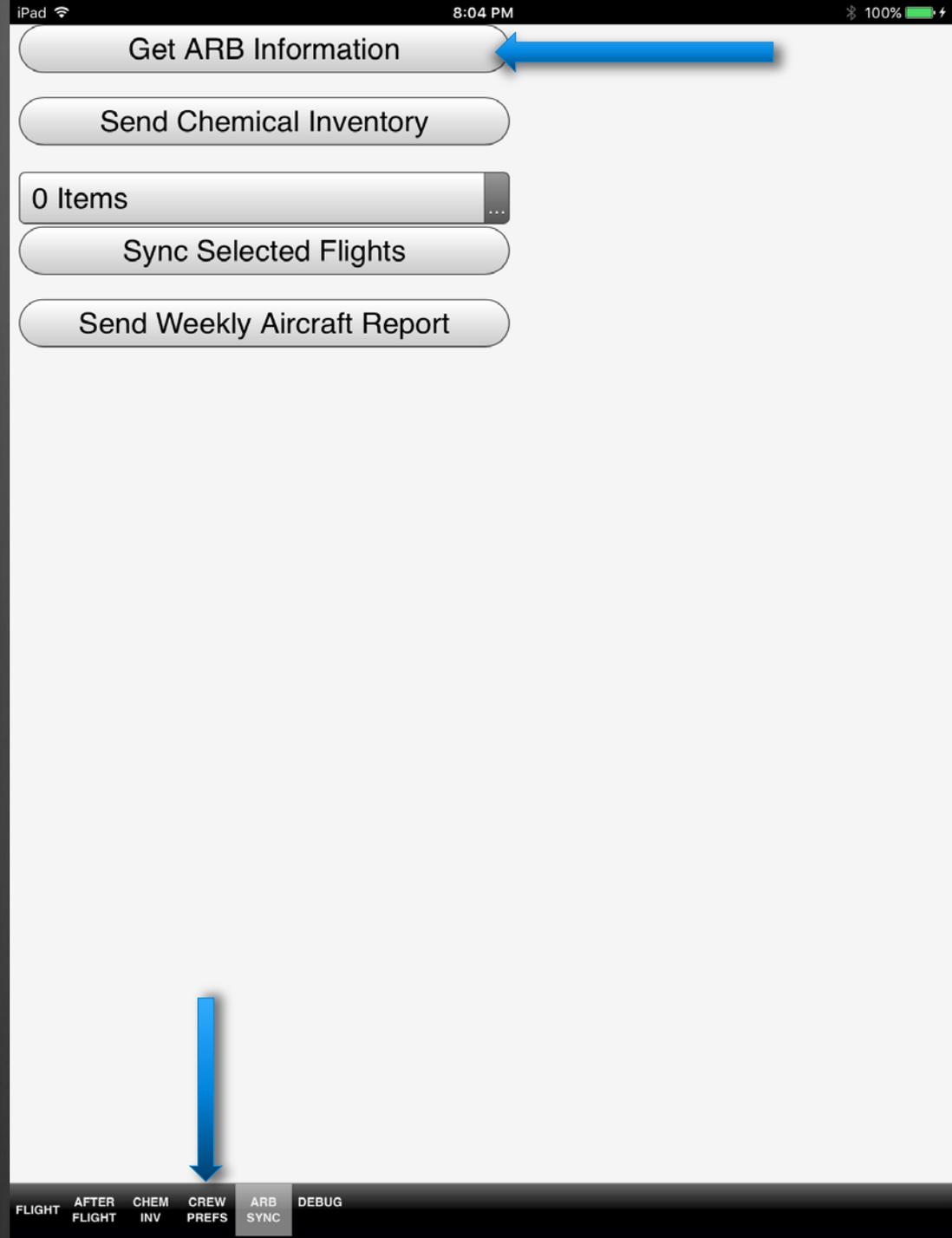
FLIGHT AFTER CHEM CREW ARB DEBUG
FLIGHT INV PREFS SYNC

ARB SYNC

Get ARB Information

- Downloads info such as Pilot lists, Co-Pilot lists, and Airports.

After you Get ARB Information, select CREW PREFS from the bottom menu.



CREW PREFS

These menus let you select the basic information for your plane.

DO NOT change info for one flight or for a rotating vacation intern. These adjustments can and should be made in the Flight Info for that flight.

Once Preferences are set, select Flight from the bottom menu.

CREW PREFS 100%

Default Pilot: Jody Fischer

Default CoPilot: Daniel Brothers

Aircraft Type: Base

Seed Number: Seed 1

Default Airport: Bowman

District: D1

Security Key: 960-536-731-890



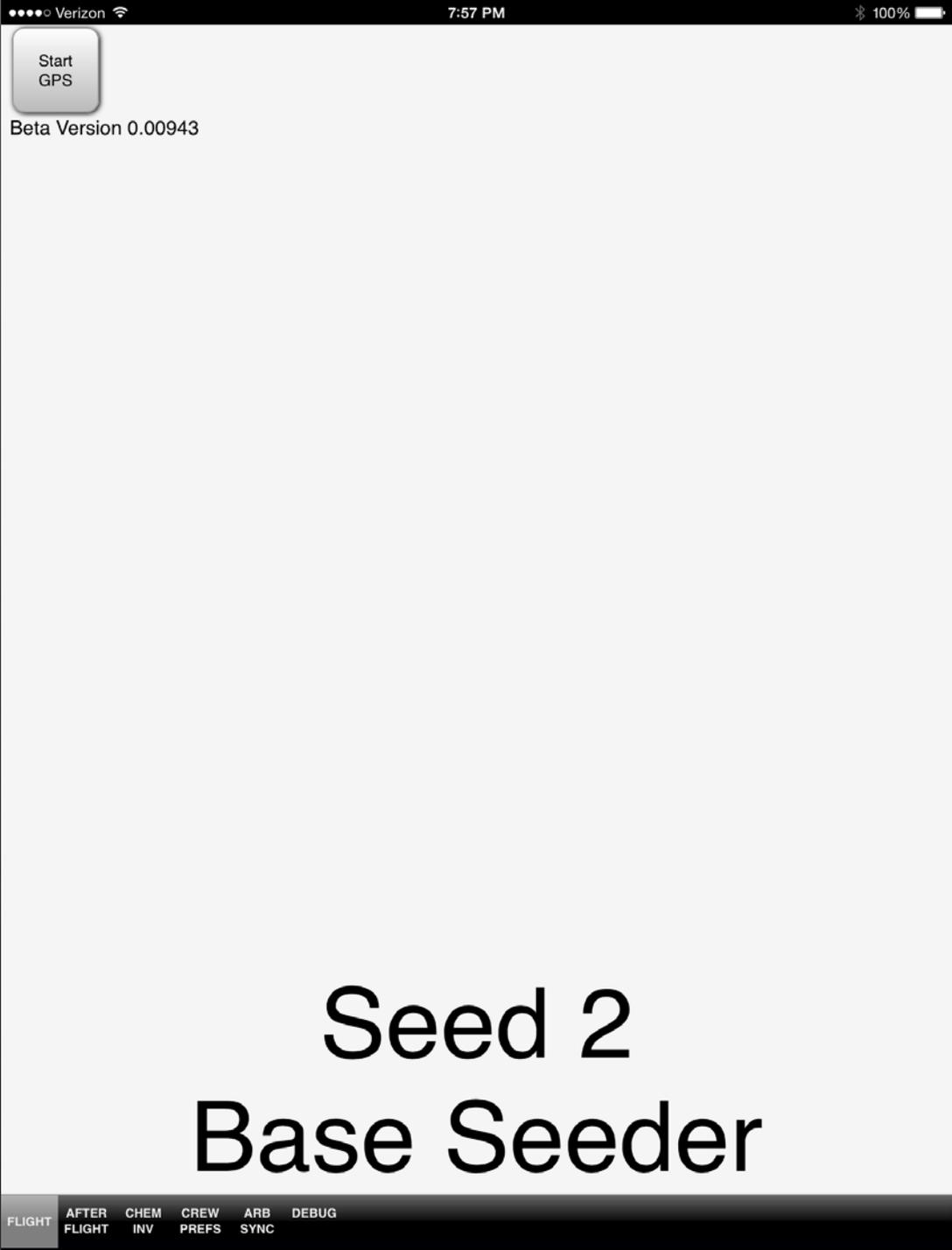
Flight

Anytime you are launched, Start GPS immediately.

- Before you even get to the plane.
- This gives the GPS a few minutes to get proper accuracy.

Many buttons require a double tap to work. The first tap darkens the button. The second tap confirms the button.

- Helps prevent mistakes in bumpy airplanes.



Start
GPS

Beta Version 0.00943

Seed 2
Base Seeder

FLIGHT

AFTER
FLIGHT

CHEM
INV

CREW
PREFS

ARB
SYNC

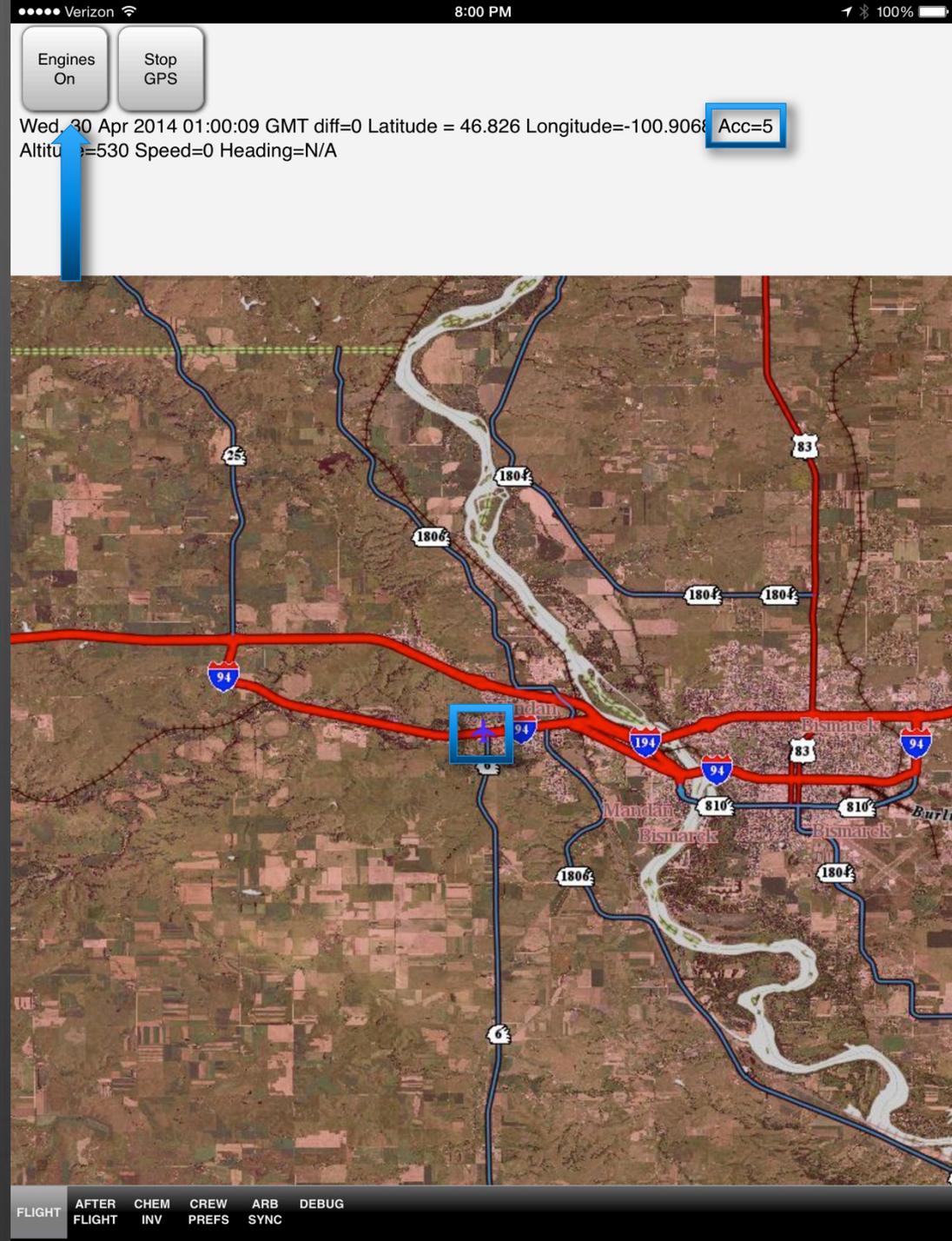
DEBUG

Flight

Once GPS is turned on the map appears showing your current location.

GPS accuracy should be at least 10 before Engines On.

Press Engines On as close as possible to actual Engines On of the airplane.

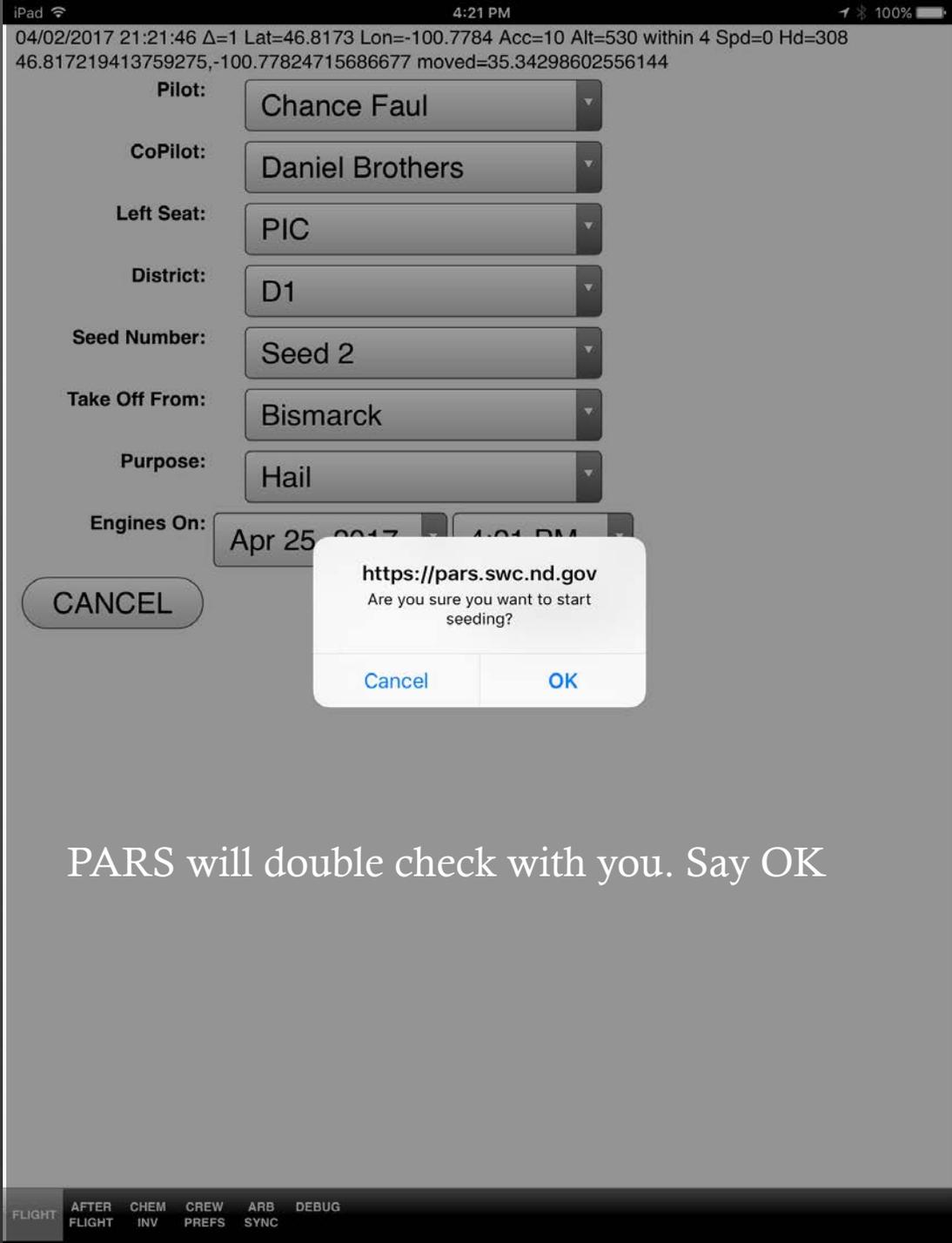


Flight

Select/Change the necessary fields.

- Left Seat must be selected as either PIC or Intern. Who is sitting in the left seat.
- Purpose must be selected. Use Recon if not sure. Can be changed during or after flight as well.
- Engines On Date and Time must be selected. If you pushed Engines On at the correct time minimal adjustment should be needed.

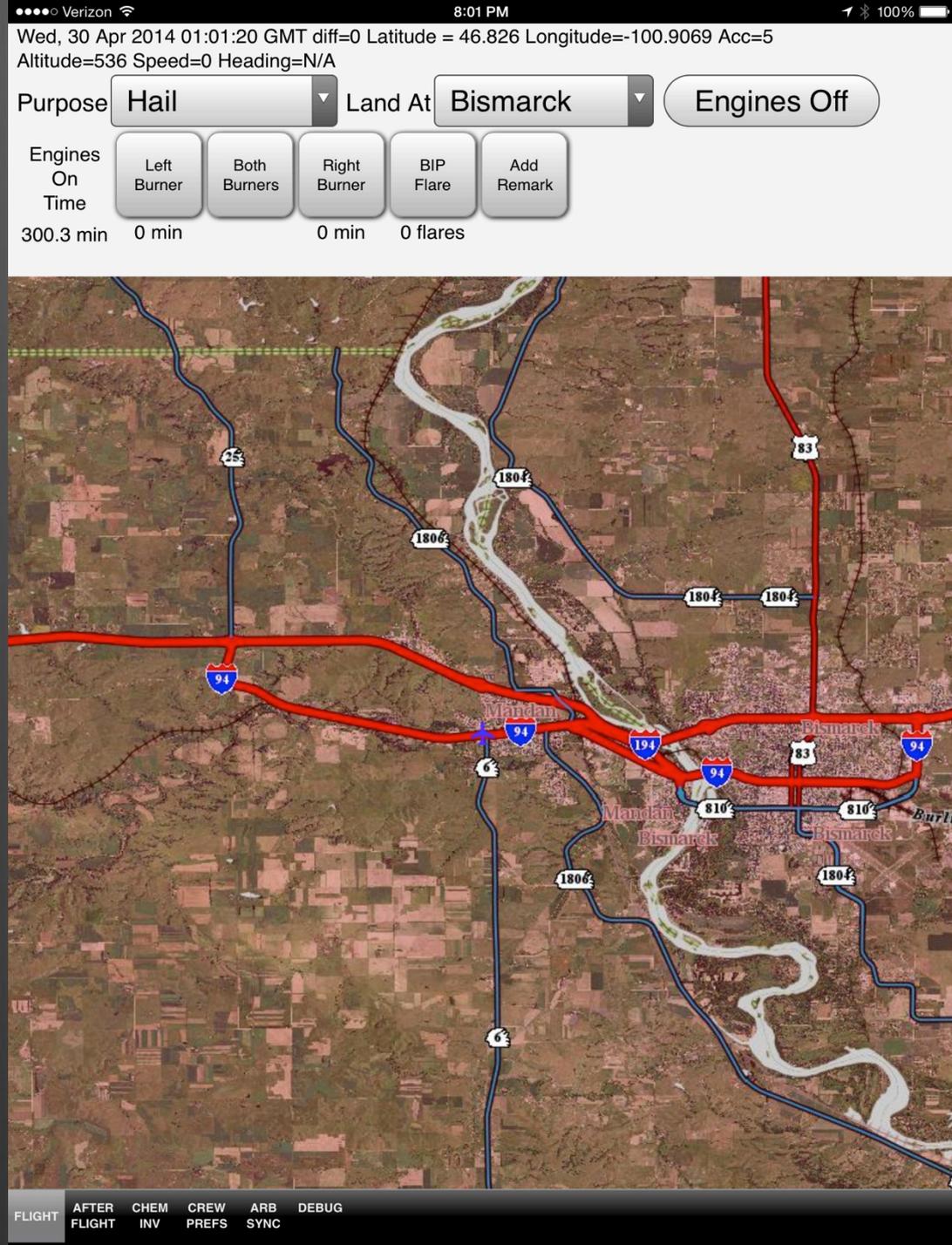
When all info is correct push START.



Base Seeder

Options for Left Burner, Right Burner, Both Burners, BIP Flares, and Add Remark.

- Push Buttons as actions actually occur in flight. This will give us the most accurate chem usage and physical position of events.
- Remarks should be entered at least once every 10 minutes, even if no event occurs.
- Any time an event occurs the iPad will automatically prompt you for Remarks.



Remarks

Remarks include Updraft, Temp, Cloud Base, and Precip Code.

- Updraft: Nearest 100 kft. Leave as N/A in clear skies.
- Temp: Must be entered. Air temp in degrees Celsius.
- Cloud Base: Leave as N/A if there are no clouds. Will automatically place the decimal point. (ex: Entering 65 produces a 6.5 kft cloud base height.)
- Precip Code: Use N/A for no clouds.
- **SAVE!**

Verizon 2:09 100%

Updraft (kft): 500 N/A Temp: 6 Cloud Base (kft): 5.5

100 200 300 7 8 9 7 8 9

400 500 600 4 5 6 4 5 6

700 800 900 1 2 3 1 2 3

1000 1500 2000 . 0 Back 0 Back

Down 0 Up +/-

Precip Code: 2

N/A 0 1

<http://pars.swc.nd.gov>
The Up or Down must be selected for the updraft.

OK

Save

FLIGHT AFTER CHEM CREW ARB DEBUG
FLIGHT INV PREFS SYNC

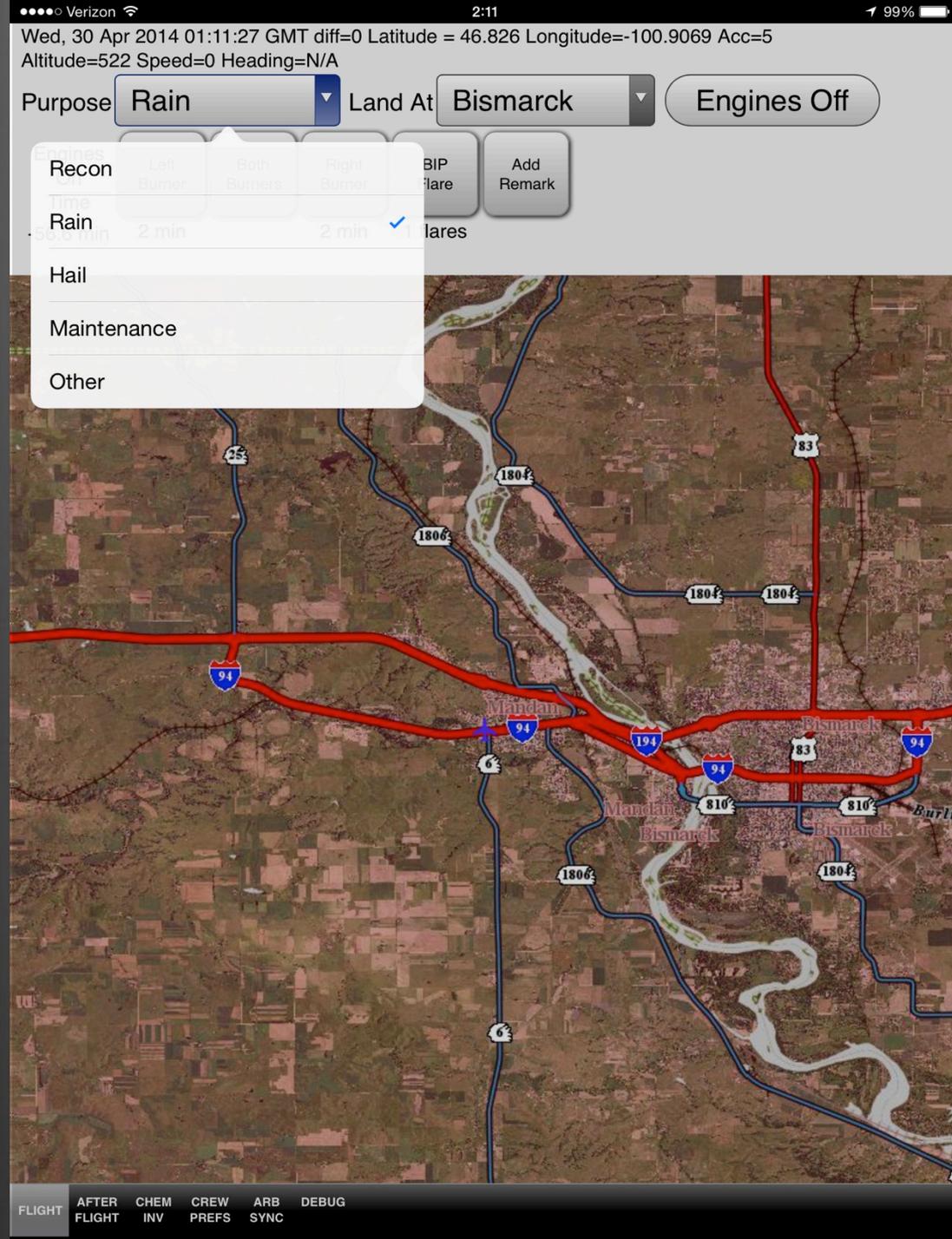
Base Flight

Counters keep track of chem usage

- Burners are tracked in minutes
- Flares are # of flares used

Flight time is also tracked in minutes.

If purpose changes, you can change it with a drop-down menu.



Base Flight

Make sure all seeding equipment is off before trying to turn off Engines

Hopefully, this isn't a problem since you are entering what happens in flight, and you wouldn't be landing with burners still on.

Verizon 2:11 99%

Wed, 30 Apr 2014 01:11:03 GMT diff=0 Latitude = 46.826 Longitude=-100.9069 Acc=5
Altitude=522 Speed=0 Heading=25

Purpose **Rain** Land At **Bismarck** Engines Off

Engines On Time	Left Burner	Both Burners	Right Burner	BIP Flare	Add Remark
-57 min	1.9 min		1.9 min	1 flares	

<http://pars.swc.nd.gov>
Seeding equipment is still on making it impossible to shut off the engines.

OK

FLIGHT AFTER FLIGHT CHEM INV CREW Prefs ARB SYNC DEBUG

Verizon 1:24 94%
 Wed, 30 Apr 2014 01:24:48 GMT diff=0 Latitude = 46.8261 Longitude=-100.9068 Acc=10
 Altitude=526 Speed=0 Heading=67.9

Ice On 7sec Ice Off EJC Flare 2 Finish Run

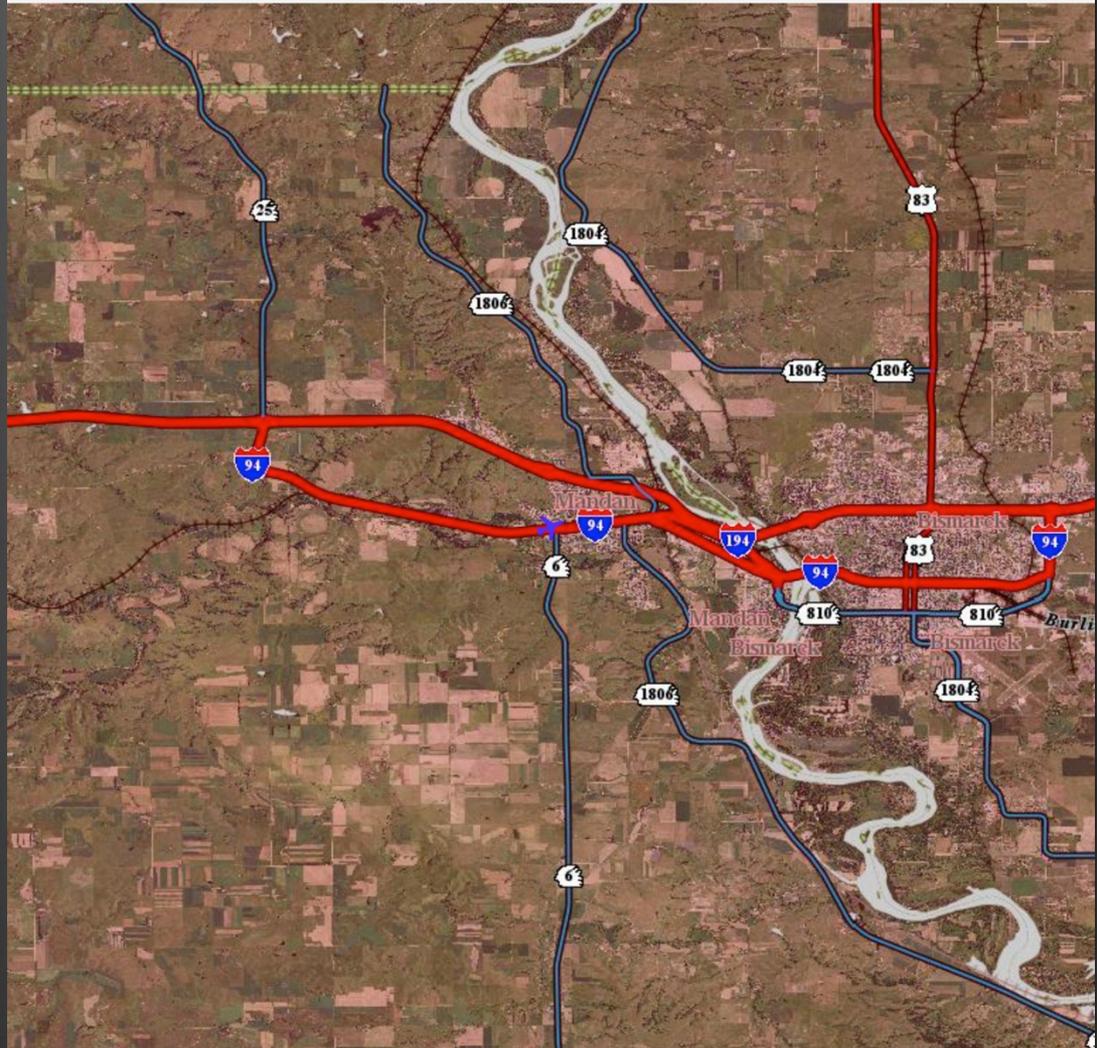
Ice Run Total: 0.3 min

Top Flight

The King Air uses Dry Ice, Ejectable Flares, and BIP Flares, but does not have burners. Does not seed at Base.

When selecting Ice or EJC you start a "Run".

- If you pressed Ice, the Ice will already be On.
- If you pressed EJC the Ice will be Off.
- Counters keep track of Ice time and flares used.



Hybrid Flight

The Hybrid planes have EJC Flares, BIP Flares, and burners, but no ice. Can be used at both base or top, depending on circumstances.

Selecting EJC starts a “Run”.

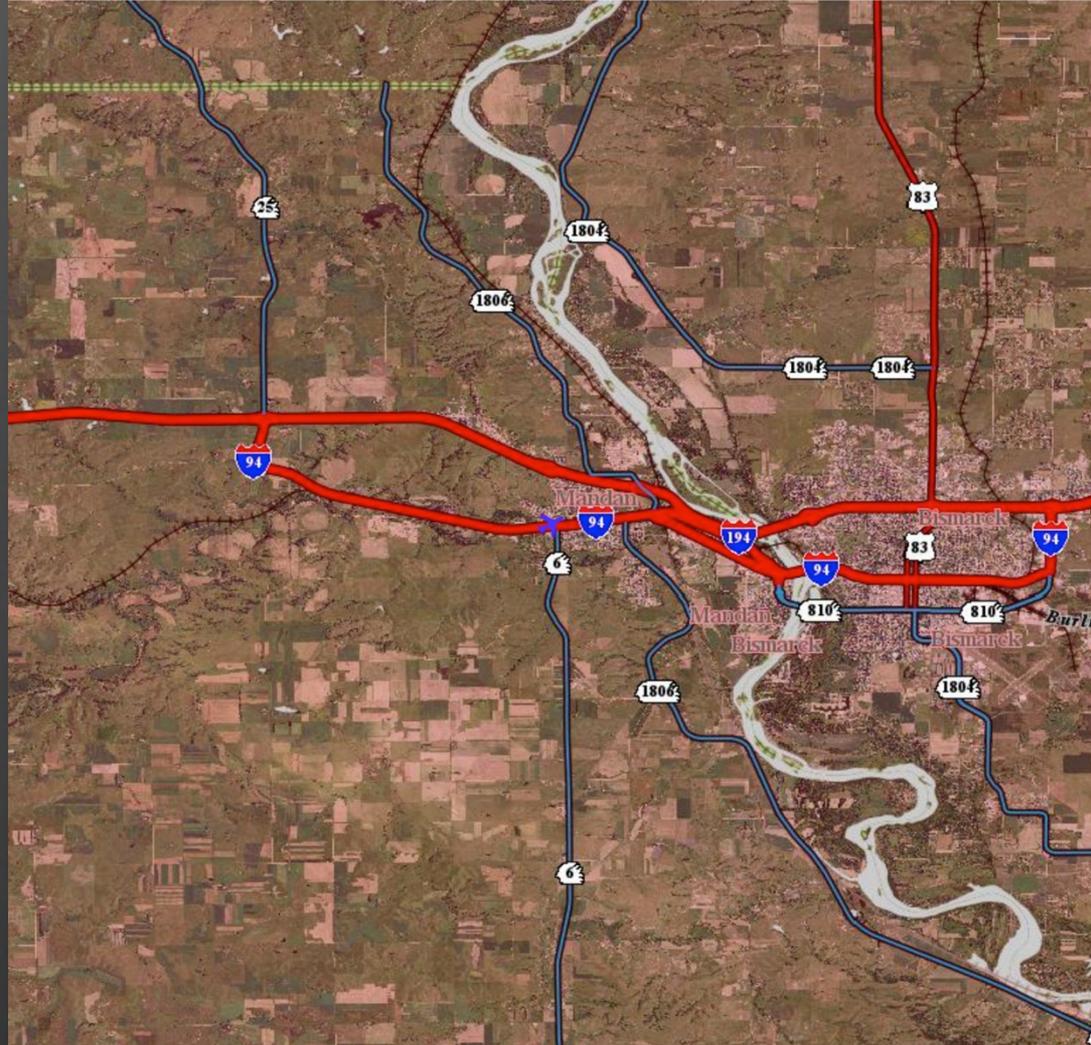
Make sure to Finish Run if it will be several minutes until the next run takes place.

Remarks are only entered after finishing a run.

1:28 93%
Wed, 30 Apr 2014 01:28:49 GMT diff=0 Latitude = 46.826 Longitude=-100.9069 Acc=5
Altitude=530 Speed=0 Heading=60.8

EJC Flare 1 Finish Run

Ice Run Total:



Bad Accuracy: 2409 Tries: 2

Purpose **Hail**

Land At **Dickinson**

Engines Off

Engines
On
Time

BIP
Flare

EJC
Flare

Dry
Ice
Run

Add
Remark

107.5 min

0 bip

3 ejc

0.2 min

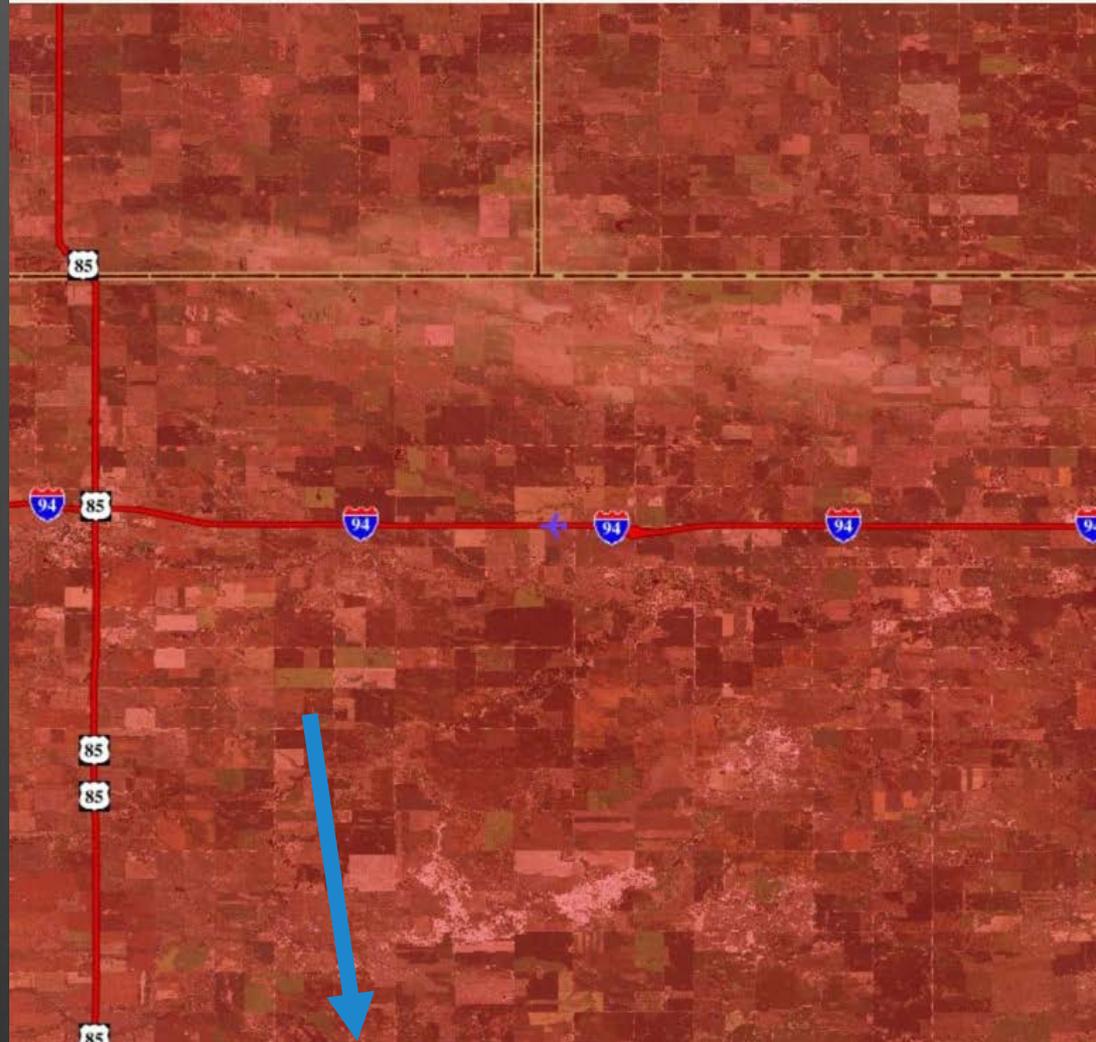
Bad GPS Issue

If GPS is working, you have a bunch of data at the top of the screen.

If GPS stops working, the data is replaced by a “Bad Accuracy” alert. (Or if Acc > 10)

If GPS does not reconnect within 30 seconds (or 4 Tries), click on DEBUG.

FLIGHT AFTER FLIGHT CHEM INV CREW PREFS ARB SYNC **DEBUG**



Bad GPS Issue

On the DEBUG page, select “Reset GPS”.

- You won't see anything really happen on this page, but that's ok.

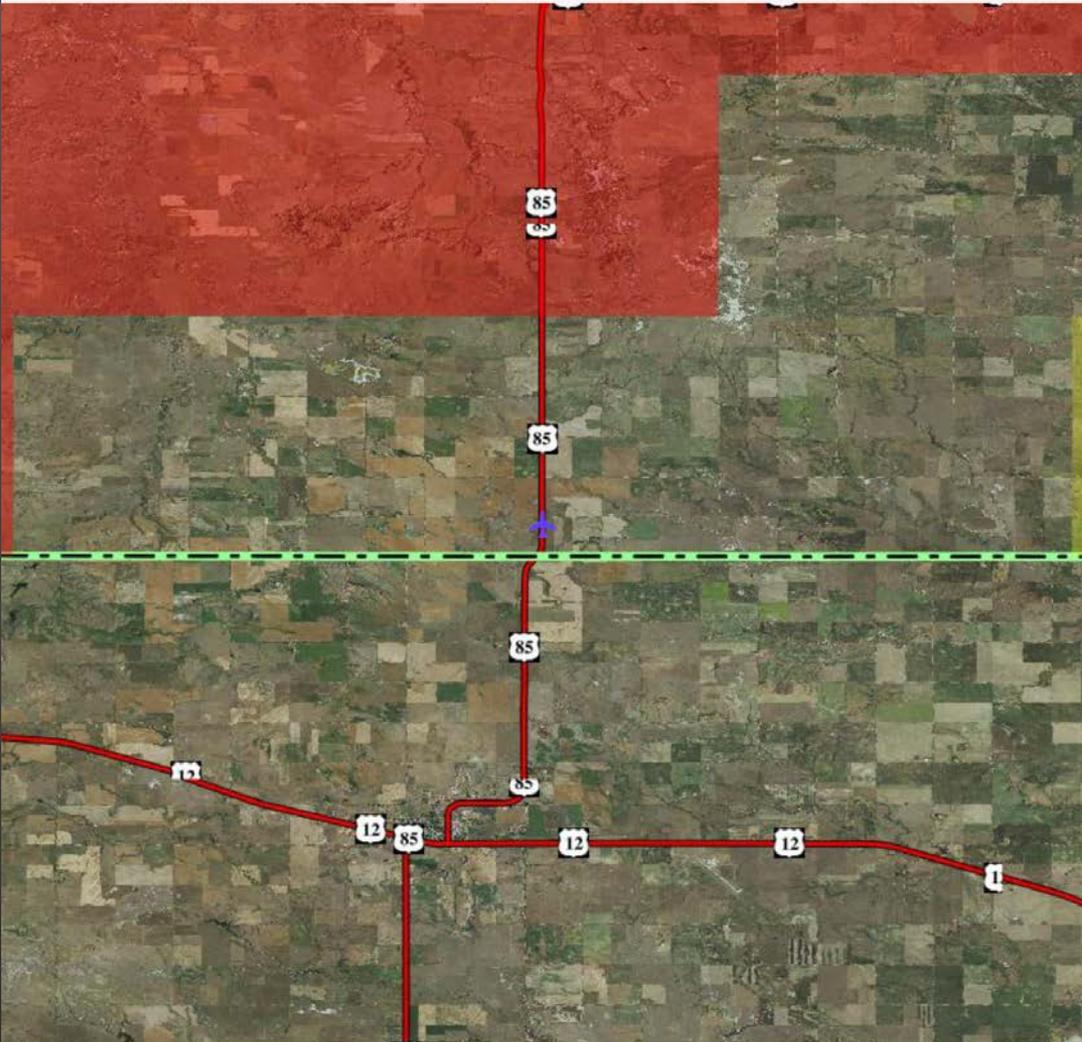
Go back to “Flight” and the GPS should reconnect and start updating again.



iPad 14:37 05/04/2018 19:37:17 Δ=1 Lat=46.2921 Lon=-103.3632 Acc=5 Alt=918 within 6 Spd=29 Hd=360 46.2921425421222,-103.36316152485401 moved=560.9804012836049

Purpose **Hail** Land At **Bowman** Engines Off

Engines On Time	Left Burner	Both Burners	Right Burner	BIP Flare	Add Remark
312.2 min	6.9 min		6.9 min	1 bip	



Map Shading

Target areas have no shading.

Buffer Zones have a light green shading (Not Shown).

Non-Operational areas have a red shading.

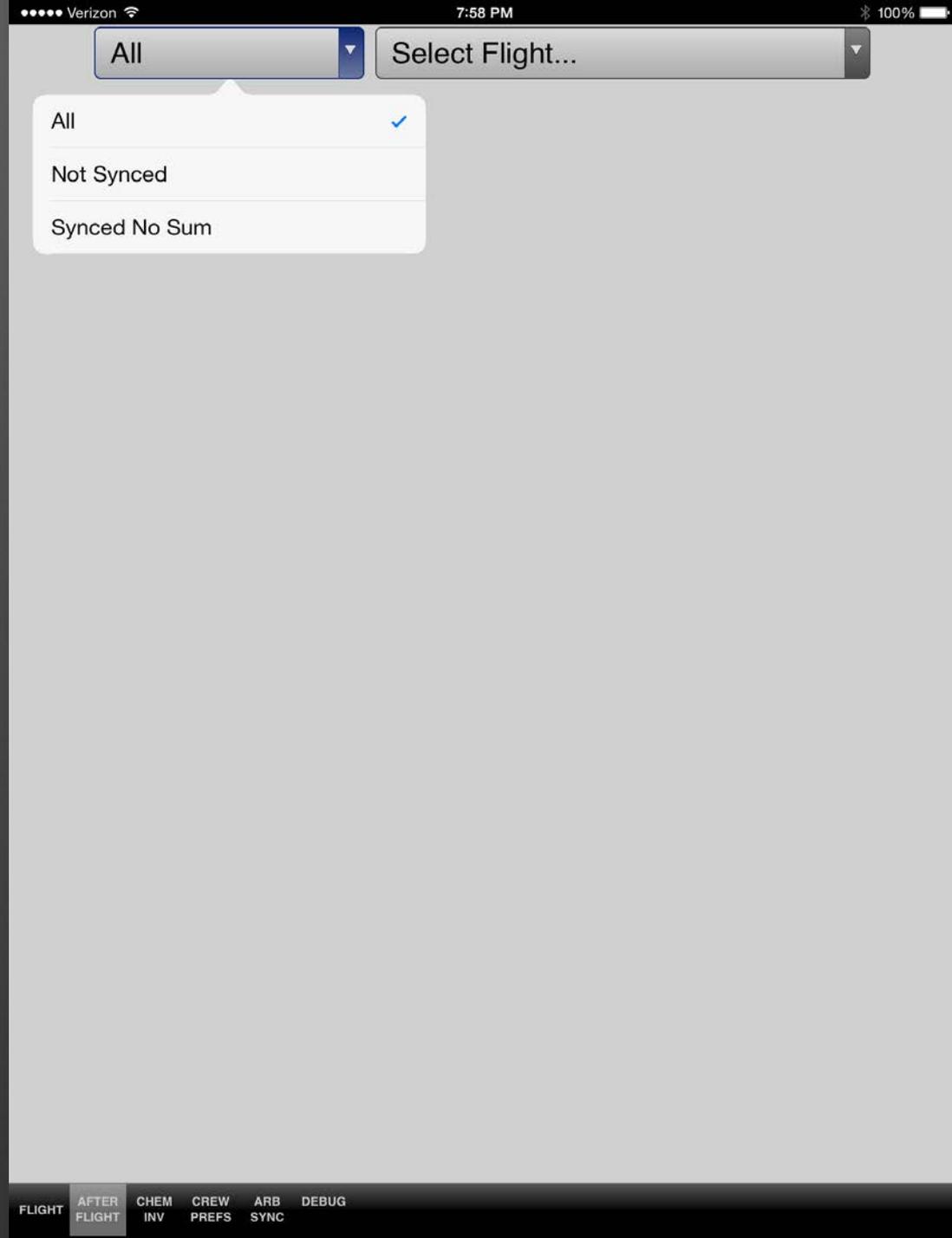
Red means No Seeding.

After Flight

Select AFTER FLIGHT from the bottom Menu.

Select the appropriate flight from the list.

You can also sort flights.



After Flight

The first time you select a flight you will be prompted for BIP and EJC usage.

- These should be based on a VISUAL count of the number of flares ACTUALLY used during flight.
- If you get it wrong, you don't get a second chance. Get it right the first time.
- Check the appropriate box if you had burner problems or if seeding was suspended due to flash flooding or tornado warnings.

The screenshot shows an iPad app interface for data entry. At the top, there is a status bar with 'iPad', signal strength, '18:34', and '61%' battery. Below the status bar, there are two dropdown menus: the first is set to 'All' and the second is set to 'Wed, 30 Apr 2014 13:25:00 GMT'. The main form contains the following fields and controls:

- BIP Flares:** A text input field with a vertical cursor.
- EJC Flares:** A text input field.
- Burner Problems:** A label followed by a square checkbox.
- Seeding Suspensions:** A label followed by a square checkbox.
- Done:** A rounded rectangular button at the bottom of the form.

At the bottom of the screen, there is a keyboard with a blue 'Go' button on the right side. The keyboard includes standard alphanumeric keys, a 'Go' button, and a microphone icon.

After Flight

If the number of flares used doesn't match the number of flares entered during flight the count turns red.

- You will need to fix this before syncing your flight.
- Various controls allow you to move between records.
- There are also menus for adjusting flight info if necessary.
- Enter a flight summary in the space provided.

On: 10:05:00 04/26/2017
Off: 15:10:33 04/26/2017
Left Seat: PIC

Takeoff: Bismarck
Landing: Bismarck

Pilot: Chance Faul
Co-Pilot: Daniel Brothers

Purpose: Hall
District: D1

Seed 2 EON Record 1 of 65 at 15:15:35 04/26/2017

BIP Total = 3 1 too many

Aircraft Status				
Latitude	Longitude	Altitude	Heading	Speed
46.81737883020827	-100.77840152205972	535	8	1

Environment			
Cloud Base	Air Temperature	Updraft	Prncip Code
-999	-999	-999	-999

Seeding Status				
Dry Ice	Left Burner	Right Burner	EJC Flare	BIP Flare
0	0	0	0	0

First Record Prev Record Next Record Last Record All Save Summary

FLIGHT AFTER FLIGHT CHEM INV CREW PREFS ARB SYNC DEBUG

After Flight

Moving through Records

- You can sort records using the menu.
- Events include EON, EOF, BON, BOF, LON, LOF, RON, ROF, BIP, EJC, and ICE.
- You can Remove a Flare if you had an erroneous entry. (ex: A dud)
- You can add a flare if you forgot to hit the button during flight.
- Don't forget to Save Summary any time you make changes.

Verizon 1:17 97%

All Sat, 10 Aug 2013 23:56:00 GMT

On: 23:56:00 08/10/2013 Left Seat PIC
Off: 03:35:07 08/11/2013

Takeoff: Bowman Landing: Bowman
Pilot: TJ Lehman Co-Pilot: Brandon Renner
Purpose: Hail District: D1

BIP Total = 7

Seed 2 POS Record 675 of 1930 at 01:03:31 08/11/2013

Aircraft Status				
Latitude	Longitude	Altitude	Heading	Speed
46.33736169435674	-103.47170499163072	2522	262	60

Environment			
Cloud Base	Air Temperature	Updraft	Precip Code
-999	-999	-999	-999

Seeding Status				
Dry Ice	Left Burner	Right Burner	EJC Flare	BIP Flare
0	1	1	0	0

First Record Prev Record Next Record Last Record Add BIP Add EJC All Save Summary

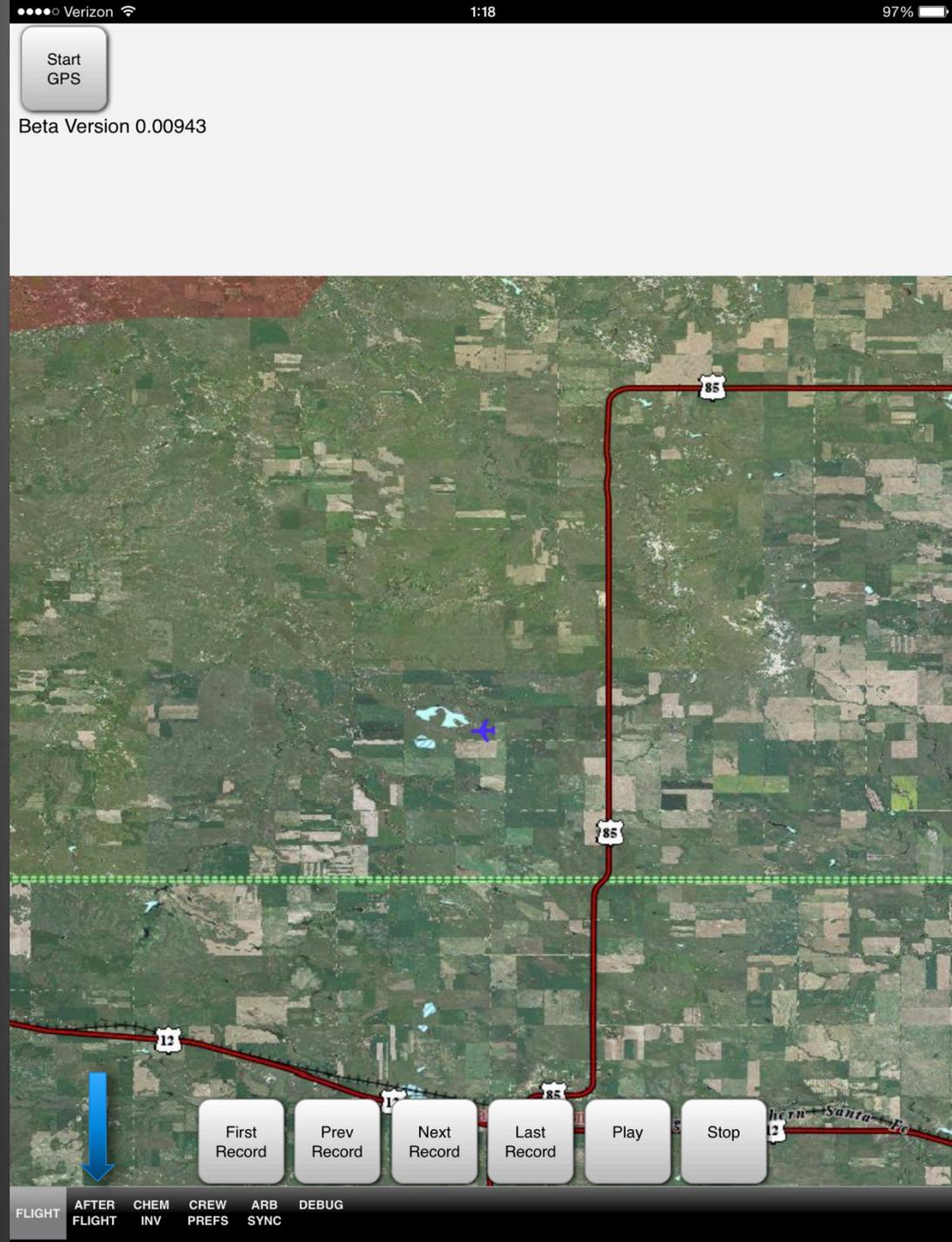
Correct engine off time is 2:58. Launched on line of storms moving in from the north. Began broadcast seeding as storm moved into buffer found good inflow and lit flares as directed by radio. Seeded until area of inflow exited into sd. RTB Bowman.

FLIGHT AFTER FLIGHT CHEM INV CREW PREFS ARB SYNC DEBUG

After Flight

Finding where to add a flare.

- The map can be helpful in finding where to add a flare, if you know about where it should have been.
- While in the flight records, press the FLIGHT button at the bottom of the screen.
- The map shows the planes position at the time of that record. Use the controls to go through the flight.
- Go back to AFTER FLIGHT and you'll be on the new record for editing.



Weekly Report

Only for home site.

Weekly Chemical Inventories are completed every week before 17Z Monday morning.

Make sure Date and Time are entered and accurate.

SAVE

Verizon 1:22 95%

Weekly Report of Chemical in Bowman

Date and Time Measured:

Mix Reported			Flares
Stick Reading	Carboy Type	Gallons	BIPs
c1	34	One Hole	22
c2		One Hole	BIP Duds
c3		One Hole	EJCs
c4		One Hole	EJC Duds
c5		One Hole	

Total M ¹¹

Acetone

Acetone

Cancel Save

Dry Chemical

Sodium Perchlorate 4

Ammonium Iodide

Silver Iodide

Paradichlorobenzene

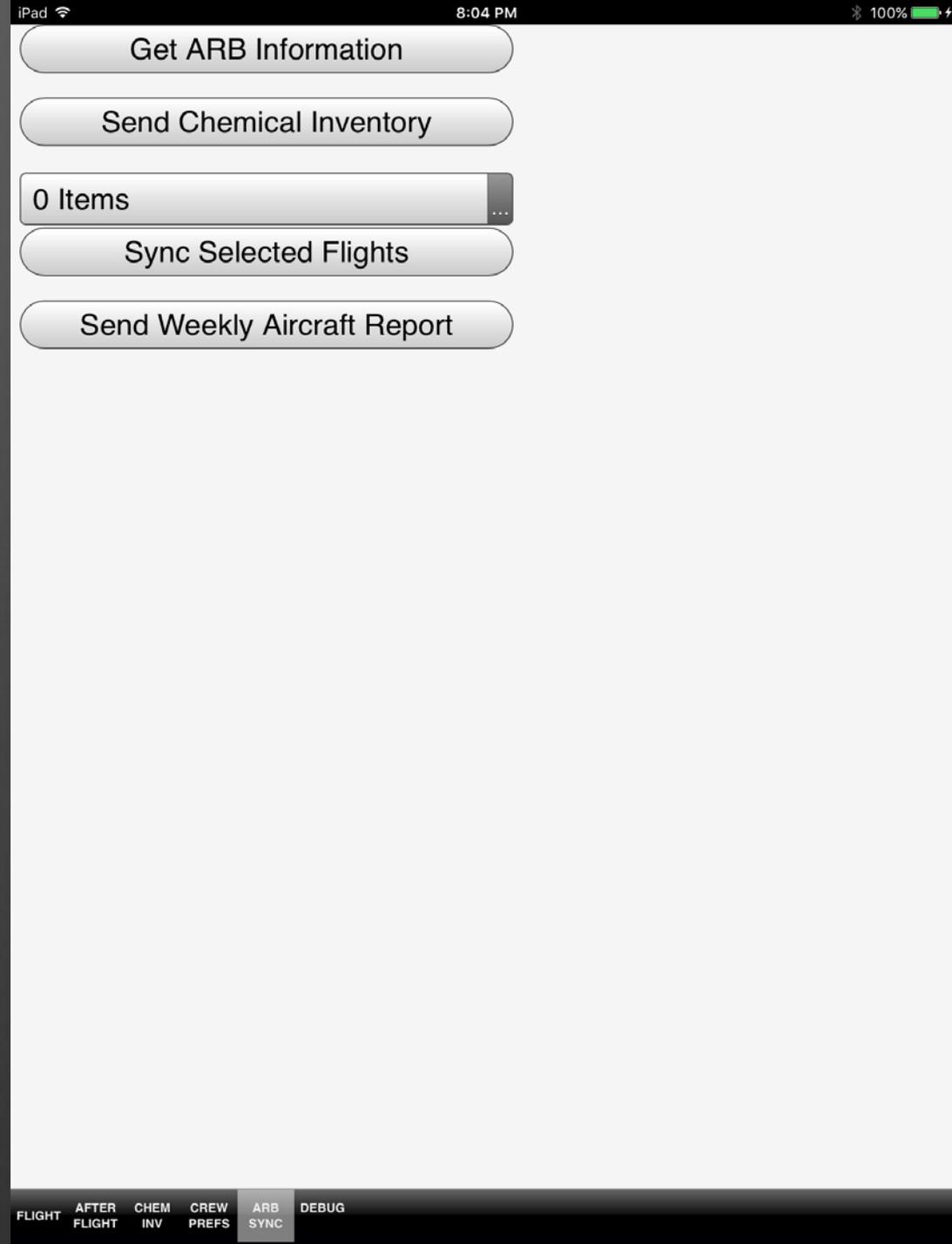
<http://pars.swc.nd.gov>
Date and Time measured must be filled out.

OK

FLIGHT AFTER FLIGHT CHEM INV CREW PREFS ARB SYNC DEBUG

ARB Sync

Send Chemical Inventory will send your weekly chemical to Bismarck.



ARB Sync

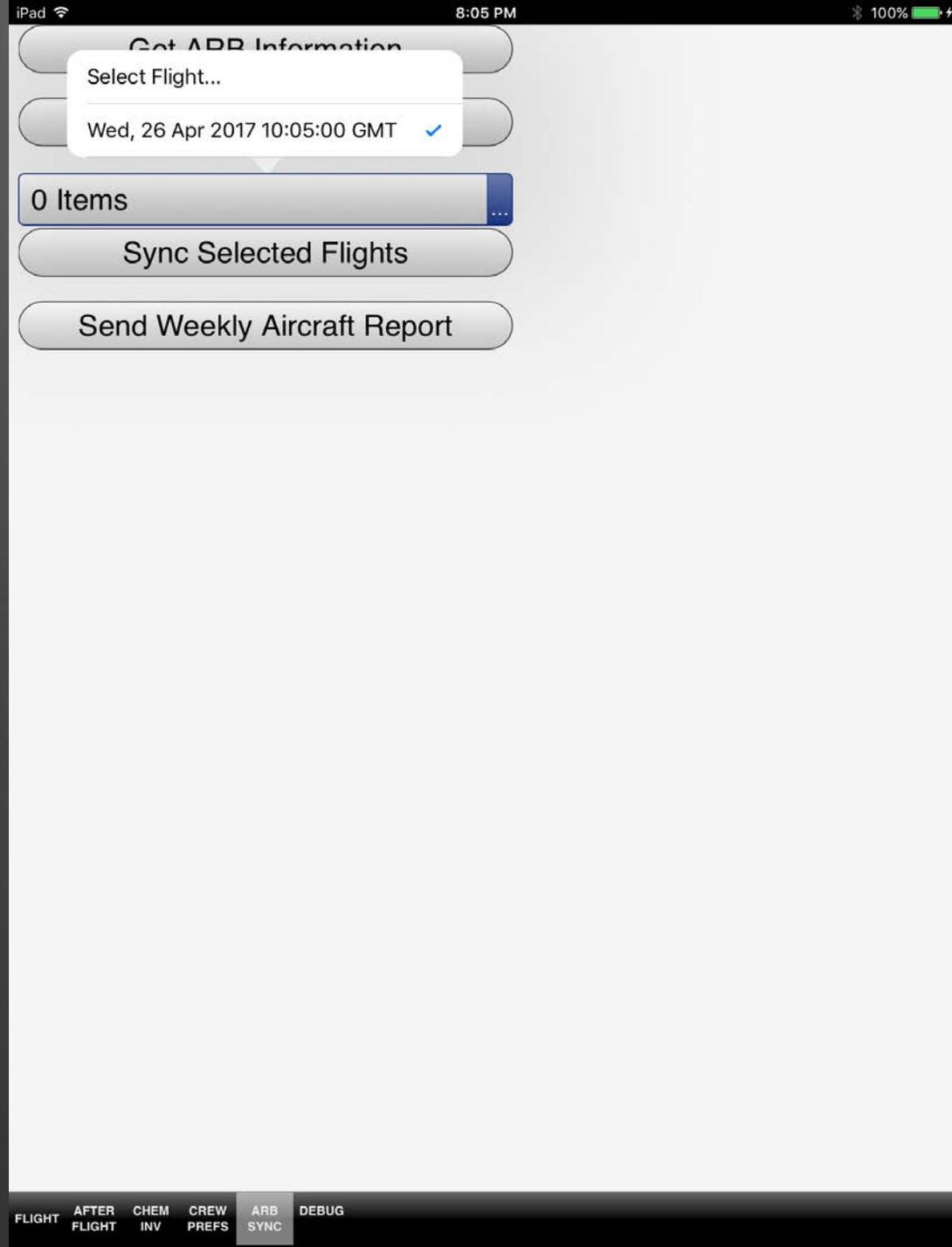
A menu shows any syncable flights.

Only select flights when you are ready to send them. (Summary is completed)

A flight is not syncable if you have not gone through After Flight yet.

A flight can not be resent unless a change is made. (Change Summary if needed)

Sync Selected Flights (May take a few minutes)



ARB Sync

SEND WEEKLY FLIGHT REPORT

-Used to report the number and type of flights during the week.

-Make sure the proper week is selected.

-Enter the total number of flights for each day, based on UTC, regardless of purpose.

-If flights occurred, list the EON, EOF, and purpose of each flight.

-List # and type of flares used, if applicable.

-Push Send. You will be automatically returned to the ARB Sync page.

iPad 8:08 PM 100%

4/24 - 4/30

Day	No. of Flights	Summary
Monday	<input type="text" value="0"/>	No flights
Tuesday	<input type="text" value="0"/>	No flights
Wednesday	<input type="text" value="0"/>	No flights
Thursday	<input type="text" value="1"/>	EON 1504 EOF 1735 Hail 2 2 BIPs
Friday	<input type="text" value="0"/>	No Flights
Saturday	<input type="text" value="0"/>	No Flights
Sunday	<input type="text" value="2"/>	EON 1832 EOF 1946 Recon EON 2103 EOF 2129 MX

FLIGHT AFTER FLIGHT CHEM INV CREW PREFS ARB SYNC DEBUG

Questions?