

ARCSIX Field Data Repository

www-air Introduction

dataID Registration and Data Upload

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Morgan Silverman**

www-air Website Introduction

- <https://www-air.larc.nasa.gov/missions/arcsix/>
- A repository for all ARCSIX-relevant observational and ancillary data products and relevant documentation/reports to facilitate science team data exchange and data processing
- Data holdings include aircraft data as well as other data as needed/requested
- Data file types include binary (HDF/netCDF), text (ICARTT), and image (jpg/png)
- Password-protected document and file sharing
- Publication-quality (“final”) data will be transferred to the NASA DAAC


ARCSIX Website


ARCSIX — Arctic Radiation-Cloud-Aerosol-Surface Interaction Experiment


Data Access

Document Upload/Download


DataID Registration and Data Upload

[Data Archive: ARCSIX 2024](#) 

[Custom Data Merging Tool \(P-3B\)](#) 


[File Sharing \[private\]:](#) 
Telecons, Meetings, Reports, etc.


Relevant Data / Links

[Recommended Standard Variable Names For Atmospheric Composition](#) 

Data Upload Tools




[Steps for submitting data to the Archive](#)

[Data Submittal / Scanning](#) 
» [Help FScan](#)

[Register PI dataIDs](#) 

[ICARTT Data Format Document](#)

Useful Tools

- [Download HDFView -- visual tool for browsing & editing HDF files](#) 
- [Download FileScanning S/W for Windows](#) 
(Requires IE) [What's New](#)
- [Download Flight Planning S/W for Windows](#) 
(Requires Google Earth)

Recent Activities

The overarching goal of **ARCSIX** is to quantify the contributions of surface properties, clouds, aerosol particles, and precipitation to the Arctic summer surface radiation budget and sea ice melt during the early melt season (May through mid-July). It encompasses three main science questions and one objective:

- **Science Question 1 (Radiation):** What is the impact of the predominant summer Arctic cloud types on the radiative surface energy budget?
- **Science Question 2 (Cloud Life Cycle):** What processes control the evolution and maintenance of the predominant cloud regimes in the summertime Arctic?
- **Science Question 3 (Sea Ice):** How do the two-way interactions between surface properties and atmospheric forcings affect the sea ice evolution?
- **Remote Sensing and Modeling Objective:** Enhance our long-term space-based monitoring and predictive capabilities of Arctic sea ice, cloud and aerosols by validating and improving remote sensing algorithms and model parameterizations in the Arctic.



To accomplish the science objectives, ARCSIX will be deploying these aircraft platforms:



NASA Goddard Space Flight Center (GSFC) Wallops Flight Facility (WFF) P-3 Orion Aircraft



NASA Langley Research Center (LaRC) Gulfstream III Aircraft



SPEC Learjet Model 35A Research Aircraft

Data Access: SARP Example

>> DC-8 Aircraft
C-23 Aircraft
P-3B Aircraft
Merges
Ground

Sondes

Current list for the DC8 AIRCRAFT Data:

PI Directory	Last Updated	Parameters	Measurement / Research Description (SARP_2022)
BENNETT.RYAN/	May 09, 2023	+ Show VarList	NSRC DC-8 Meteorological and Navigation Facility Instrumentation
DIGANGL.JOSHUA/	Jun 27, 2022	+ Show VarList	NASA LaRC Trace Gas Measurements
DISKIN.GLENN/	Jun 27, 2022	+ Show VarList	NASA LaRC Diode Laser Hygrometer
NEHRIR.AMIN/	Jun 29, 2022		NASA LaRC High Altitude Lidar Observatory (HALO) - Water vapor, aerosol and cloud profiles
STCLAIR.JASON/	Jul 18, 2022	+ Show VarList	NASA GSFC in situ formaldehyde
ZIEMBA.LUKE/	Jul 13, 2022	+ Show VarList	

[BENNETT.RYAN/](#)

Filename

Recv'd/Updated

Size (KB)

SARP-MetNav_DC8_20220621_R0_L1.ict	20230509	2715.3
SARP-MetNav_DC8_20220621_R0_L2.ict	20230509	2898.3
SARP-MetNav_DC8_20220623_R0.ict	20230509	5077.0

[DIGANGL.JOSHUA/](#)

Filename

Recv'd/Updated

Size (KB)


SARP-CRDS-CH4_DC8_20220623_RA.ict	20220627	191.4
SARP-CRDS-CO2_DC8_20220623_RA.ict	20220627	191.4
SARP-CRDS-CO_DC8_20220623_RA.ict	20220627	191.3
SARP-CRDS-O3_DC8_20220623_RA.ict	20220627	344.6
SARP-CRDS-CH4_DC8_20220621_RA_L1.ict	20220621	101.7
SARP-CRDS-CH4_DC8_20220621_RA_L2.ict	20220621	103.6
SARP-CRDS-CO2_DC8_20220621_RA_L1.ict	20220621	101.8
SARP-CRDS-CO2_DC8_20220621_RA_L2.ict	20220621	103.6
SARP-CRDS-CO_DC8_20220621_RA_L1.ict	20220621	101.8

Data Organization:


1. locationID (Platform)
2. Principal Investigator
3. dataID (identifier)
4. Flight or data collection dates

Data Submission Steps

- DataID Registration (one-time process):
 - dataID is part of the filename and will be used to organize PI files on the data repository (links data files to PI)
 - PI or file creator will need to first register dataID(s) before files can be submitted
- Data Submission:
 - File submission is through a scanning tool (FScan) for checking filenames and content
 - All incoming files are scanned:
 - ICARTT Files: file header, including keywords and data flags, as well as time stamps
 - HDF and netCDF files: data variable dimensions and attributes
 - Other files: file names
 - Support zipped multi-file upload
 - Script-based batch upload and download available
- Username/password: contact POCs

➔ Data Archive: ARCSIX 2024 

➔ Custom Data Merging Tool (P-3B) ➔


File Sharing [private]: 
Telecons, Meetings, Reports, etc.


Relevant Data / Links

➔ Recommended Standard Variable Names For Atmospheric Composition 

Data Upload Tools

➔ Steps for submitting data to the Archive


➔ Data Submittal / Scanning 
» Help FScan


➔ Register PI dataIDs 

➔ ICARTT Data Format Document

Useful Tools

• Download HDFView -- visual tool for browsing & editing HDF files 

• Download FileScanning S/W for Windows
(Requires IE) 
» What's New

• Download Flight Planning S/W for Windows
(Requires Google Earth) 

DataID Registration Page

DataIDs Registration -- ACTIVATE 2022

A dataID is the first part of an ICARTT [type] data filename (see the Data Format Document for details). Each dataID (per platform) must be unique.

IMPORTANT (PLEASE READ)

This registration is ONLY valid for the Platforms listed in the "Platform Box". Do NOT register if your platform is not listed. YOUR "PLATFORM DATA MANAGER" IS RESPONSIBLE FOR YOUR DATA ARCHIVING NEEDS.

The PI's data directory will be created from LastName.FirstName. Please enter PI name correctly. Each dataID represents a [separate] group of files in PI's data directory:

See file naming convention slide

PI Last Name :	PI First Name :	Platform (LocationID) :
<input type="text" value="BENNETT"/>	<input type="text" value="RYAN"/>	<input type="text" value="NASA King Air Aircraft (KINGAIR)"/>
dataID: (max 45 chars) <i>Prefix with "activate-" e.g., activate-CO2</i>	Data Description: (max 380 chars) <i>Describe your measurements; e.g., Carbon Dioxide Mixing Ratio</i>	Instrument(s): (max 190 chars) <i>List Instruments; e.g., LI-COR 6252</i>
<input type="button" value="Reset"/> <input type="text" value="activate-MetNav"/>	<input type="text" value="NSRC UC-12 Meteorological and Navigation Facility Parameters"/>	<input type="text" value="Varies"/>
<input type="button" value="+ Add Another dataID"/>	<input type="button" value="- Remove Last Entry"/>	
Upload Your Instrument(s) Description Document: <input type="button" value="Choose File"/> No file chosen (Select your file)		
*** (NOTE: Any new file/document upload WILL OVERWRITE your previously uploaded document) *** *** (If you have more than 1 file (document) to upload, please email the files to: gao.chen@nasa.gov and/or ali.a.aknan@nasa.gov. Thank you!) ***		
<input type="checkbox"/> OVERWRITE my previous record (i.e., ALL previously registered dataIDs for this mission will be removed).		
Link to PI website, instrument, experiment description, etc		
<input type="text" value="https://baeri.org/nsrc/"/>		<i>Optional: to display on LaRC Archive webpage</i>
Text describing PI experiment or measurements (e.g., NASA LaRC DIAL - Troposphere O3, Aerosols, and Clouds Profiles):		
<input type="text" value="NSRC UC-12 Meteorological and Navigation Facility Parameters"/>		<i>Optional: to display on LaRC Archive webpage</i>
<input type="button" value="Submit"/>		

Current Registered dataIDs on the Server for ACTIVATE 2022

PI Name: Last.First	LocationID	Registered dataIDs
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Registered DataID Example

PI Last Name :	PI First Name :	Platform (LocationID) :
<input type="text" value="HAIR"/>	<input type="text" value="JOHN"/>	<input type="text" value="LaRC GIII Aircraft (LARC-G3)"/>

	dataID: (max 45 chars) <i>Prefix with "asiaaq-" e.g., asiaaq-CO2</i>	Data Description: (max 380 chars) <i>Describe your measurements; e.g., Carbon Dioxide Mixing Ratio</i>	Instrument(s): (max 190 chars) <i>List Instruments; e.g., LI-COR 6252</i>
<input type="button" value="Reset"/>	<input type="text" value="asiaaq-HSRL2"/>	HSRL measurements of clouds and aerosols, as well as DIAL measurements of Ozone Concentration	<input type="text" value="HSRL2"/>
<input type="button" value="Reset"/>	<input type="text" value="asiaaq-HSRL2-images"/>	Full flight images of the lidar measurements of clouds, aerosols, and ozone, plus raster-specific images within a flight, designated as Ln (n can be 1,2,3,or 4)	<input type="text" value="HSRL2"/>
<input type="button" value="Reset"/>	<input type="text" value="asiaaq-HSRL2-mlh"/>	Aerosol derived mixed layer heights and mean backscatter and extinction within several layers from HSRL2	<input type="text" value="HSRL2"/>
<input type="button" value="Reset"/>	<input type="text" value="asiaaq-HSRL2-NearSurface"/>	High horizontal resolution measurements of HSRL2 atmospheric aerosol and ozone with lower vertical resolution. Several combinations of horizontal and	<input type="text" value="HSRL2"/>

Upload Your Instrument(s) Description Document: No file chosen (Select your file)

*****(NOTE: Any new file/document upload WILL OVERWRITE your previously uploaded document)*****
*****(If you have more than 1 file (document) to upload, please email the files to: gao.chen@nasa.gov and/or ali.a.aknan@nasa.gov. Thank you!)*****

OVERWRITE my previous record (i.e., ALL previously registered dataIDs for this mission will be removed).

Link to PI website, instrument, experiment description, etc
 Optional: to display on LaRC Archive webpage

Text describing PI experiment or measurements (e.g., NASA LaRC DIAL - Troposphere O3, Aerosols, and Clouds Profiles):
 Optional: to display on LaRC Archive webpage

FScan Page

SARPEAST File Scanning and Submittal
[ICARTT File Format Document](#)

IMPORTANT: In order to archive files, dataID(s) must be registered first because the PI Data Directory on the Server will be created from the registration.

[Help](#)

What to do: Scan Only Scan and Archive (see dataIDs note above)

File Upload: No file chosen (Select your file)

This is Final (i.e., NOT Field) data -- File Revision MUST be set to R0, R1, etc.

[How to upload multiple files in one step.](#) | [How to archive *.zip ICARTT files.](#)

This application scans three (3) file types -- defined as ICARTT: [FFI 1001](#), [FFI 2110](#), and [FFI 2310](#)

Select Data Time-Interval Type : Start, Stop, and Mid-point
Start, Stop, and Mid-point
Constant Equal (1 or less); {Or, irregular (Satellite/Trajectory/Ground)}

Display FScan results (report) : Detailed Brief

Submit

 Pressing this button will Scan *[and Archive]* the selected file(s).

Please scan your files on your machine first using [FScanBrowser \(Windows\)](#)
*** Your Browser should allow FScan to open a new Window (to display FScan's results) ***

By: Ali Aknan -- Ver 3.7.8 (June 02, 2022)

***** Scanning Failed. See [Error Messages Below](#) *****

Please scroll down to the end of this page to view the results.

NOTE: error messages are displayed in RED; warnings and other info in ORANGE

Function Selected: Scan and Archive
FScan Results Report: Detailed
Time-interval Type Selected: Start, Stop, and Mid-point
Filename Submitted: DCOTSS-MMS-1HZ_ER2_20210817_RA.ict
File Size: 3066538 bytes
File Content: application/octet-stream

Receiving file was successful - now onto scanning ...

✓ ALL DONE.

Please scroll down to the end of this page to view the results.

NOTE: error messages are displayed in RED; warnings and other info in ORANGE.

Function Selected: Scan and Archive
FScan Results Report: Detailed
Time-interval Type Selected: Start, Stop, and Mid-point
Filename Submitted: ACTIVATE-LARGE-SMPS_HU25_20220111_RA_L2.ict
File Size: 55987 bytes
File Content: application/octet-stream

Receiving file was successful - now onto scanning ...

Note: results open on a separate page, may need to change browser permissions

ARCSIX File Naming Convention

DataID_LocationID_YYYYMMDD_R# [_Description].extension

- **DataID:** a short description of measured parameter/species, instrument, or model prefixed by “ARCSIX-”
- **LocationID:** an identifier of measurement platform/type, provided on the dataID registration website in a drop-down box
 - ARCSIX locationIDs: P3B, G3, LEARJET, SATELLITE, GROUND, MERGE, MODEL, ANALYSIS, TRAJECTORY, SONDE, and OTHER; please reach out if others are needed
- **YYYYMMDD:** UTC date of takeoff for flight data or the beginning of the measurement for ground sites **Note:** ADT = UTC-3
- **R#:** Revision identifier. Typically RA, RB, RC, ... for field data and R0, R1, R2, ... for the publication quality data. **Note:** *archived files cannot be overwritten, only replaced with subsequent revisions*
- **Description:** optional additional description of the file if necessary
- **Extension:** “ict” for ICARTT files, and “h5” for HDF 5 files, nc for netCDF files, etc.
 - Allowed: *.ict, *.nc, *.cdf, *.hdf, *.h4, *.h5, *.hdf4, *.hdf5, *.he5, *.kmz, *.kml, *.htm, *.html, *.txt, *.jpg, *.jpeg, *.gif, *.png, *.bmp, *.pdf, *.xls, *.xlsx, *.doc, *.docx, *.ppt, *.pptx
 - Upon request: *.zip, *.tar, *.gz, or others
- The underscore, “_”, is used ONLY to separate the different fields of the filename
- Examples: the filename for ARCSIX LARGE aerosol optical measurements made on a June 15, 2024 flight may be:
 - ARCSIX-LARGE-OPTICAL_P3B_20240615_RA.ict (for field data)
 - ARCSIX-LARGE-OPTICAL_P3B_20240615_R0.ict (for publication quality data)

ARCSIX Data Submission Schedule

Mission Phase	Data Type	Submission Deadline	Access Control
Field Deployment	Field Data	24 hour after each flight or cal. day	Science team and Partners
Post-Deployment	Publication-quality or “Final” Data	6 months after campaign concludes (nominally Feb. 16, 2025)	Public

- Field data submission deadline may vary depending on field operation constraints
- The final data should be of publication quality and time synced to the time standard for each platform

ARCSIX Data Format Requirements

- The ARCSIX data will conform to **ICARTT, netCDF, or HDF** format standards. This supports NASA's Open-Source Science and Open Data initiatives by making ARCSIX data FAIR
- All in-situ measurements are required to report data in ICARTT format (<https://www.earthdata.nasa.gov/s3fs-public/imported/ESDS-RFC-029v2.pdf>)
- ICARTT files will be scanned to ensure compliance with the format requirements
- HDF and netCDF files should be as CF-compliant as possible, i.e., having all required global and variable attributes and properly dimensioned data variables (template URL to be posted)
- In-field and remote assistance will be available to the science team to troubleshoot file format and submission issues

ICARTT Format

- CSV text file with prescribed header format
- Self-describing (can be read programmatically)
- <https://www.earthdata.nasa.gov/s3fs-public/imported/ESDS-RFC-029v2.pdf>

Number of header lines → 42 1001

Principle Investigator (PI) → Luke Ziemba

Flight date → 2023,06,15 2023,06,15

Independent variable → Time_Mid Secs after midnight,Time of acquisition

Missing data flags → -9999,-9999

Variable definition lines →

Metadata (normal header lines) →

Data (comma-separated) →

```
42 1001
Luke Ziemba
NASA Langley
In-situ microphysical aerosol measurements from the Dynamic Aviation B200
NASA 2023 SARP East
1,1
2023,06,15 2023,06,15
1 0
Time_Mid Secs after midnight,Time of acquisition
2
1,1
-9999,-9999
CNgt6nm, #/cm3, AerMP_NumConc_InSitu_RHd_None_Bulk_STP, Number concentration of particles with diameters greater than 6nm
CNgt6nm_nonvol, #/cm3, AerMP_NonVolatileNumConc_InSitu_RHd_None_Bulk_STP, Number concentration of nonvolatile particles with diameters greater than 6nm
0
26
*****
Langley Aerosol data from the 2023 SARP East field campaign

PI_CONTACT_INFO: luke.ziemba@nasa.gov
PLATFORM: Dynamic Aviation B200, N46L
LOCATION: Latitude, Longitude, and Altitude included in MetNav files
ASSOCIATED_DATA: N/A
INSTRUMENT_INFO: Flagged data are due to missing data or to instrument issues.
CN statistics: Condensation Particle Counters
- CNgt6nm is measured with a BMI CPC-1710
- CNgt6nm_nonvol is measured with a BMI CPC-1710, where the sample is heated to 350 deg C
DATA_INFO: Aerosol measurements are reported at standard temperature and pressure (0 deg C, 1013.25 mb)
- Data in this file is NOT time synced
UNCERTAINTY: CPC data is 10%
ULOD_FLAG: -7777
ULOD_VALUE: N/A
LLOD_FLAG: -8888
LLOD_VALUE: N/A
DM_CONTACT_INFO: Michael Shook (michael.shook@nasa.gov)
PROJECT_INFO: SARP East 2023
STIPULATIONS_ON_USE: This is FIELD data. Please consult the PI and/or DM prior to use.
OTHER_COMMENTS: None
REVISION: RA
RA: None
*****
Time_Mid,CNgt6nm,CNgt6nm_nonvol
49068,3392.94,1488.95
49069,3391.92,1572.72
49070,3369.56,1580.84
49071,3311.75,1563.65
49072,3407.56,1446.77
49073,3312.15,1432.90
```

ARCSIX Data Reporting Best Practices

- Use the same number, names, and order of variables throughout the mission for files within the same dataID and revision. This prevents issues with the online merge tool, and FScan now checks the variable list between files
- Measurement Time Reporting:
 - Fixed variable name(s): Time_Start, Time_Stop, and Time_Mid
 - Report start, stop, and mid times if integration interval larger than 1 sec
 - Can use one time stamp (e.g., Time_Start or Time_Stop) for data at ≥ 1 Hz
- Use file header (e.g., DATA_INFO) or metadata to indicate whether the measurement time is synced to the time standard
- Trace gases: Indicate whether measurement is reported in dry or ambient condition
- Report absolute concentrations and aerosol extensive properties at STP: 273.15K and 1013.25 hPa (i.e., 0°C and 1atm)
- Use required attributes for HDF and netCDF files and properly dimension data variables
- Variable short name should not start with a number or contain “-”
- Recommend standard unit notation: [WMO Codes Registry : wmdr/unit](http://wmdr/unit)

ARCSIX Science Data Policy

All participants are requested to accept the following responsibilities:

- Submit data in ICARTT, netCDF or HDF format no later than the deadlines
- If unexpected events lead to any delay in data submission, the PI is required to notify the project leadership as soon as issues are known
- Publication-quality data cannot have mandatory user requirements or stipulations on use
- **Publication-quality or “final” data should be submitted to the archive prior to any presentation at scientific conferences (e.g. AGU, AMS) or manuscript preparation, unless explicit authorization is obtained from the program managers**
- All aircraft measurements from a common platform should be synchronized to science team pre-agreed time standard
- Consult with PIs when using their data in conference/data workshop presentations and/or manuscript
- Invite PIs of any data used to be co-authors (particularly during post-deployment research phase)
- PIs should be available to answer questions about their data

ACVSNC Variable Standard Names

- Atmospheric Composition Variable Standard Name Convention (ACVSNC) is a NASA Earth Science Data Systems convention, intended to make data more findable and interoperable, and (re)usable:
<https://www-air.larc.nasa.gov/missions/etc/AtmosphericCompositionVariableStandardNames.pdf>
- Constructed from controlled vocabulary
- Tags, **NOT** short names or variable names:
 - **For ICARTT files: short name, unit, *standard name*, long name**
CH2O_pptv, pptv, *Gas_CH2O_insitu_S_AVMR*, mixing ratio by volume
CH2O_LOD_pptv, pptv, *Gas_CH2O_insitu_S_AVMR*, Limit of Detection
NOy_pptv, pptv, *Gas_NOyasNO_insitu_M_AVMR*, Total Reactive Nitrogen Mixing Ratio
Sc700_total, Mm-1, *AerOpt_Scattering_insitu_red_RHd_Bulk_AMB*, Dry Scattering at 700nm (Total Aerosols)
 - **For netCDF and HDF files: use ACVSN_standard_name attribute**
- Contact Morgan, Gao, or Michael for questions or adding new standard names

Points of Contact

- **Field Repository (www-air.larc.nasa.gov)**
 - Michael Shook, NASA Langley Research Center, michael.a.shook@nasa.gov, 757-864-5793
 - Gao Chen, NASA Langley Research Center, gao.chen@nasa.gov, 757-759-5642 (cell)
 - Ali Aknan, AMA/NASA Langley Research Center, ali.a.aknan@nasa.gov (website and file scanner)
 - Morgan Silverman, AMA/NASA Langley Research Center, morgan.l.silverman@nasa.gov (standard name issues)

Please free feel to reach out for data download, upload, format, and ACVSNC standard name issues

Example Document Sharing Page

- <https://www-air.larc.nasa.gov/cgi-bin/DocXhg/SARPDocs>

Login here to view/upload documents

User ID :

Password :

SARP Documents / File Sharing

Status Update	Telecons	Presentations	Publications	Forecasts	Meetings	Research & Other Docs	Mission Reports	Hide All
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No. Date Recv'd [Author Name] Document Description

1.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 1230	[1.69 MB]	*	mission_report
2.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 0930	[1.13 MB]	*	mission_report
3.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 1230	[1.44 MB]	*	mission_report
4.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 0930	[1.13 MB]	*	mission_report

* Login Required

Example Document Sharing Page

- <https://www-air.larc.nasa.gov/cgi-bin/DocXhg/SARPDocs>
- File upload process:
 - Log in
 - Choose file, document type, author name, and text to appear on the file list
- File list is public, but viewing/downloading requires logging in

File Upload : No file chosen

* **Doc Type** * **Author's Name** * **Text describing the file; e.g.,**
Science Team Meeting 8/27/15 @LaRC - Deployments & Coordination

Please Select ...

 * **Required** *For help, please contact Ali Aknan | Last Updated: December 2022 | Ver 2.3*

SARP Documents / File Sharing

Status Update	Telecons	Presentations	Publications	Forecasts	Meetings	Research & Other Docs	Mission Reports	Hide All
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No.	Date Recv'd	[Author Name]	Document Description	
1.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 1230 [1.69 MB]	mission report
2.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 0930 [1.13 MB]	mission report
3.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 1230 [1.44 MB]	mission report
4.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 0930 [1.13 MB]	mission report