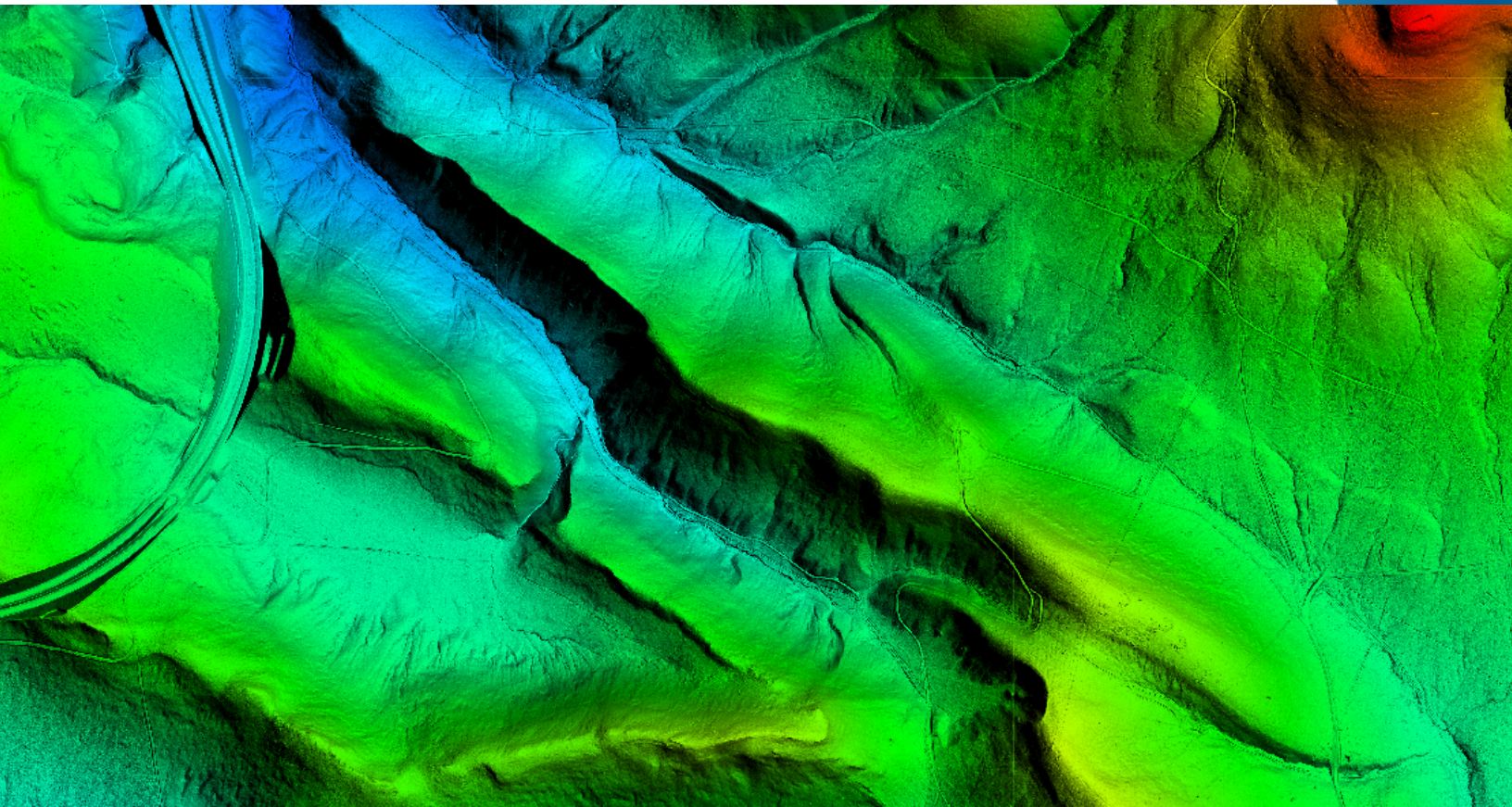


N|V|5 GEOSPATIAL



WA_NorthCentral_2021_1_B21 LIDAR PROCESSING REPORT

2023

Submitted: September 11, 2023

Project ID: 221837
Work Unit: 221834

Prepared for:

Prepared by:



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Contents

- 1. Summary / Scope 1**
 - 1.1. Summary 1
 - 1.2. Scope 1
 - 1.3. Coverage..... 1
 - 1.4. Duration..... 1
 - 1.5. Issues 1
- 2. Planning / Equipment 4**
 - 2.1. Flight Planning 4
 - 2.2. Lidar Sensor 4
 - 2.3. Aircraft..... 6
 - 2.4. Time Period 7
- 3. Processing Summary 8**
 - 3.1. Flight Logs..... 8
 - 3.2. Lidar Processing..... 9
 - 3.3. LAS Classification Scheme 10
 - 3.4. Classified LAS Processing 11
 - 3.5. Hydro-Flattened Breakline Processing..... 11
 - 3.6. Hydro-Flattened Processing..... 12
 - 3.7. Hydro-Flattened Raster DEM Processing..... 12
 - 3.8. Intensity Image Processing 12
 - 3.9. Swath Separation Raster Processing..... 13
 - 3.10. Maximum Surface Height Raster Processing..... 13
- 4. Project Coverage Verification 15**
- 5. Geometric Accuracy..... 17**
 - 5.1. Horizontal Accuracy 17
 - 5.2. Relative Vertical Accuracy..... 18
- Project Report Appendicesxix**
- Appendix A.....xx**
 - Flight Logs.....xx
- Appendix B.....xxi**
 - Survey Report.....xxi

List of Figures

Figure 1. Work Unit Boundary 3
Figure 2. Riegl VQ-1560ii Lidar Sensor 5
Figure 3. Some of NV5 Geospatial’s Planes..... 6
Figure 4. Lidar Tile Layout 14
Figure 5. Lidar Coverage 16

List of Tables

Table 1. Originally Planned Lidar Specifications..... 1
Table 2. Lidar System Specifications 5
Table 3. LAS Classifications 10

List of Appendices

- Appendix A: Flight Logs
- Appendix B: Survey Report

1. Summary / Scope

1.1. Summary

This report contains a summary of the WA_NorthCentral_1_2021, Work Unit 221834 lidar acquisition task order, issued by USGS under their Contract G16PC00016 on 8/02/2021. The task order yielded a project area covering 2965 square miles over Washington. The intent of this document is only to provide specific validation information for the data acquisition/collection, processing, and production of deliverables completed as specified in the task order.

1.2. Scope

Aerial topographic lidar was acquired using state of the art technology along with the necessary surveyed ground control points (GCPs) and airborne GPS and inertial navigation systems. The aerial data collection was designed with the following specifications listed in Table 1 below.

Table 1. Originally Planned Lidar Specifications

Average Point Density	Flight Altitude (AGL)	Field of View	Minimum Side Overlap	RMSEz
8 pts / m2	2085 m	58.5°	55%	≤ 10 cm

1.3. Coverage

The project boundary covers 2965 square miles over Washington. Project extents are shown in Figure 1.

1.4. Duration

Lidar data was acquired from 10/30/2021 to 5/03/2022 in 14 total lifts. See “Section: 2.4. Time Period” for more details.

1.5. Issues

Due to differences in collection dates, some temporal offsets are present in the hydro features.

WA_NorthCentral_1_2021 Work Unit 221834 Projected Coordinate System: Washington State Plane North FIPS 4601 Horizontal Datum: NAD83 (2011) Vertical Datum: NAVD88 (GEOID 18) Units: Meters	
Lidar Point Cloud	Classified Point Cloud in .LAS 1.4 format
Rasters	<ul style="list-style-type: none"> • 1-meter Hydro-flattened Bare Earth Digital Elevation Model (DEM) in GeoTIFF format • 1-meter Intensity images in GeoTIFF format • Maximum Surface Height • Swath Separation Images
Vectors	Shapefiles (*.shp) <ul style="list-style-type: none"> • Project Boundary • Lidar Tile Index • Calibration and QC Checkpoints (NVA/VVA) Geodatabase (*.gdb) <ul style="list-style-type: none"> • Continuous Hydro-flattened Breaklines
Reports	Reports in PDF format <ul style="list-style-type: none"> • Focus on Delivery • Focus on Accuracy • Survey Report • Processing Report
Metadata	XML Files (*.xml) <ul style="list-style-type: none"> • Breaklines • Classified Point Cloud • DEM • Intensity Imagery

WA_NorthCentral_1_2021 Work Unit 221834 Boundary

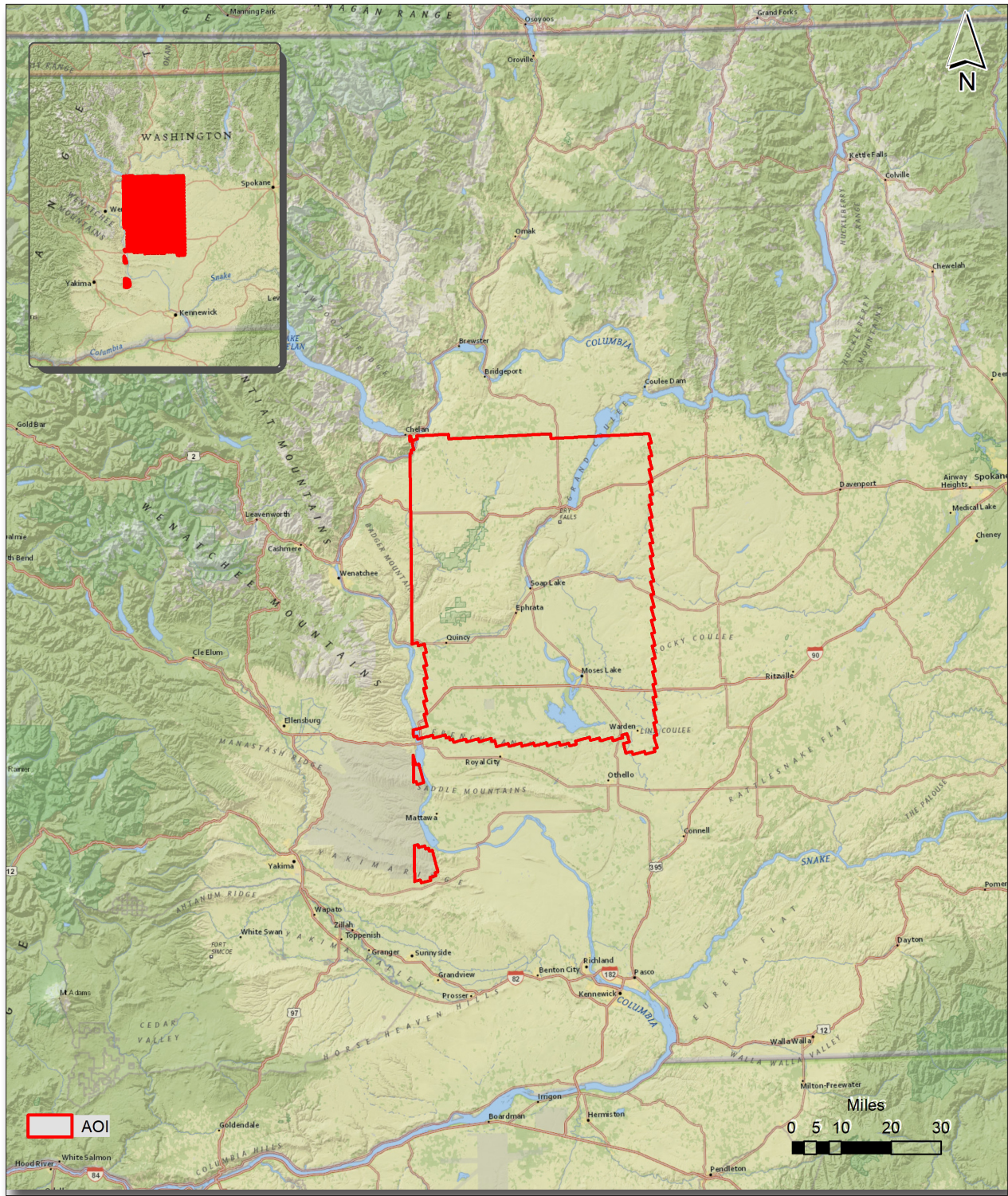


Figure 1. Work Unit Boundary

2. Planning / Equipment

2.1. Flight Planning

Flight planning was based on the unique project requirements and characteristics of the project site. The basis of planning included: required accuracies, type of development, amount / type of vegetation within project area, required data posting, and potential altitude restrictions for flights in project vicinity.

Detailed project flight planning calculations were performed for the project using RiPARAMETER planning software.

2.2. Lidar Sensor

NV5 Geospatial utilized Riegl VQ-1560ii lidar sensors (Figure 2), serial numbers 3061, and 3546 for data acquisition.

The Riegl 1560ii system has a laser pulse repetition rate of up to 2 MHz resulting in more than 1.3 million measurements per second. The system utilizes a Multi-Pulse in the Air option (MPIA). The sensor is also equipped with the ability to measure up to an unlimited number of targets per pulse from the laser.

A brief summary of the aerial acquisition parameters for the project are shown in the lidar System Specifications in Table 2.

Table 2. Lidar System Specifications

		Riegl VQ-1560ii (3061 & 3546)
Terrain and Aircraft Scanner	Flying Height	2085 m
	Recommended Ground Speed	145 kts
Scanner	Field of View	58.5°
	Scan Rate Setting Used	2 x 102 Hz
Laser	Laser Pulse Rate Used	2 x 594 kHz
	Multi Pulse in Air Mode	Yes
Coverage	Full Swath Width	2335 m
	Line Spacing	0.707 m
Point Spacing and Density	Average Point Spacing	0.35 m
	Average Point Density	8 pts / m ²

Figure 2. Riegl VQ-1560ii Lidar Sensor



2.3. Aircraft

All flights for the project were accomplished through the use of customized planes. Plane type and tail numbers are listed below.

Lidar Collection Planes

- Cessna Caravan, Tail Number(s): N840JA

These aircraft provided an ideal, stable aerial base for lidar acquisition. These aerial platforms have relatively fast cruise speeds, which are beneficial for project mobilization / demobilization while maintaining relatively slow stall speeds, proving ideal for collection of high-density, consistent data posting using a state-of-the-art Riegl VQ-1560ii lidar system. Some of NV5 Geospatial’s operating aircraft can be seen in Figure 3 below.

Figure 3. Some of NV5 Geospatial’s Planes



2.4. Time Period

Project specific flights were conducted between 10/30/2021 and 5/03/2022. Fourteen aircraft lifts were completed. Accomplished lifts are listed below.

Lift
10/30/2021
10/31/2021
3/04/2022
3/05/2022
3/06/2022
3/16/2022
3/17/2022
3/18/2022
3/20/2022
3/25/2022
3/29/2022
4/09/2022
4/23/2022
5/03/2022

3. Processing Summary

3.1. Flight Logs

Flight logs were completed by Lidar sensor technicians for each mission during acquisition. These logs depict a variety of information, including:

- Job / Project #
- Flight Date / Lift Number
- FOV (Field of View)
- Scan Rate (HZ)
- Pulse Rate Frequency (Hz)
- Ground Speed
- Altitude
- Base Station
- PDOP avoidance times
- Flight Line #
- Flight Line Start and Stop Times
- Flight Line Altitude (AMSL)
- Heading
- Speed
- Returns
- Crab

Notes: (Visibility, winds, ride, weather, temperature, dew point, pressure, etc). Project specific flight logs for each sortie are available in Appendix A.

3.2. Lidar Processing

Applanix + POSPac software was used for post-processing of airborne GPS and inertial data (IMU), which is critical to the positioning and orientation of the lidar sensor during all flights. Applanix POSPac combines aircraft raw trajectory data with stationary GPS base station data yielding a “Smoothed Best Estimate Trajectory” (SBET) necessary for additional post processing software to develop the resulting geo-referenced point cloud from the lidar missions.

During the sensor trajectory processing (combining GPS & IMU datasets) certain statistical graphs and tables are generated within the Applanix POSPac processing environment which are commonly used as indicators of processing stability and accuracy. This data for analysis include: max horizontal / vertical GPS variance, separation plot, altitude plot, PDOP plot, base station baseline length, processing mode, number of satellite vehicles, and mission trajectory.

Point clouds were created using the RiPROCESS software. The generated point cloud is the mathematical three dimensional composite of all returns from all laser pulses as determined from the aerial mission. The point cloud is imported into GeoCue distributive processing software. Imported data is tiled and then calibrated using TerraMatch and proprietary software. Using TerraScan, the vertical accuracy of the surveyed ground control is tested and any bias is removed from the data. TerraScan and TerraModeler software packages are then used for automated data classification and manual cleanup. The data are manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler.

DEMs and Intensity Images are then generated using proprietary software. In the bare earth surface model, above-ground features are excluded from the data set. Global Mapper is used as a final check of the bare earth dataset.

Finally, proprietary software is used to perform statistical analysis of the LAS files.

Software	Version
Applanix + POSPac	8.6
RiPROCESS	1.8.6
GeoCue	2020.1.22.1
Global Mapper	19.1;20.1
TerraModeler	21.008
TerraScan	21.016
TerraMatch	21.007
StripAlign	2.21

3.3. LAS Classification Scheme

The classification classes are determined by Lidar Base Specifications 2020 Revision A and are an industry standard for the classification of lidar point clouds. All data starts the process as Class 1 (Unclassified), and then through automated classification routines, the classifications are determined using TerraScan macro processing.

The classes used in the dataset are as follows and have the following descriptions:

Table 3. LAS Classifications

	Classification Name	Description
1	Processed, but Unclassified	Laser returns that are not included in the ground class, or any other project classification
2	Bare earth	Laser returns that are determined to be ground using automated and manual cleaning algorithms
7	Noise	Laser returns that are often associated with scattering from reflective surfaces and/or artificial points above and below the bare earth surface
9	Water	Laser returns that are found inside of hydro features
17	Bridge Deck	Laser returns falling on bridge decks
20	Ignored Ground	Ground points that fall within the given threshold of a collected hydro feature.
22	Temporal Exclusion	Points that are excluded due to differences in collection dates

3.4. Classified LAS Processing

The bare earth surface is then manually reviewed to ensure correct classification on the Class 2 (Ground) points. After the bare- earth surface is finalized; it is then used to generate all hydro-breaklines through heads-up digitization.

All ground (ASPRS Class 2) lidar data inside of the Lake Pond and Double Line Drain hydro flattening breaklines were then classified to water (ASPRS Class 9) using proprietary tools. A buffer of 1.5 feet/0.5 meter was also used around each hydro flattened feature to classify these ground (ASPRS Class 2) points to Ignored ground (ASPRS Class 20). All Lake Pond Island and Double Line Drain Island features were checked to ensure that the ground (ASPRS Class 2) points were reclassified to the correct classification after the automated classification was completed.

Any noise that was identified either through manual review or automated routines was classified to the appropriate class (ASPRS Class 7 and/or ASPRS Class 18) followed by flagging with the withheld bit.

All data was manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler. Global Mapper is used as a final check of the bare earth dataset. GeoCue was then used to create the deliverable industry-standard LAS files for all point cloud data. NV5 Geospatial's proprietary software was used to perform final statistical analysis of the classes in the LAS files, on a per tile level to verify final classification metrics and full LAS header information.

3.5. Hydro-Flattened Breakline Processing

Using heads-up digitization, all Lake-Ponds, Double Line Drains, and Islands are manually collected that are within the project size specification. This includes Lake-Ponds greater than 2 acres in size, Double Line Drains with greater than a 100 foot nominal width, and Islands greater than 1 acre in size within a collected hydro feature. Lidar intensity imagery and bare-earth surface models are used to ensure appropriate and complete collection of these features.

Elevation values are assigned to all collected hydro features via NV5 Geospatial's proprietary software. This software sets Lake-Ponds to an appropriate, single elevation to allow for the generation of hydro-flattened digital elevation models (DEM). Double Line Drain elevations are assigned based on lidar elevations and surrounding terrain feature to ensure all breaklines match the lidar within acceptable tolerances. Some deviation is expected between breakline and lidar elevations due to monotonicity, connectivity, and flattening rules that are enforced on the breaklines. Once completeness, horizontal placement, and vertical variances are reviewed, all breaklines are evaluated for topological consistency and data integrity using a combination of proprietary tools and manual review of hydro-flattened DEMs.

Breaklines are combined into one seamless shapefile, clipped to the project boundary, and imported into an Esri file geodatabase for delivery.

3.6. Hydro-Flattened Processing

Class 2 (ground) lidar points was used to create a bare earth surface model. The surface model was then used to heads-up digitize 2D breaklines of inland streams and rivers with a 100-foot nominal width and inland ponds and lakes of 2 acres or greater surface area.

Elevation values were assigned to all Inland Ponds and Lakes, Inland Pond and Lake Islands, Inland Stream and River Islands, using TerraModeler functionality.

Elevation values were assigned to all inland streams and rivers using NV5 Geospatial's proprietary software.

All Ground (ASPRS Class 2) lidar data inside of the collected inland breaklines were then classified to Water (ASPRS Class 9) using TerraScan macro functionality. A buffer of 3 feet was also used around each hydro-flattened feature. These points were moved from ground (ASPRS Class 2) to Ignored Ground (ASPRS Class 20).

3.7. Hydro-Flattened Raster DEM Processing

Hydro-Flattened DEMs (topographic) represent a lidar-derived product illustrating the grounded terrain and associated breaklines (as described above) in raster form. NV5 Geospatial's proprietary software was used to take all input sources (bare earth lidar points, bridge and hydro breaklines, etc.) and create a Triangulated Irregular Network (TIN) on a tile-by-tile basis. Data extending past the tile edge is incorporated in this process so that proper triangulation can occur. From the TIN, linear interpolation is used to calculate the cell values for the raster product. The raster product is then clipped back to the tile edge so that no overlapping cells remain across the project area. A 32-bit floating point GeoTIFF DEM was generated for each tile with a pixel size of .5 meters. NV5 Geospatial's proprietary software was used to write appropriate horizontal and vertical projection information as well as applicable header values into the file during product generation. Each DEM is reviewed in Global Mapper to check for any surface anomalies and to ensure a seamless dataset. NV5 Geospatial ensures there are no void or no-data values (-999999) in each derived DEM. This is achieved by using propriety software checking all cell values that fall within the project boundary. NV5 Geospatial uses a proprietary tool called FOCUS on Delivery to check all formatting requirements of the DEMs against what is required before final delivery.

3.8. Intensity Image Processing

Intensity images represent reflectivity values collected by the lidar sensor during acquisition. Proprietary software generates intensity images using first returns and excluding those flagged with a withheld bit. Intensity images are linearly scaled to a value range specific to the project area to standardize the images and reduce differences between individual tiles. Appropriate horizontal projection information as well as applicable header values are written during product generation.

3.9. Swath Separation Raster Processing

Swath Separation Images are rasters that represent the interswath alignment between flight lines and provide a qualitative evaluation of the positional quality of the point cloud. NV5 Geospatial proprietary software generated 2 meter raster images in GeoTIFF format using last returns, excluding points flagged with the withheld bit, and using a point-in-cell algorithm. Images are generated with a 75% intensity opacity and (4) absolute 8-cm intervals, see below for interval coloring. Intensity images are linearly scaled to a value range specific to the project area to standardize the images and reduce differences between individual tiles. Appropriate horizontal projection information as well as applicable header values are written to the file during product generation. NV5 Geospatial uses a proprietary tool called FOCUS on Delivery to check all formatting requirements of the images against what is required before final delivery.

3.10. Maximum Surface Height Raster Processing

Maximum Surface Height rasters (topographic) represent a lidar-derived product illustrating natural and built-up features. NV5 Geospatial’s proprietary software was used to take all first-return classified lidar points, excluding those flagged with a withheld bit, and create a raster on a tile-by-tile basis. Data extending past the tile edge is incorporated in this process so that proper gridding can occur. The raster product is then clipped back to the tile edge so that no overlapping cells remain across the project area. A 32-bit floating point GeoTIFF was generated for each tile with a pixel size of 2 meters. NV5 Geospatial’s proprietary software was used to write appropriate horizontal and vertical projection information as well as applicable header values into the file during product generation. Each maximum surface height raster is reviewed in Global Mapper to check for any anomalies and to ensure a seamless dataset. NV5 Geospatial uses a proprietary tool called FOCUS on Delivery to check all formatting requirements of the DEMs against what is required before final delivery.

	0-8cm
	8-16cm
	16-24cm
	>24cm

WA_NorthCentral_1_2021 Work Unit 221834 Tile Layout

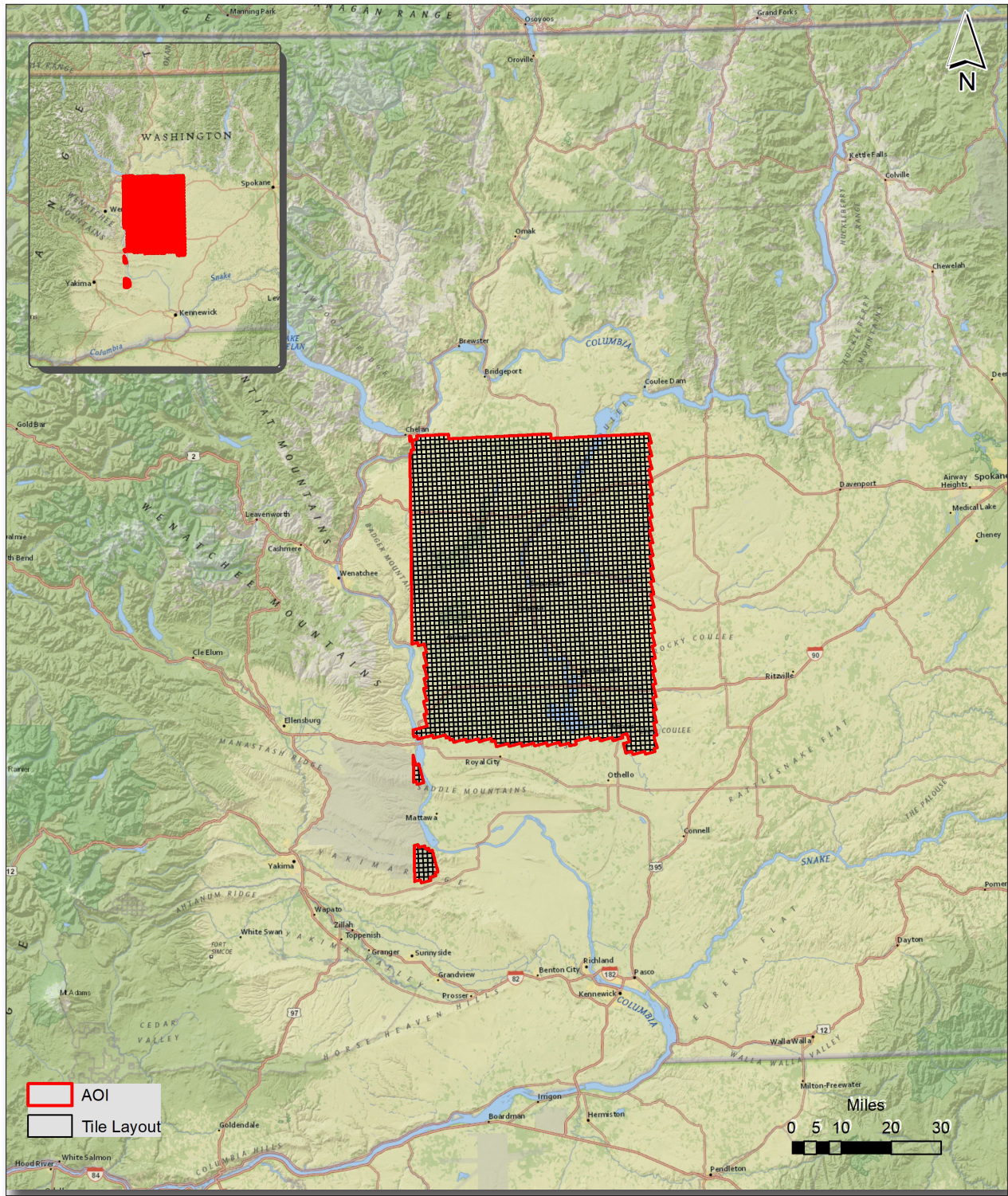


Figure 4. Lidar Tile Layout

4. Project Coverage Verification

A proprietary tool (FOCUS on Flight) produces grid-based polygons of each flightline, depicting exactly where lidar points exist. These swath polygons are reviewed against the project boundary to verify adequate project coverage. Please refer to Figure 5.

WA_NorthCentral_1_2021

Work Unit 221834 Lidar Coverage

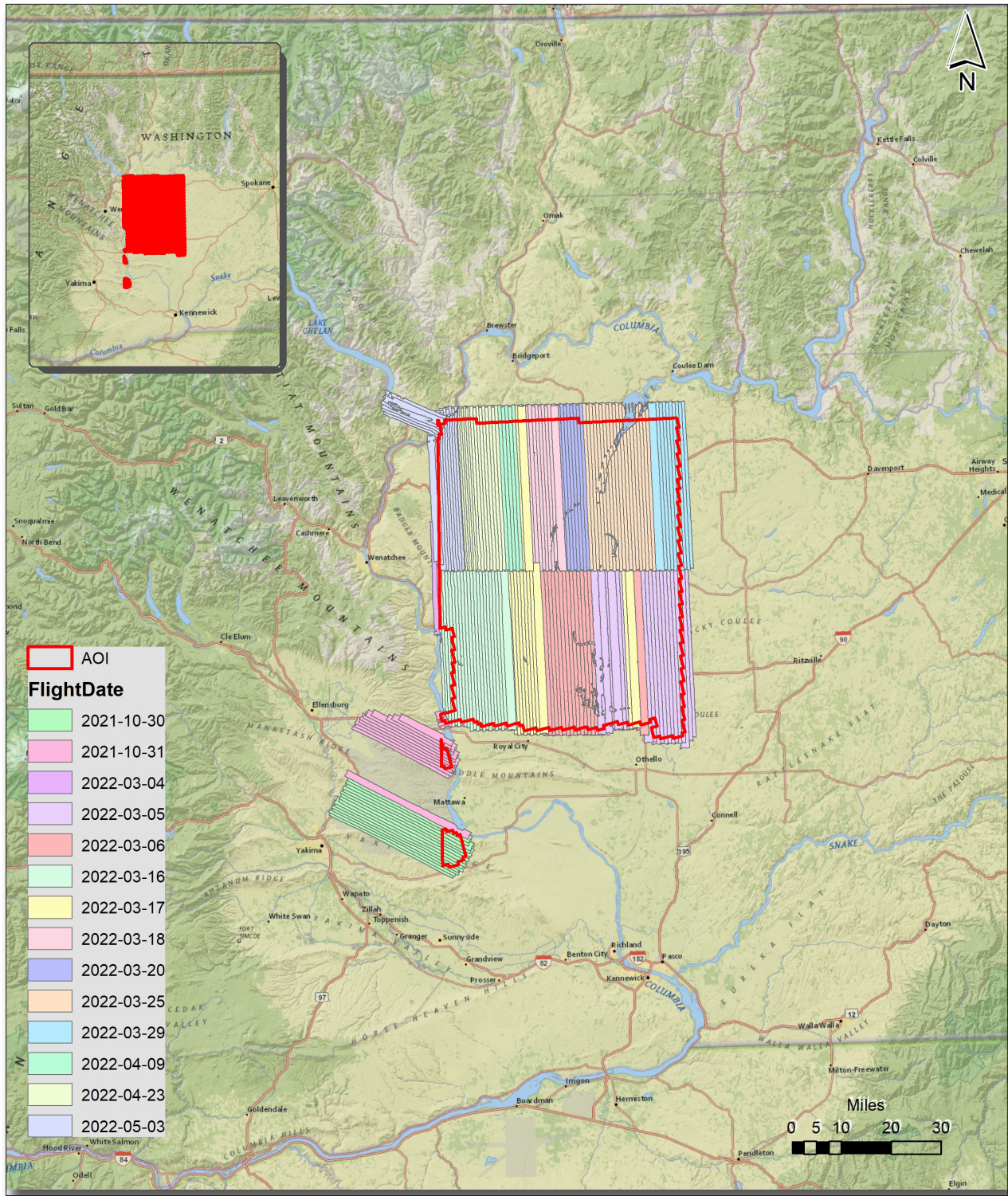


Figure 5. Lidar Coverage

5. Geometric Accuracy

5.1. Horizontal Accuracy

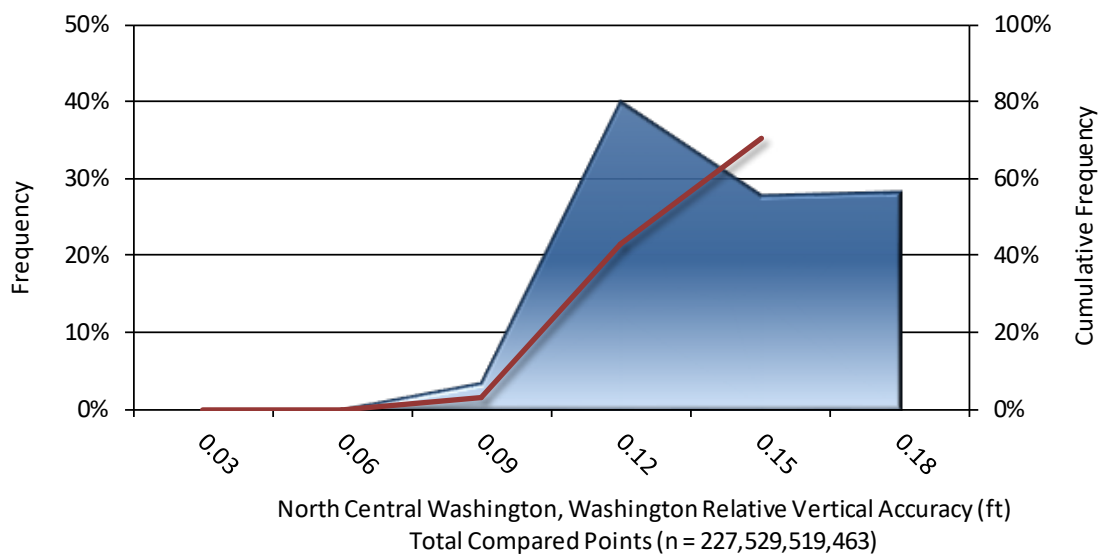
Lidar horizontal accuracy is a function of Global Navigation Satellite System (GNSS) derived positional error, flying altitude, and INS derived attitude error. The obtained $RMSE_r$ value is multiplied by a conversion factor of 1.7308 to yield the horizontal component of the National Standards for Spatial Data Accuracy (NSSDA) reporting standard where a theoretical point will fall within the obtained radius 95% of the time. Based on a flying altitude of 2000 meters, an IMU error of 0.002 decimal degrees, and a GNSS positional error of 0.036 meters, this project was compiled to meet 0.22 meter horizontal accuracy at the 95% confidence level. A summary is shown below.

Horizontal Accuracy	
$RMSE_r$	0.43 ft
	0.13 m
ACC_r	0.74 ft
	0.22 m

5.2. Relative Vertical Accuracy

Relative vertical accuracy refers to the internal consistency of the data set as a whole: the ability to place an object in the same location given multiple flight lines, GPS conditions, and aircraft attitudes. When the lidar system is well calibrated, the swath-to-swath vertical divergence is low (<0.10 meters). The relative vertical accuracy was computed by comparing the ground surface model of each individual flight line with its neighbors in overlapping regions. The average (mean) line to line relative vertical accuracy for the WA_NorthCentral_1_2021 project was 0.122 feet (0.037 meters). A summary is shown below.

Relative Vertical Accuracy	
Sample	195 flight line surfaces
Average	0.122 ft
	0.037 m
Median	0.127 ft
	0.039 m
RMSE	0.132 ft
	0.040 m
Standard Deviation (1σ)	0.027 ft
	0.008 m
1.96σ	0.053 ft
	0.016 m



Project Report Appendices

The following section contains the appendices as listed in the **WA_NorthCentral_1_2021 Lidar Project Report**.

Appendix A

Flight Logs

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20211030_F1	Mission Notes
Mission Date	10/30/2021	Good flight, no issues.
Aircraft	N840JA	
Pilot	Christopher Griffin	
Co-Pilot		
Operator	Justen Maxey	
Co-Operator		
Vendor	NV5 Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:45:00 AM	
Arrival (Local Time)	4:15:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00051	SE	17:59:43	18:02:00	144.2	
USGS_WA_NorthCentral_1560iis	00050	NW	18:05:26	18:10:41	144.5	
USGS_WA_NorthCentral_1560iis	00049	SE	18:13:51	18:19:47	139.5	
USGS_WA_NorthCentral_1560iis	00048	NW	18:23:58	18:31:48	144.7	
USGS_WA_NorthCentral_1560iis	00047	SE	18:35:14	18:43:52	140.7	
USGS_WA_NorthCentral_1560iis	00046	NW	18:47:12	18:56:09	144.9	
USGS_WA_NorthCentral_1560iis	00045	SE	18:59:18	19:08:42	141.8	
USGS_WA_NorthCentral_1560iis	00044	NW	19:11:32	19:21:20	144.1	
USGS_WA_NorthCentral_1560iis	00043	SE	19:24:08	19:34:17	141.8	
USGS_WA_NorthCentral_1560iis	00042	NW	19:36:38	19:46:35	147.4	
USGS_WA_NorthCentral_1560iis	00041	SE	19:49:21	19:59:40	143.0	
USGS_WA_NorthCentral_1560iis	00040	NW	20:02:05	20:12:22	143.7	
USGS_WA_NorthCentral_1560iis	00039	SE	20:15:11	20:25:42	142.3	
USGS_WA_NorthCentral_1560iis	00038	NW	20:28:26	20:38:57	142.4	
USGS_WA_NorthCentral_1560iis	00037	SE	20:41:45	20:52:17	140.8	
USGS_WA_NorthCentral_1560iis	00036	NW	20:54:59	21:05:06	145.8	
USGS_WA_NorthCentral_1560iis	00035	SE	21:08:00	21:18:38	140.2	
USGS_WA_NorthCentral_1560iis	00034	NW	21:21:12	21:31:39	142.5	
USGS_WA_NorthCentral_1560iis	00033	SE	21:34:32	21:45:00	142.3	
USGS_WA_NorthCentral_1560iis	00032	NW	21:48:01	21:58:29	141.7	
USGS_WA_NorthCentral_1560iis	00031	SE	22:01:34	22:11:57	140.3	
USGS_WA_NorthCentral_1560iis	00030	NW	22:14:22	22:24:23	143.4	
USGS_WA_NorthCentral_1560iis	00029	SE	22:27:22	22:37:51	135.4	
USGS_WA_NorthCentral_1560iis	xline	NE	22:48:04	22:53:45	150.2	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20211031_F1	Mission Notes
Mission Date	10/31/2021	Good flight. We finished the restricted area. DI and AS went up for a second lift.
Aircraft	N840JA	
Pilot	Christopher Griffin	
Co-Pilot		
Operator	Justen Maxey	
Co-Operator		
Vendor	NV5 Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:25:00 AM	
Arrival (Local Time)	3:10:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00028	SE	16:51:19	17:01:55	135.8	
USGS_WA_NorthCentral_1560iis	00027	NW	17:04:48	17:14:57	141.7	
USGS_WA_NorthCentral_1560iis	00026	SE	17:19:09	17:25:20	131.6	
USGS_WA_NorthCentral_1560iis	00025	NW	17:28:01	17:33:48	142.5	
USGS_WA_NorthCentral_1560iis	00024	SE	17:37:19	17:43:20	137.0	
USGS_WA_NorthCentral_1560iis	00023	NW	17:46:04	17:51:53	142.2	
USGS_WA_NorthCentral_1560iis	00022	SE	17:54:43	18:00:42	133.9	
USGS_WA_NorthCentral_1560iis	00021	NW	18:03:32	18:09:00	140.3	
USGS_WA_NorthCentral_1560iis	00020	SE	18:11:58	18:17:11	134.3	
USGS_WA_NorthCentral_1560iis	00019	NW	18:20:02	18:24:58	141.3	
USGS_WA_NorthCentral_1560iis	00018	SE	18:27:56	18:33:37	134.2	
USGS_WA_NorthCentral_1560iis	00017	NW	18:36:10	18:42:08	138.6	
USGS_WA_NorthCentral_1560iis	00016	SE	18:45:13	18:51:59	138.0	
USGS_WA_NorthCentral_1560iis	00015	NW	18:54:52	19:02:20	136.5	
USGS_WA_NorthCentral_1560iis	00014	SE	19:05:25	19:13:29	136.1	
USGS_WA_NorthCentral_1560iis	00013	NW	19:16:23	19:24:18	142.7	
USGS_WA_NorthCentral_1560iis	00012	SE	19:27:18	19:35:33	136.8	
USGS_WA_NorthCentral_1560iis	00011	NW	19:38:18	19:46:18	141.4	
USGS_WA_NorthCentral_1560iis	00010	SE	19:49:37	19:58:00	132.9	
USGS_WA_NorthCentral_1560iis	00009	NW	20:00:49	20:08:35	141.9	
USGS_WA_NorthCentral_1560iis	00008	SE	20:11:26	20:19:27	137.3	
USGS_WA_NorthCentral_1560iis	00007	NW	20:22:00	20:29:28	140.6	
USGS_WA_NorthCentral_1560iis	00006	SE	20:32:10	20:39:15	139.6	
USGS_WA_NorthCentral_1560iis	00005	NW	20:42:02	20:47:34	141.4	
USGS_WA_NorthCentral_1560iis	00004	SE	20:50:18	20:55:37	135.9	
USGS_WA_NorthCentral_1560iis	00003	NW	20:58:10	21:02:32	140.9	
USGS_WA_NorthCentral_1560iis	00002	SE	21:04:32	21:08:11	138.8	
USGS_WA_NorthCentral_1560iis	00001	NW	21:10:31	21:12:56	141.7	
USGS_WA_NorthCentral_1560iis	xline	SW	21:17:04	21:24:39	137.6	
USGS_WA_NorthCentral_1560iis	00877	E	21:34:12	21:36:07	131.8	
USGS_WA_NorthCentral_1560iis	00876	SW	21:38:32	21:40:17	145.3	
USGS_WA_NorthCentral_1560iis	00875	E	21:42:44	21:44:38	132.5	
USGS_WA_NorthCentral_1560iis	00874	SW	21:46:55	21:48:36	147.2	
USGS_WA_NorthCentral_1560iis	xline	S	21:51:05	21:52:45	136.4	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20211031_F2	Mission Notes
Mission Date	10/31/2021	Flew second lift of a double crew day.
Aircraft	N840JA	
Pilot	Alex Sessions	
Co-Pilot		
Operator	Dwight Iverson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	3:12:00 PM	
Arrival (Local Time)	5:58:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00768	S	23:25:56	23:29:08	143.2	
USGS_WA_NorthCentral_1560iis	00769	S	23:29:57	23:30:07	157.1	false start of sensor while on turn
USGS_WA_NorthCentral_1560iis	00769	N	23:32:22	23:36:51	141.7	
USGS_WA_NorthCentral_1560iis	00770	S	23:39:25	23:43:51	146.9	
USGS_WA_NorthCentral_1560iis	00771	N	23:46:07	23:51:03	144.4	
USGS_WA_NorthCentral_1560iis	00772	S	23:54:05	00:00:19	129.7	
USGS_WA_NorthCentral_1560iis	00773	N	00:02:56	00:08:36	143.7	
USGS_WA_NorthCentral_1560iis	00774	S	00:12:00	00:20:04	129.1	
USGS_WA_NorthCentral_1560iis	00775	N	00:22:32	00:30:01	144.4	
USGS_WA_NorthCentral_1560iis	00776	S	00:32:32	00:41:00	132.3	
USGS_WA_NorthCentral_1560iis	0000	SW	00:45:43	00:49:03	149.7	crossline- make the complaint about the name go away Nexus manager

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	

Mission Name	S2223546_20220315_F1	Mission Notes
Mission Date	3/15/2022	
Aircraft	N840JA	
Pilot	Daniel Lockett	
Co-Pilot	Ethan Hillmer	
Operator	James Schoone	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:45:00 AM	
Arrival (Local Time)	10:28:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560ii	00811	N	16:09:41	16:22:17	140.7	
USGS_WA_NorthCentral_1560ii	00185	N	16:32:07	16:43:34	140.9	Snow through out
USGS_WA_NorthCentral_1560ii	00209	S	16:55:06	17:07:24	139.1	Snow North end

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20220316_F1	Mission Notes
Mission Date	3/16/2022	Completed 801-822 under clear skies
Aircraft	N840JA	
Pilot	Daniel Luckett	
Co-Pilot	Ethan Hillmer	
Operator	James Schoone	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:18:00 AM	
Arrival (Local Time)	2:12:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00801	N	15:37:11	15:51:08	135.6	
USGS_WA_NorthCentral_1560iis	00802	S	15:52:53	16:06:27	139.5	
USGS_WA_NorthCentral_1560iis	00803	N	16:09:09	16:22:37	140.8	
USGS_WA_NorthCentral_1560iis	00804	S	16:24:31	16:37:51	140.8	
USGS_WA_NorthCentral_1560iis	00805	N	16:39:48	16:52:48	140.0	
USGS_WA_NorthCentral_1560iis	00806	S	16:54:37	17:07:04	141.7	
USGS_WA_NorthCentral_1560iis	00807	N	17:08:48	17:20:44	142.9	
USGS_WA_NorthCentral_1560iis	00808	S	17:22:19	17:34:09	143.0	
USGS_WA_NorthCentral_1560iis	00809	N	17:35:45	17:47:55	141.2	
USGS_WA_NorthCentral_1560iis	00810	S	17:49:17	18:01:32	142.0	
USGS_WA_NorthCentral_1560iis	00811	N	18:02:51	18:15:13	140.5	
USGS_WA_NorthCentral_1560iis	00812	S	18:16:40	18:28:54	141.9	
USGS_WA_NorthCentral_1560iis	00813	N	18:30:10	18:42:34	139.9	
USGS_WA_NorthCentral_1560iis	00814	S	18:43:53	18:56:08	141.8	
USGS_WA_NorthCentral_1560iis	00815	N	18:57:23	19:09:48	140.0	
USGS_WA_NorthCentral_1560iis	00816	S	19:11:06	19:23:17	142.4	
USGS_WA_NorthCentral_1560iis	00817	N	19:24:38	19:37:06	139.3	
USGS_WA_NorthCentral_1560iis	00818	S	19:38:24	19:50:38	141.8	
USGS_WA_NorthCentral_1560iis	00819	N	19:52:00	20:04:24	140.0	
USGS_WA_NorthCentral_1560iis	00820	S	20:05:53	20:18:08	141.6	
USGS_WA_NorthCentral_1560iis	00821	N	20:19:42	20:32:02	140.4	
USGS_WA_NorthCentral_1560iis	00822	S	20:33:42	20:45:51	142.4	
USGS_WA_NorthCentral_1560iis	Cross Tie	SW	20:49:52	20:56:03	134.2	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20220317_F1	Mission Notes
Mission Date	3/17/2022	
Aircraft	N840JA	
Pilot	Brian Butler	
Co-Pilot		
Operator	James Schoone	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:24:00 AM	
Arrival (Local Time)	2:52:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00818	S	16:46:32	16:51:19	138.5	
USGS_WA_NorthCentral_1560iis	00823	S	17:00:06	17:12:36	138.7	
USGS_WA_NorthCentral_1560iis	00824	N	17:15:17	17:27:56	141.3	
USGS_WA_NorthCentral_1560iis	00825	S	17:30:46	17:43:51	136.5	
USGS_WA_NorthCentral_1560iis	00826	N	17:46:18	17:59:08	139.0	
USGS_WA_NorthCentral_1560iis	00827	S	18:01:38	18:14:51	135.1	
USGS_WA_NorthCentral_1560iis	00828	N	18:17:13	18:29:42	143.0	
USGS_WA_NorthCentral_1560iis	00829	S	18:33:16	18:46:01	140.0	
USGS_WA_NorthCentral_1560iis	00830	N	18:48:18	19:00:56	141.0	
USGS_WA_NorthCentral_1560iis	00831	S	19:03:11	19:15:51	140.6	
USGS_WA_NorthCentral_1560iis	00832	N	19:18:13	19:30:52	140.9	
USGS_WA_NorthCentral_1560iis	00857	S	19:40:03	19:52:09	142.6	
USGS_WA_NorthCentral_1560iis	00858	N	19:55:07	20:07:13	142.7	
USGS_WA_NorthCentral_1560iis	Cross Tie	SW	20:14:28	20:20:39	134.8	
USGS_WA_NorthCentral_1560iis	00797	N	20:27:23	20:36:26	138.5	
USGS_WA_NorthCentral_1560iis	00212	S	20:52:10	21:04:42	137.4	
USGS_WA_NorthCentral_1560iis	00213	N	21:07:06	21:19:20	140.8	
USGS_WA_NorthCentral_1560iis	00214	S	21:21:49	21:34:00	141.4	
USGS_WA_NorthCentral_1560iis	Cross tie	SW	21:37:45	21:40:21	129.7	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223546_20220318_F1	Mission Notes
Mission Date	3/18/2022	
Aircraft	N840JA	
Pilot	Brian Butler	
Co-Pilot		
Operator	James Schoone	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:40:00 AM	
Arrival (Local Time)	11:49:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00215	N	16:01:21	16:13:36	140.9	
USGS_WA_NorthCentral_1560iis	00216	S	16:16:20	16:28:33	141.3	
USGS_WA_NorthCentral_1560iis	00217	N	16:31:04	16:43:09	143.0	
USGS_WA_NorthCentral_1560iis	00218	S	16:45:31	16:57:52	139.7	
USGS_WA_NorthCentral_1560iis	00219	N	17:00:30	17:12:29	144.0	
USGS_WA_NorthCentral_1560iis	00220	S	17:14:57	17:27:27	138.3	
USGS_WA_NorthCentral_1560iis	00221	N	17:30:05	17:42:17	141.6	
USGS_WA_NorthCentral_1560iis	00222	S	17:44:57	17:57:04	142.8	
USGS_WA_NorthCentral_1560iis	00223	N	17:59:29	18:11:37	142.5	
USGS_WA_NorthCentral_1560iis	00224	S	18:14:04	18:26:21	141.0	
USGS_WA_NorthCentral_1560iis	Cross	SW	18:30:34	18:34:37	144.2	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20220320_F1	Mission Notes
Mission Date	3/20/2022	
Aircraft	N840JA	
Pilot	Brian Butler	
Co-Pilot		
Operator	James Schoone	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:58:00 AM	
Arrival (Local Time)	1:32:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00225	N	16:18:50	16:32:12	129.6	
USGS_WA_NorthCentral_1560iis	00226	S	16:34:18	16:46:23	143.4	
USGS_WA_NorthCentral_1560iis	00227	N	16:49:02	17:02:11	131.7	
USGS_WA_NorthCentral_1560iis	00228	S	17:04:36	17:16:45	142.5	
USGS_WA_NorthCentral_1560iis	00229	N	17:21:29	17:34:15	135.7	
USGS_WA_NorthCentral_1560iis	00230	S	17:36:23	17:48:34	142.3	
USGS_WA_NorthCentral_1560iis	00231	N	17:51:38	18:04:34	134.3	
USGS_WA_NorthCentral_1560iis	00232	S	18:06:44	18:18:48	143.7	
USGS_WA_NorthCentral_1560iis	00233	N	18:21:16	18:34:04	135.8	
USGS_WA_NorthCentral_1560iis	Cross Tie	SW	18:38:06	18:41:47	136.6	
USGS_WA_NorthCentral_1560iis	00297	N	18:45:12	18:51:21	140.5	
USGS_WA_NorthCentral_1560iis	00298	S	18:53:37	18:59:49	139.5	
USGS_WA_NorthCentral_1560iis	00299	N	19:02:22	19:08:31	140.8	
USGS_WA_NorthCentral_1560iis	00300	S	19:10:57	19:16:54	145.6	
USGS_WA_NorthCentral_1560iis	00301	N	19:19:07	19:25:20	140.0	
USGS_WA_NorthCentral_1560iis	00302	S	19:27:35	19:33:42	141.8	
USGS_WA_NorthCentral_1560iis	00303	N	19:36:10	19:42:23	139.6	
USGS_WA_NorthCentral_1560iis	00304	S	19:44:28	19:50:30	143.9	
USGS_WA_NorthCentral_1560iis	00305	N	19:52:38	19:58:47	141.4	Cue 9-10 miles FNE (refly area)
USGS_WA_NorthCentral_1560iis	Cross Tie	SW	20:03:28	20:07:18	146.0	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20220325_F1	Mission Notes
Mission Date	3/25/2022	
Aircraft	N840JA	
Pilot	Brian Butler	
Co-Pilot		
Operator	James Schoone	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:46:00 AM	
Arrival (Local Time)	3:41:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00234	N	17:07:13	17:19:26	142.3	
USGS_WA_NorthCentral_1560iis	00235	S	17:22:10	17:35:17	132.6	
USGS_WA_NorthCentral_1560iis	00236	N	17:37:51	17:49:53	144.6	
USGS_WA_NorthCentral_1560iis	00237	S	17:52:29	18:04:48	141.3	
USGS_WA_NorthCentral_1560iis	00238	N	18:07:29	18:19:41	142.6	
USGS_WA_NorthCentral_1560iis	00239	S	18:22:38	18:35:24	136.3	
USGS_WA_NorthCentral_1560iis	00240	N	18:37:54	18:50:12	141.5	
USGS_WA_NorthCentral_1560iis	00241	S	18:53:33	19:06:06	138.8	
USGS_WA_NorthCentral_1560iis	00242	N	19:08:39	19:20:58	141.7	
USGS_WA_NorthCentral_1560iis	00243	S	19:23:46	19:35:55	143.7	
USGS_WA_NorthCentral_1560iis	00244	N	19:38:50	19:51:17	140.2	
USGS_WA_NorthCentral_1560iis	00245	S	19:53:54	20:06:20	140.5	
USGS_WA_NorthCentral_1560iis	00246	N	20:08:39	20:21:00	141.4	
USGS_WA_NorthCentral_1560iis	00247	S	20:25:03	20:37:42	138.2	
USGS_WA_NorthCentral_1560iis	00248	N	20:41:54	20:54:17	141.0	
USGS_WA_NorthCentral_1560iis	00249	S	20:57:04	21:09:28	141.0	
USGS_WA_NorthCentral_1560iis	00250	N	21:11:47	21:24:07	141.8	
USGS_WA_NorthCentral_1560iis	00251	S	21:26:35	21:39:08	139.5	
USGS_WA_NorthCentral_1560iis	00252	N	21:41:40	21:53:57	142.3	
USGS_WA_NorthCentral_1560iis	00253	S	21:56:33	22:08:58	140.9	
USGS_WA_NorthCentral_1560iis	Cross	SW	22:12:00	22:19:09	127.4	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2223546_20220326_F1	Mission Notes
Mission Date	3/26/2022	Scouted the AOI looking for cloud free and snow free ground. Collected an area before noticing a gulch full of snow pack, relocated and found snow free area.
Aircraft	N840JA	
Pilot	Brian Butler	
Co-Pilot		
Operator	Erin Guillory	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:09:00 AM	
Arrival (Local Time)	3:03:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560ii	00777	N	16:43:22	16:51:48	139.2	
USGS_WA_NorthCentral_1560ii	00375	S	17:19:10	17:20:58	130.2	
USGS_WA_NorthCentral_1560ii	00374	N	17:23:32	17:25:49	134.9	
USGS_WA_NorthCentral_1560ii	00373	S	17:28:28	17:33:45	131.4	
USGS_WA_NorthCentral_1560ii	00372	N	17:36:24	17:41:34	138.7	
USGS_WA_NorthCentral_1560ii	00371	S	17:44:34	17:49:59	132.7	
USGS_WA_NorthCentral_1560ii	00370	N	17:52:55	17:58:17	143.0	
USGS_WA_NorthCentral_1560ii	00369	S	18:02:17	18:09:17	139.6	
USGS_WA_NorthCentral_1560ii	00368	N	18:11:43	18:19:21	135.2	
USGS_WA_NorthCentral_1560ii	00367	S	18:21:59	18:29:32	136.8	
USGS_WA_NorthCentral_1560ii	00366	N	18:31:44	18:39:15	140.5	
USGS_WA_NorthCentral_1560ii	00365	S	18:41:40	18:49:08	141.5	
USGS_WA_NorthCentral_1560ii	00364	N	18:55:59	19:03:22	142.6	
USGS_WA_NorthCentral_1560ii	00363	S	19:05:33	19:06:40	142.4	
USGS_WA_NorthCentral_1560ii	00356	S	19:11:57	19:19:50	140.8	
USGS_WA_NorthCentral_1560ii	00355	N	19:22:07	19:29:56	141.6	
USGS_WA_NorthCentral_1560ii	00354	S	19:32:29	19:40:30	137.6	
USGS_WA_NorthCentral_1560ii	00354	N	19:42:53	19:45:30	129.6	
USGS_WA_NorthCentral_1560ii	00353	N	19:51:17	19:59:08	139.8	
USGS_WA_NorthCentral_1560ii	00352	S	20:01:36	20:09:30	137.9	
USGS_WA_NorthCentral_1560ii	00351	N	20:11:39	20:19:08	140.3	
USGS_WA_NorthCentral_1560ii	00350	S	20:21:28	20:29:00	138.6	
USGS_WA_NorthCentral_1560ii	00349	N	20:31:19	20:38:23	142.5	
USGS_WA_NorthCentral_1560ii	00348	S	20:40:41	20:48:02	136.1	
USGS_WA_NorthCentral_1560ii	00347	N	20:50:11	20:57:18	139.7	
USGS_WA_NorthCentral_1560ii	00346	S	20:59:28	21:06:43	135.9	
USGS_WA_NorthCentral_1560ii	00345	N	21:09:03	21:16:13	137.8	
USGS_WA_NorthCentral_1560ii	00344	S	21:18:28	21:25:43	135.9	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20220329_F1	Mission Notes
Mission Date	3/29/2022	Good day of flying
Aircraft	N840JA	
Pilot	Brian Butler	
Co-Pilot		
Operator	Josh Noble	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:16:00 AM	
Arrival (Local Time)	2:44:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00263	N	16:45:34	16:59:07	128.5	
USGS_WA_NorthCentral_1560iis	00262	S	17:01:32	17:14:24	135.9	
USGS_WA_NorthCentral_1560iis	00261	N	17:17:35	17:32:15	119.3	
USGS_WA_NorthCentral_1560iis	00260	S	17:34:21	17:47:13	136.0	
USGS_WA_NorthCentral_1560iis	00259	N	17:49:58	18:03:57	125.3	
USGS_WA_NorthCentral_1560iis	00258	S	18:06:23	18:19:07	137.7	
USGS_WA_NorthCentral_1560iis	00257	N	18:21:36	18:35:02	130.7	
USGS_WA_NorthCentral_1560iis	00256	S	18:37:35	18:50:06	140.0	
USGS_WA_NorthCentral_1560iis	00255	N	18:53:06	19:06:40	129.3	
USGS_WA_NorthCentral_1560iis	00254	S	19:09:02	19:21:47	137.5	
USGS_WA_NorthCentral_1560iis	x	E	19:25:43	19:29:32	144.8	cross line
USGS_WA_NorthCentral_1560iis	00330	N	19:42:12	19:50:26	129.8	
USGS_WA_NorthCentral_1560iis	00329	S	19:52:27	20:00:09	140.1	
USGS_WA_NorthCentral_1560iis	00328	N	20:03:00	20:11:42	125.9	
USGS_WA_NorthCentral_1560iis	00327	S	20:13:48	20:21:43	141.5	
USGS_WA_NorthCentral_1560iis	00326	N	20:24:07	20:32:46	129.4	
USGS_WA_NorthCentral_1560iis	00325	S	20:34:46	20:42:38	142.3	
USGS_WA_NorthCentral_1560iis	x	SW	20:49:34	20:52:53	151.5	cross line
USGS_WA_NorthCentral_1560iis	00314	N	20:57:37	21:04:40	140.5	
USGS_WA_NorthCentral_1560iis	00313	S	21:07:01	21:14:04	140.8	
USGS_WA_NorthCentral_1560iis	x	E	21:17:07	21:18:29	135.5	cross line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20220330_F1	Mission Notes
Mission Date	3/30/2022	Another good day of flying. Expected to be clouded out, but wasn't an issue in area of work
Aircraft	N840JA	
Pilot	Brian Butler	
Co-Pilot		
Operator	Josh Noble	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	11:00:00 AM	
Arrival (Local Time)	4:15:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00306	N	18:24:44	18:30:28	136.1	
USGS_WA_NorthCentral_1560iis	00312	S	18:35:42	18:42:36	143.3	
USGS_WA_NorthCentral_1560iis	00311	N	18:45:37	18:53:00	133.8	
USGS_WA_NorthCentral_1560iis	00310	S	18:55:00	19:01:55	141.2	
USGS_WA_NorthCentral_1560iis	00309	N	19:04:23	19:11:37	134.2	
USGS_WA_NorthCentral_1560iis	00308	S	19:14:04	19:20:44	139.0	
USGS_WA_NorthCentral_1560iis	00307	N	19:23:05	19:29:21	141.3	
USGS_WA_NorthCentral_1560iis	00296	S	19:34:15	19:40:36	135.3	
USGS_WA_NorthCentral_1560iis	00295	N	19:43:02	19:49:12	138.5	
USGS_WA_NorthCentral_1560iis	00294	S	19:51:32	19:57:34	139.8	
USGS_WA_NorthCentral_1560iis	00293	N	20:00:13	20:05:47	138.5	
USGS_WA_NorthCentral_1560iis	00292	S	20:08:38	20:13:45	142.0	
USGS_WA_NorthCentral_1560iis	00291	N	20:16:13	20:21:26	137.6	
USGS_WA_NorthCentral_1560iis	00290	S	20:24:00	20:28:47	141.7	
USGS_WA_NorthCentral_1560iis	00289	N	20:31:25	20:37:10	137.4	
USGS_WA_NorthCentral_1560iis	00288	S	20:40:02	20:46:30	130.0	
USGS_WA_NorthCentral_1560iis	00287	N	20:48:48	20:55:21	135.5	
USGS_WA_NorthCentral_1560iis	00286	S	20:57:49	21:04:11	138.9	
USGS_WA_NorthCentral_1560iis	00285	N	21:09:04	21:15:43	133.1	
USGS_WA_NorthCentral_1560iis	00284	S	21:18:27	21:25:03	136.2	
USGS_WA_NorthCentral_1560iis	00283	N	21:28:02	21:34:46	133.4	
USGS_WA_NorthCentral_1560iis	00282	S	21:36:57	21:43:24	139.5	
USGS_WA_NorthCentral_1560iis	00281	N	21:45:50	21:52:29	134.9	
USGS_WA_NorthCentral_1560iis	00280	S	21:54:45	22:00:59	143.8	
USGS_WA_NorthCentral_1560iis	00279	N	22:03:22	22:10:14	129.9	
USGS_WA_NorthCentral_1560iis	00278	S	22:12:17	22:18:34	140.0	
USGS_WA_NorthCentral_1560iis	00277	N	22:20:47	22:27:24	131.3	
USGS_WA_NorthCentral_1560iis	00276	S	22:29:34	22:35:42	139.8	
USGS_WA_NorthCentral_1560iis	x	E	22:39:02	22:48:26	142.9	cross line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20220331_F1	Mission Notes
Mission Date	3/31/2022	After finishing boresight got reflly line 305 and then finished the block to its west under increasing clouds. We ended our day early as the remaining lines were too high for the clouds.
Aircraft	N840JA	
Pilot	Mike Schrum	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	10:02:00 AM	
Arrival (Local Time)	1:42:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00305	N	18:29:49	18:31:54	143.5	reflew data gap of 9-10m FNE with a few miles on either side
USGS_WA_NorthCentral_1560iis	00275	S	18:40:26	18:46:27	143.4	Small cloud in data few seconds into line
USGS_WA_NorthCentral_1560iis	00274	N	18:48:27	18:54:51	133.7	N, 250 low N end for clouds
USGS_WA_NorthCentral_1560iis	00275	S	18:56:55	18:57:41	153.3	refly of line entry to cover cloud
USGS_WA_NorthCentral_1560iis	00273	S	19:01:13	19:07:00	144.5	300 low first few seconds, S
USGS_WA_NorthCentral_1560iis	00272	N	19:08:59	19:15:21	131.2	300 low N end, N
USGS_WA_NorthCentral_1560iis	00271	S	19:17:38	19:23:25	142.6	
USGS_WA_NorthCentral_1560iis	00270	N	19:25:38	19:31:23	138.6	N, 250 low N end for clouds
USGS_WA_NorthCentral_1560iis	00269	S	19:33:28	19:38:59	142.5	possible cloud in data over dam, S, 350 low for cloud ~3nm from end
USGS_WA_NorthCentral_1560iis	00268	N	19:40:46	19:46:37	132.2	
USGS_WA_NorthCentral_1560iis	00267	S	19:48:52	19:54:16	141.4	
USGS_WA_NorthCentral_1560iis	00266	N	19:56:13	20:01:46	138.4	
USGS_WA_NorthCentral_1560iis	00265	S	20:03:39	20:08:49	143.0	
USGS_WA_NorthCentral_1560iis	00264	N	20:11:01	20:13:00	139.6	
USGS_WA_NorthCentral_1560iis	00264	E	20:15:04	20:18:05	139.4	crossline

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223546_20220403_F1	Mission Notes
Mission Date	4/3/2022	
Aircraft	N840JA	
Pilot	Mike Schrum	
Co-Pilot		
Operator	Jonathan Frech	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:45:00 AM	
Arrival (Local Time)	12:55:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00164	N	17:20:11	17:22:22	142.8	
USGS_WA_NorthCentral_1560iis	00165	S	17:25:27	17:29:06	110.6	
USGS_WA_NorthCentral_1560iis	junk	SW	17:29:50	17:29:55	101.9	false start
USGS_WA_NorthCentral_1560iis	00166	N	17:32:48	17:36:01	145.8	
USGS_WA_NorthCentral_1560iis	00167	S	17:39:17	17:43:14	136.3	
USGS_WA_NorthCentral_1560iis	00168	N	17:47:08	17:51:06	150.5	
USGS_WA_NorthCentral_1560iis	00169	S	17:55:27	18:00:33	128.6	
USGS_WA_NorthCentral_1560iis	00796	S	18:12:36	18:22:05	136.9	
USGS_WA_NorthCentral_1560iis	00795	N	18:24:19	18:33:50	141.6	
USGS_WA_NorthCentral_1560iis	00794	S	18:36:28	18:46:17	141.6	
USGS_WA_NorthCentral_1560iis	00793	N	18:49:38	19:00:00	138.3	
USGS_WA_NorthCentral_1560iis	xline	E	19:05:55	19:07:52	149.9	cross line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223546_20220409_F1	Mission Notes
Mission Date	4/9/2022	
Aircraft	N840JA	
Pilot	Mike Schrum	
Co-Pilot	Creston Saul	
Operator	Jonathan Frech	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:45:00 AM	
Arrival (Local Time)	11:00:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00211	N	16:16:43	16:30:45	122.6	
USGS_WA_NorthCentral_1560iis	00210	S	16:33:18	16:44:54	148.4	
USGS_WA_NorthCentral_1560iis	00209	N	16:47:54	17:01:25	127.1	
USGS_WA_NorthCentral_1560iis	00208	S	17:04:00	17:15:42	146.8	
USGS_WA_NorthCentral_1560iis	00207	N	17:18:54	17:32:08	129.8	
USGS_WA_NorthCentral_1560iis	xline	E	17:35:54	17:38:11	158.5	crossline

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223546_20220423_F1	Mission Notes
Mission Date	4/23/2022	
Aircraft	N840JA	
Pilot	Creston Saul	
Co-Pilot		
Operator	Spencer Beck	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:19:00 AM	
Arrival (Local Time)	2:55:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00206	N	16:38:43	16:50:41	143.6	
USGS_WA_NorthCentral_1560iis	00205	S	16:53:37	17:05:20	146.6	
USGS_WA_NorthCentral_1560iis	00204	N	17:08:39	17:20:32	144.3	
USGS_WA_NorthCentral_1560iis	00203	S	17:24:11	17:35:49	147.5	
USGS_WA_NorthCentral_1560iis	00202	N	17:38:59	17:50:45	145.6	
USGS_WA_NorthCentral_1560iis	00201	S	17:53:52	18:05:34	146.4	
USGS_WA_NorthCentral_1560iis	00200	N	18:08:36	18:20:21	146.0	
USGS_WA_NorthCentral_1560iis	00199	S	18:23:40	18:35:29	144.8	
USGS_WA_NorthCentral_1560iis	00198	N	18:38:16	18:50:15	142.9	
USGS_WA_NorthCentral_1560iis	00197	S	18:53:25	19:05:08	146.0	
USGS_WA_NorthCentral_1560iis	00196	N	19:07:54	19:11:42	148.6	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2223546_20220428_F1	Mission Notes
Mission Date	4/28/2022	Flew up from Corvallis in morning, collected North of Wenatchee until we were clouded out.
Aircraft	N840JA	
Pilot	Creston Saul	
Co-Pilot		
Operator	Kevin Olsonawski	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	10:05:00 AM	
Arrival (Local Time)	2:21:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560ii	00777	N	18:39:37	18:47:50	142.9	
USGS_WA_NorthCentral_1560ii	00778	S	18:50:24	18:58:45	141.0	
USGS_WA_NorthCentral_1560ii	00779	N	19:01:36	19:10:14	143.7	
USGS_WA_NorthCentral_1560ii	00780	S	19:12:28	19:21:26	140.8	Came in a little offcenter
USGS_WA_NorthCentral_1560ii	00781	N	19:24:07	19:32:55	143.4	
USGS_WA_NorthCentral_1560ii	00782	S	19:35:29	19:44:24	141.4	
USGS_WA_NorthCentral_1560ii	00783	N	19:46:48	19:55:35	143.6	
USGS_WA_NorthCentral_1560ii	00784	S	19:57:53	20:06:53	141.9	Came in a little offcenter
USGS_WA_NorthCentral_1560ii	00785	N	20:09:16	20:18:08	144.0	
USGS_WA_NorthCentral_1560ii	00786	S	20:20:47	20:29:46	142.6	
USGS_WA_NorthCentral_1560ii	00787	N	20:32:07	20:40:54	143.7	
USGS_WA_NorthCentral_1560ii	00788	S	20:43:25	20:52:07	144.5	
USGS_WA_NorthCentral_1560ii	00789	N	20:54:32	21:03:10	143.6	
USGS_WA_NorthCentral_1560ii	00789	SW	21:05:39	21:07:48	138.3	Crossline 210539

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	

Mission Name	S2223546_20220429_F1	Mission Notes
Mission Date	4/29/2022	Flew lines at the lower altitude until wx closed in.
Aircraft	N840JA	
Pilot	Creston Saul	
Co-Pilot		
Operator	Kevin Olsonawski	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:07:00 AM	
Arrival (Local Time)	8:58:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560ii	00775	N	15:21:39	15:28:43	147.8	
USGS_WA_NorthCentral_1560ii	00776	S	15:31:14	15:39:09	139.0	
USGS_WA_NorthCentral_1560ii	00776	SW	15:46:25	15:47:14	140.6	Crossline 154625

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2223546_20220501_F1	Mission Notes
Mission Date	5/1/2022	Started on ii-S plan but had to drop down to ii plan quite quickly after starting due to clouds. Was able to get a few more lines in before getting clouded out.
Aircraft	N840JA	
Pilot	Creston Saul	
Co-Pilot		
Operator	Kevin Olsonawski	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:19:00 AM	
Arrival (Local Time)	10:46:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560ii	00787	N	15:36:12	15:48:35	135.3	Hit clouds midline.
USGS_WA_NorthCentral_1560ii	00170	S	15:54:41	15:59:25	150.9	
USGS_WA_NorthCentral_1560ii	00171	N	16:02:12	16:07:48	136.3	
USGS_WA_NorthCentral_1560ii	00172	S	16:10:01	16:15:25	150.7	
USGS_WA_NorthCentral_1560ii	00173	N	16:18:44	16:25:00	136.2	Hit clouds right at very start(south) end of line.
USGS_WA_NorthCentral_1560ii	00174	S	16:27:31	16:33:26	151.5	Clouds at very south end of line.; dropped to lower alt. plan.
USGS_WA_NorthCentral_1560ii	00166	N	16:40:45	16:45:36	138.8	
USGS_WA_NorthCentral_1560ii	00167	S	16:48:23	16:53:10	145.9	
USGS_WA_NorthCentral_1560ii	00168	N	16:55:30	17:00:37	141.1	
USGS_WA_NorthCentral_1560ii	00169	S	17:03:09	17:08:24	144.7	
USGS_WA_NorthCentral_1560ii	00170	N	17:10:40	17:16:15	140.7	
USGS_WA_NorthCentral_1560ii	00171	S	17:18:58	17:24:39	145.8	Ran into cloud midline, will need reflly
USGS_WA_NorthCentral_1560ii	00171	NW	17:30:28	17:32:39	143.4	Crossline 173028

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223546_20220503_F1	Mission Notes
Mission Date	5/3/2022	Flew what we could on first lift. Then finished up project with second lift.
Aircraft	N840JA	
Pilot	Creston Saul	
Co-Pilot		
Operator	Kevin Olsonawski	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:19:00 AM	
Arrival (Local Time)	1:10:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00787	N	15:34:44	15:46:05	147.7	
USGS_WA_NorthCentral_1560iis	00788	S	15:48:51	16:00:05	145.3	
USGS_WA_NorthCentral_1560iis	00789	N	16:02:39	16:13:30	146.7	
USGS_WA_NorthCentral_1560iis	00790	S	16:16:24	16:26:58	146.9	
USGS_WA_NorthCentral_1560iis	00791	N	16:30:01	16:40:14	147.9	
USGS_WA_NorthCentral_1560iis	00792	S	16:42:56	16:52:57	147.7	
USGS_WA_NorthCentral_1560iis	00192	N	17:00:28	17:12:04	147.0	
USGS_WA_NorthCentral_1560iis	00191	S	17:14:29	17:25:59	148.4	
USGS_WA_NorthCentral_1560iis	00190	N	17:28:22	17:39:59	146.7	
USGS_WA_NorthCentral_1560iis	00189	S	17:42:47	17:53:59	151.5	
USGS_WA_NorthCentral_1560iis	00188	N	17:56:29	18:08:12	144.3	
USGS_WA_NorthCentral_1560iis	00187	S	18:10:27	18:21:30	152.2	
USGS_WA_NorthCentral_1560iis	00186	N	18:24:01	18:35:35	142.2	
USGS_WA_NorthCentral_1560iis	00185	S	18:38:07	18:48:09	155.4	
USGS_WA_NorthCentral_1560iis	00184	N	18:50:51	19:01:20	143.3	
USGS_WA_NorthCentral_1560iis	00158	NW	19:05:13	19:10:04	139.2	
USGS_WA_NorthCentral_1560iis	00163	SE	19:12:37	19:16:28	160.5	
USGS_WA_NorthCentral_1560iis	00162	NW	19:18:39	19:23:25	135.9	
USGS_WA_NorthCentral_1560iis	00161	SE	19:25:23	19:29:37	158.7	
USGS_WA_NorthCentral_1560iis	00160	NW	19:32:10	19:37:06	136.8	
USGS_WA_NorthCentral_1560iis	00159	SE	19:39:36	19:44:12	147.5	
USGS_WA_NorthCentral_1560iis	00183	S	19:48:01	19:56:09	161.9	
USGS_WA_NorthCentral_1560iis	00183	SW	19:57:49	19:59:27	145.6	Crossline 195749

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223546_20220503_F2	Mission Notes
Mission Date	5/3/2022	Finished up Central WA project with 2nd lift.
Aircraft	N840JA	
Pilot	Creston Saul	
Co-Pilot		
Operator	Kevin Olsonawski	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	1:59:00 PM	
Arrival (Local Time)	3:33:00 PM	

Flightplan	Line	Heading	Start Time (UTC) Stop Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00182	N	21:12:42	21:22:15	132.2	
USGS_WA_NorthCentral_1560iis	00181	S	21:24:34	21:32:46	147.0	
USGS_WA_NorthCentral_1560iis	00180	N	21:35:28	21:43:54	136.5	
USGS_WA_NorthCentral_1560iis	00179	S	21:46:12	21:53:48	144.7	
USGS_WA_NorthCentral_1560iis	00178	N	21:56:33	22:04:22	138.1	
USGS_WA_NorthCentral_1560iis	00177	S	22:06:47	22:13:48	146.8	
USGS_WA_NorthCentral_1560iis	00177	SW	22:18:53	22:20:38	134.9	Crossline 221853

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	

Mission Name	S2223546_20220504_F1	Mission Notes
Mission Date	5/4/2022	Collected one last line from NorthCentral WA project, then mobed to Spokane to try start on NE_WA project but got clouded out.
Aircraft	N840JA	
Pilot	Creston Saul	
Co-Pilot		
Operator	Kevin Olsonawski	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KGEG	
Departure (Local Time)	10:01:00 AM	
Arrival (Local Time)	11:18:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560ii	01113	NW	17:21:13	17:26:01	139.1	
USGS_WA_NorthCentral_1560ii	01113	S	17:29:30	17:30:51	137.6	Crossline 172930

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210911_F1	Mission Notes
Mission Date	9/11/2021	
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Justen Maxey	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:15:00 AM	
Arrival (Local Time)	1:30:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00389	SW	16:52:50	16:56:26	141.9	
USGS_WA_NorthCentral_1560iis	00388	E	16:58:49	17:02:23	148.0	
USGS_WA_NorthCentral_1560iis	00387	SW	17:04:42	17:08:45	145.4	
USGS_WA_NorthCentral_1560iis	00386	E	17:11:25	17:15:40	154.0	
USGS_WA_NorthCentral_1560iis	00385	SW	17:18:14	17:23:01	144.4	
USGS_WA_NorthCentral_1560iis	00727	NW	17:28:53	17:35:36	139.1	
USGS_WA_NorthCentral_1560iis	00668	E	17:43:53	17:52:49	148.7	
USGS_WA_NorthCentral_1560iis	00669	SW	17:55:36	18:04:40	147.1	
USGS_WA_NorthCentral_1560iis	00670	E	18:07:29	18:16:26	149.3	
USGS_WA_NorthCentral_1560iis	00671	SW	18:19:09	18:28:14	147.5	
USGS_WA_NorthCentral_1560iis	00672	E	18:30:48	18:39:59	146.3	
USGS_WA_NorthCentral_1560iis	00673	SW	18:42:40	18:51:49	147.1	
USGS_WA_NorthCentral_1560iis	00674	E	18:54:18	19:03:25	147.7	
USGS_WA_NorthCentral_1560iis	NA	N	19:06:30	19:08:28	143.6	
USGS_WA_NorthCentral_1560iis	00083	SW	19:31:37	19:39:44	147.3	
USGS_WA_NorthCentral_1560iis	00084	NE	19:42:31	19:50:25	148.3	
USGS_WA_NorthCentral_1560iis	00085	SW	19:52:48	20:00:26	149.2	
USGS_WA_NorthCentral_1560iis	NA	NW	20:02:32	20:04:13	128.8	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210912_F1	Mission Notes
Mission Date	9/12/2021	
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Justen Maxey	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:45:00 AM	
Arrival (Local Time)	12:45:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00086	NE	16:12:34	16:20:12	143.0	
USGS_WA_NorthCentral_1560iis	00087	SW	16:23:23	16:29:24	142.3	
USGS_WA_NorthCentral_1560iis	00087	NE	16:32:50	16:39:54	146.2	
USGS_WA_NorthCentral_1560iis	00088	SW	16:42:49	16:49:35	142.3	
USGS_WA_NorthCentral_1560iis	00089	NE	16:52:16	16:56:52	146.2	
USGS_WA_NorthCentral_1560iis	00090	SW	16:59:16	17:03:39	140.8	
USGS_WA_NorthCentral_1560iis	00091	NE	17:06:09	17:10:08	144.1	
USGS_WA_NorthCentral_1560iis	00092	SW	17:12:21	17:15:57	145.2	
USGS_WA_NorthCentral_1560iis	00093	NE	17:18:28	17:21:40	144.2	
USGS_WA_NorthCentral_1560iis	00094	SW	17:24:29	17:27:07	142.7	
USGS_WA_NorthCentral_1560iis	NA	SW	17:29:51	17:33:00	136.8	
USGS_WA_NorthCentral_1560iis	00350	NE	17:37:02	17:42:21	145.6	
USGS_WA_NorthCentral_1560iis	00351	SW	17:44:52	17:50:30	143.2	
USGS_WA_NorthCentral_1560iis	00352	NE	17:53:06	17:58:45	147.1	
USGS_WA_NorthCentral_1560iis	00353	SW	18:01:19	18:07:18	142.8	
USGS_WA_NorthCentral_1560iis	00354	NE	18:09:45	18:15:44	147.3	
USGS_WA_NorthCentral_1560iis	00355	SW	18:18:02	18:24:13	145.4	
USGS_WA_NorthCentral_1560iis	00356	NE	18:27:23	18:33:14	145.3	
USGS_WA_NorthCentral_1560iis	00357	SW	18:36:04	18:41:36	146.1	
USGS_WA_NorthCentral_1560iis	00358	NE	18:44:36	18:49:35	151.1	
USGS_WA_NorthCentral_1560iis	00359	SW	18:52:01	18:55:16	146.0	
USGS_WA_NorthCentral_1560iis	00360	NE	18:58:28	19:00:37	146.1	
USGS_WA_NorthCentral_1560iis	00361	SW	19:03:35	19:05:29	143.4	
USGS_WA_NorthCentral_1560iis	NA	NW	19:07:56	19:10:30	138.4	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210914_F1	Mission Notes
Mission Date	9/14/2021	
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Justen Maxey	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:15:00 AM	
Arrival (Local Time)	2:00:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00466	N	16:01:27	16:09:48	144.6	
USGS_WA_NorthCentral_1560iis	00465	S	16:12:36	16:20:53	146.2	
USGS_WA_NorthCentral_1560iis	00464	N	16:23:14	16:31:40	143.3	
USGS_WA_NorthCentral_1560iis	00463	S	16:33:57	16:42:27	145.7	
USGS_WA_NorthCentral_1560iis	00462	N	16:44:51	16:53:20	145.2	
USGS_WA_NorthCentral_1560iis	00461	S	16:55:50	17:04:08	147.7	
USGS_WA_NorthCentral_1560iis	00460	N	17:06:26	17:14:47	145.6	
USGS_WA_NorthCentral_1560iis	00459	S	17:17:19	17:25:33	147.3	
USGS_WA_NorthCentral_1560iis	00458	N	17:28:11	17:36:49	143.2	
USGS_WA_NorthCentral_1560iis	00457	S	17:39:46	17:48:12	146.2	
USGS_WA_NorthCentral_1560iis	00479	E	17:50:34	17:50:41	183.7	
USGS_WA_NorthCentral_1560iis	00479	SW	17:53:21	18:01:45	135.3	
USGS_WA_NorthCentral_1560iis	00480	E	18:04:27	18:12:12	148.4	
USGS_WA_NorthCentral_1560iis	00481	SW	18:14:43	18:23:16	136.4	
USGS_WA_NorthCentral_1560iis	00482	E	18:25:52	18:33:49	147.8	
USGS_WA_NorthCentral_1560iis	00483	SW	18:36:27	18:45:08	136.2	
USGS_WA_NorthCentral_1560iis	00484	E	18:47:33	18:55:38	148.0	
USGS_WA_NorthCentral_1560iis	00485	SW	18:58:17	19:06:59	138.0	
USGS_WA_NorthCentral_1560iis	00486	E	19:09:37	19:17:48	148.4	
USGS_WA_NorthCentral_1560iis	00512	SW	19:23:38	19:33:48	139.4	
USGS_WA_NorthCentral_1560iis	00513	E	19:36:26	19:46:06	146.7	
USGS_WA_NorthCentral_1560iis	00514	SW	19:48:36	19:58:45	140.0	
USGS_WA_NorthCentral_1560iis	00515	E	20:00:58	20:10:38	146.8	
USGS_WA_NorthCentral_1560iis	NA	N	20:12:34	20:13:45	156.8	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210916_F1	Mission Notes
Mission Date	9/16/2021	
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:32:00 AM	
Arrival (Local Time)	1:35:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00384	SW	16:08:54	16:14:00	137.2	
USGS_WA_NorthCentral_1560iis	00383	E	16:16:54	16:21:43	147.5	
USGS_WA_NorthCentral_1560iis	00382	SW	16:24:37	16:30:01	139.9	
USGS_WA_NorthCentral_1560iis	00381	E	16:32:27	16:37:44	145.3	
USGS_WA_NorthCentral_1560iis	00380	SW	16:40:16	16:45:49	139.1	
USGS_WA_NorthCentral_1560iis	00379	E	16:48:18	16:53:35	146.3	
USGS_WA_NorthCentral_1560iis	00378	SW	16:56:21	17:01:52	140.0	
USGS_WA_NorthCentral_1560iis	00377	E	17:04:18	17:09:32	147.7	
USGS_WA_NorthCentral_1560iis	00376	SW	17:12:09	17:17:33	143.0	
USGS_WA_NorthCentral_1560iis	00375	E	17:20:16	17:25:33	145.1	
USGS_WA_NorthCentral_1560iis	00374	SW	17:28:12	17:33:30	143.0	
USGS_WA_NorthCentral_1560iis	00373	E	17:35:44	17:40:50	143.4	possible cloud mid line
USGS_WA_NorthCentral_1560iis	00372	SW	17:43:17	17:48:18	144.8	possible cloud mid line
USGS_WA_NorthCentral_1560iis	00371	E	17:50:54	17:52:21	141.8	Aborted line due to clouds
USGS_WA_NorthCentral_1560iis	00727	NW	18:04:26	18:11:01	141.8	Reflight of line already flown
USGS_WA_NorthCentral_1560iis	00726	SE	18:13:52	18:19:52	144.3	
USGS_WA_NorthCentral_1560iis	00725	NW	18:22:40	18:28:15	141.8	
USGS_WA_NorthCentral_1560iis	00724	SE	18:31:01	18:35:59	148.6	
USGS_WA_NorthCentral_1560iis	00723	NW	18:38:49	18:43:33	143.8	Turbulence north end of line
USGS_WA_NorthCentral_1560iis	00722	SE	18:46:29	18:50:45	148.0	
USGS_WA_NorthCentral_1560iis	00721	NW	18:53:30	18:57:37	142.9	
USGS_WA_NorthCentral_1560iis	00720	SE	19:00:04	19:03:51	147.5	
USGS_WA_NorthCentral_1560iis	00719	NW	19:06:29	19:10:11	143.9	
USGS_WA_NorthCentral_1560iis	00718	SE	19:12:52	19:16:11	146.5	
USGS_WA_NorthCentral_1560iis	00717	NW	19:18:44	19:22:05	145.4	
USGS_WA_NorthCentral_1560iis	00716	SE	19:24:40	19:28:01	148.4	
USGS_WA_NorthCentral_1560iis	00715	NW	19:30:37	19:34:09	142.0	
USGS_WA_NorthCentral_1560iis	00714	SE	19:36:40	19:40:07	145.9	
USGS_WA_NorthCentral_1560iis	00713	NW	19:42:55	19:46:30	142.7	
USGS_WA_NorthCentral_1560iis	xline	SW	19:48:10	19:51:01	154.6	
USGS_WA_NorthCentral_1560iis	xline	S	20:02:40	20:05:20	157.9	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210920_F1	Mission Notes
Mission Date	9/20/2021	
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:07:00 AM	
Arrival (Local Time)	12:30:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00616	NE	16:44:01	16:47:13	148.4	
USGS_WA_NorthCentral_1560iis	test	E	16:47:50	16:48:00	165.4	
USGS_WA_NorthCentral_1560iis	00615	SW	16:51:26	16:55:24	145.3	
USGS_WA_NorthCentral_1560iis	00614	NE	16:58:28	17:03:05	145.8	
USGS_WA_NorthCentral_1560iis	00613	SW	17:06:01	17:11:23	143.5	
USGS_WA_NorthCentral_1560iis	00612	NE	17:14:11	17:20:18	143.1	
USGS_WA_NorthCentral_1560iis	00611	SW	17:23:01	17:29:55	142.4	
USGS_WA_NorthCentral_1560iis	00610	NE	17:32:16	17:39:50	143.3	
USGS_WA_NorthCentral_1560iis	00609	SW	17:42:12	17:50:26	143.9	
USGS_WA_NorthCentral_1560iis	xline	SE	17:52:39	17:54:49	154.9	
USGS_WA_NorthCentral_1560iis	00596	NE	18:02:04	18:11:00	143.6	
USGS_WA_NorthCentral_1560iis	00595	SW	18:13:36	18:22:26	143.1	
USGS_WA_NorthCentral_1560iis	00594	NE	18:24:58	18:33:43	146.4	possible small thin cloud at southern end of line
USGS_WA_NorthCentral_1560iis	00593	SW	18:36:19	18:45:15	142.0	Large cloud at southern end of line
USGS_WA_NorthCentral_1560iis	xline	NW	18:49:58	18:51:02	144.9	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210921_F1	Mission Notes
Mission Date	9/21/2021	One lift today, captured 21 lines.
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NV5 Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:23:00 AM	
Arrival (Local Time)	1:53:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00400	N	16:02:18	16:10:49	144.6	
USGS_WA_NorthCentral_1560iis	00401	S	16:14:12	16:22:49	143.8	
USGS_WA_NorthCentral_1560iis	00680	SW	16:32:07	16:42:41	125.1	
USGS_WA_NorthCentral_1560iis	00679	E	16:45:14	16:54:13	147.9	
USGS_WA_NorthCentral_1560iis	00678	SW	16:57:14	17:07:57	123.8	
USGS_WA_NorthCentral_1560iis	00677	E	17:11:13	17:20:22	147.2	
USGS_WA_NorthCentral_1560iis	00676	SW	17:23:11	17:33:53	125.7	
USGS_WA_NorthCentral_1560iis	00675	E	17:35:53	17:45:05	146.4	
USGS_WA_NorthCentral_1560iis	00371	E	18:21:13	18:26:00	144.8	
USGS_WA_NorthCentral_1560iis	00370	SW	18:29:05	18:34:42	121.0	
USGS_WA_NorthCentral_1560iis	00369	E	18:36:58	18:41:32	147.3	
USGS_WA_NorthCentral_1560iis	00368	SW	18:44:58	18:50:04	130.3	
USGS_WA_NorthCentral_1560iis	00367	E	18:52:36	18:57:05	146.5	
USGS_WA_NorthCentral_1560iis	00366	SW	19:00:02	19:04:54	133.6	
USGS_WA_NorthCentral_1560iis	00365	E	19:07:31	19:11:37	144.8	
USGS_WA_NorthCentral_1560iis	00364	SW	19:14:25	19:18:52	131.6	
USGS_WA_NorthCentral_1560iis	00363	E	19:21:45	19:25:35	146.0	
USGS_WA_NorthCentral_1560iis	XLINE	S	19:28:32	19:30:45	143.1	xline
USGS_WA_NorthCentral_1560iis	00593	NE	19:34:37	19:43:18	146.0	
USGS_WA_NorthCentral_1560iis	00592	SW	19:45:57	19:54:57	139.4	
USGS_WA_NorthCentral_1560iis	00591	NE	19:57:19	20:05:49	145.4	
USGS_WA_NorthCentral_1560iis	00590	SW	20:08:36	20:17:24	138.1	
USGS_WA_NorthCentral_1560iis	triggered accidentally	NE	20:18:52	20:19:13	173.3	fired by mistake
USGS_WA_NorthCentral_1560iis	x-line	SE	20:19:58	20:21:22	162.8	xline

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210922_F1	Mission Notes
Mission Date	9/22/2021	One lift today. The Western side of the AOI was under rain showers when we arrived. Flew four lines on the eastern side of the AOI until the rain and lower ceilings moved in.
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:25:00 AM	
Arrival (Local Time)	10:28:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00589	NE	16:03:42	16:11:59	143.5	
USGS_WA_NorthCentral_1560iis	00588	SW	16:14:33	16:22:50	141.0	
USGS_WA_NorthCentral_1560iis	00587	NE	16:24:58	16:32:54	144.6	
USGS_WA_NorthCentral_1560iis	00586	SW	16:35:14	16:43:03	141.2	Heavy turbulence south end
USGS_WA_NorthCentral_1560iis	X-LINE	NW	16:51:19	16:53:39	132.6	X-LINE

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210923_F1	Mission Notes
Mission Date	9/23/2021	One lift today. Initially tried to close out the SW block, however, clouds in the western end of those line prevented that. Captured 30 lines.
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NV5 Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:29:00 AM	
Arrival (Local Time)	1:58:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00751	NW	16:07:31	16:15:19	121.4	Aborted line due to clds on W. end
USGS_WA_NorthCentral_1560iis	00585	NE	16:33:42	16:40:59	145.7	
USGS_WA_NorthCentral_1560iis	00584	SW	16:43:45	16:50:25	146.8	
USGS_WA_NorthCentral_1560iis	00583	NE	16:53:10	16:59:37	146.4	
USGS_WA_NorthCentral_1560iis	00582	SW	17:01:54	17:08:18	146.0	
USGS_WA_NorthCentral_1560iis	00581	NE	17:10:45	17:17:09	144.4	
USGS_WA_NorthCentral_1560iis	00580	SW	17:19:45	17:25:58	146.7	
USGS_WA_NorthCentral_1560iis	00579	NE	17:28:12	17:34:39	143.1	
USGS_WA_NorthCentral_1560iis	00578	SW	17:37:06	17:43:28	145.4	
USGS_WA_NorthCentral_1560iis	00577	NE	17:45:30	17:51:55	145.4	
USGS_WA_NorthCentral_1560iis	00576	SW	17:54:23	18:00:52	143.3	
USGS_WA_NorthCentral_1560iis	00575	NE	18:03:01	18:09:22	144.5	
USGS_WA_NorthCentral_1560iis	00574	SW	18:11:38	18:18:05	144.2	
USGS_WA_NorthCentral_1560iis	00573	NE	18:20:19	18:26:42	144.6	
USGS_WA_NorthCentral_1560iis	00572	SW	18:29:25	18:35:21	143.4	
USGS_WA_NorthCentral_1560iis	00571	NE	18:37:51	18:43:31	147.0	
USGS_WA_NorthCentral_1560iis	00570	SW	18:45:59	18:51:38	143.9	
USGS_WA_NorthCentral_1560iis	00569	NE	18:53:54	18:58:11	142.0	
USGS_WA_NorthCentral_1560iis	00568	SW	19:00:31	19:04:43	145.1	
USGS_WA_NorthCentral_1560iis	00567	NE	19:07:05	19:11:26	140.0	
USGS_WA_NorthCentral_1560iis	00566	SW	19:13:56	19:18:07	146.2	
USGS_WA_NorthCentral_1560iis	00565	NE	19:20:25	19:24:51	137.5	
USGS_WA_NorthCentral_1560iis	00564	SW	19:27:05	19:31:20	141.6	
USGS_WA_NorthCentral_1560iis	00563	NE	19:33:36	19:37:46	143.5	
USGS_WA_NorthCentral_1560iis	00562	SW	19:40:23	19:44:28	146.4	
USGS_WA_NorthCentral_1560iis	00561	NE	19:46:46	19:50:39	145.1	
USGS_WA_NorthCentral_1560iis	00560	SW	19:53:06	19:56:54	144.6	
USGS_WA_NorthCentral_1560iis	00559	NE	20:00:14	20:02:55	142.8	
USGS_WA_NorthCentral_1560iis	00558	SW	20:05:08	20:07:46	145.3	
USGS_WA_NorthCentral_1560iis	00557	NE	20:10:06	20:12:43	145.4	
USGS_WA_NorthCentral_1560iis	00556	SW	20:15:18	20:17:56	148.4	
USGS_WA_NorthCentral_1560iis	x-line	SE	20:20:28	20:25:47	163.4	x-line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210924_F1	Mission Notes
Mission Date	9/24/2021	One lift today. Acquired 18 lines in a high priority (high elevation area).
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:17:00 AM	
Arrival (Local Time)	12:24:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00751	NW	15:53:00	16:00:24	139.8	
USGS_WA_NorthCentral_1560iis	00750	SE	16:03:06	16:10:05	146.2	
USGS_WA_NorthCentral_1560iis	00749	NW	16:13:06	16:20:15	140.0	
USGS_WA_NorthCentral_1560iis	00748	SE	16:22:29	16:29:20	147.6	
USGS_WA_NorthCentral_1560iis	00747	NW	16:32:01	16:39:08	141.9	
USGS_WA_NorthCentral_1560iis	00746	SE	16:41:55	16:48:55	145.7	
USGS_WA_NorthCentral_1560iis	00745	NW	16:52:00	16:59:13	141.5	
USGS_WA_NorthCentral_1560iis	00744	SE	17:01:52	17:08:47	147.3	
USGS_WA_NorthCentral_1560iis	00743	NW	17:11:44	17:18:57	140.4	
USGS_WA_NorthCentral_1560iis	00742	SE	17:21:34	17:28:30	148.2	
USGS_WA_NorthCentral_1560iis	00741	NW	17:31:22	17:39:04	134.9	
USGS_WA_NorthCentral_1560iis	00740	SE	17:41:46	17:48:56	146.1	
USGS_WA_NorthCentral_1560iis	00739	NW	17:51:39	17:59:07	140.4	
USGS_WA_NorthCentral_1560iis	00738	SE	18:01:46	18:08:53	147.6	
USGS_WA_NorthCentral_1560iis	00737	NW	18:12:07	18:19:35	140.5	
USGS_WA_NorthCentral_1560iis	00736	SE	18:22:19	18:29:27	145.8	
USGS_WA_NorthCentral_1560iis	00735	NW	18:32:17	18:39:27	145.2	
USGS_WA_NorthCentral_1560iis	00734	SE	18:42:10	18:49:08	149.6	
USGS_WA_NorthCentral_1560iis	x-line	SW	18:52:07	18:55:51	138.7	x-line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20210925_F1	Mission Notes
Mission Date	9/25/2021	One lift today. We finished up 6 lines in a block, flew 2 lines in a different block, and then MOB'd to KCVO for aircraft mx.
Aircraft	N208JA	
Pilot	Matthew Archambault	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:30:00 AM	
Arrival (Local Time)	12:20:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00733	NW	16:06:07	16:13:28	140.0	
USGS_WA_NorthCentral_1560iis	00732	SE	16:16:09	16:23:15	144.8	
USGS_WA_NorthCentral_1560iis	00731	NW	16:26:01	16:33:23	139.7	
USGS_WA_NorthCentral_1560iis	00730	SE	16:35:58	16:42:58	145.9	
USGS_WA_NorthCentral_1560iis	00729	NW	16:45:48	16:53:08	139.1	
USGS_WA_NorthCentral_1560iis	00728	SE	16:55:46	17:02:38	146.4	
USGS_WA_NorthCentral_1560iis	00712	NW	17:07:06	17:10:44	141.4	
USGS_WA_NorthCentral_1560iis	00711	SE	17:13:06	17:16:41	144.5	
USGS_WA_NorthCentral_1560iis	x-line	SW	17:21:47	17:26:07	138.8	x-line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20211001_F1	Mission Notes
Mission Date	10/1/2021	One lift today, had to work around clouds but finally found an area to collect data in the AOI. We flew until we had some kind of communication error between the GPS and the RiAcquire system, system froze up. Couldn't get it restarted in flight. Also, apparently some thing wrong with the rpp file because it had a parsing error when I tried to upload it into Nexus.
Aircraft	N208JA	
Pilot	Robert Cale	
Co-Pilot	Mike Schrum	
Operator	Steve Krohn	
Co-Operator		
Vendor	NV5 Geospatial	
Base Airport	KEAT	
Departure (Local Time)	10:40:00 AM	
Arrival (Local Time)	2:52:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00517	NE	12:00:00	12:30:00		184824
USGS_WA_NorthCentral_1560iis	00518	NE	12:00:00	12:30:00		185221
USGS_WA_NorthCentral_1560iis	00519	NE	12:00:00	12:30:00		185650
USGS_WA_NorthCentral_1560iis	00520	NE	12:00:00	12:30:00		190048
USGS_WA_NorthCentral_1560iis	00521	NE	12:00:00	12:30:00		190531
USGS_WA_NorthCentral_1560iis	00522	NE	12:00:00	12:30:00		190941
USGS_WA_NorthCentral_1560iis	00523	NE	12:00:00	12:30:00		191424
USGS_WA_NorthCentral_1560iis	00524	NE	12:00:00	12:30:00		191917
USGS_WA_NorthCentral_1560iis	00525	NE	12:00:00	12:30:00		192611 Cld. South End of line
USGS_WA_NorthCentral_1560iis	00526	NE	12:00:00	12:30:00		193136
USGS_WA_NorthCentral_1560iis	00527	NE	12:00:00	12:30:00		193731
USGS_WA_NorthCentral_1560iis	00528	NE	12:00:00	12:30:00		194330
USGS_WA_NorthCentral_1560iis	00529	NE	12:00:00	12:30:00		194952
USGS_WA_NorthCentral_1560iis	00530	NE	12:00:00	12:30:00		195601
USGS_WA_NorthCentral_1560iis	00531	NE	12:00:00	12:30:00		200253
USGS_WA_NorthCentral_1560iis	00532	NE	12:00:00	12:30:00		200919
USGS_WA_NorthCentral_1560iis	00533	NE	12:00:00	12:30:00		201605
USGS_WA_NorthCentral_1560iis	00534	NE	12:00:00	12:30:00		202225
USGS_WA_NorthCentral_1560iis	00535	NE	12:00:00	12:30:00		203203
USGS_WA_NorthCentral_1560iis	00536	NE	12:00:00	12:30:00		203841
USGS_WA_NorthCentral_1560iis	00537	NE	12:00:00	12:30:00		204550
USGS_WA_NorthCentral_1560iis	00538	NE	12:00:00	12:30:00		205226
USGS_WA_NorthCentral_1560iis	00539	NE	12:00:00	12:30:00		205918
USGS_WA_NorthCentral_1560iis	00540	NE	12:00:00	12:30:00		210631
USGS_WA_NorthCentral_1560iis	00541	NE	12:00:00	12:30:00		211354 LOST GPS MID-LINE, REFLY REQUIRED
USGS_WA_NorthCentral_1560iis	00709	SE	12:00:00	12:30:00		183142 POSSIBLE CLOUD MID-LINE
USGS_WA_NorthCentral_1560iis	00710	SE	12:00:00	12:30:00		183809

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20211002_F1	Mission Notes
Mission Date	10/2/2021	One lift today in deteriorating weather. We were only able to acquire 6 lines.
Aircraft	N208JA	
Pilot	Robert Cale	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:18:00 AM	
Arrival (Local Time)	11:41:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00541	NE	16:59:33	17:04:43	146.0	
USGS_WA_NorthCentral_1560iis	00542	SW	17:08:21	17:14:01	135.0	
USGS_WA_NorthCentral_1560iis	00543	NE	17:16:19	17:21:35	145.6	
USGS_WA_NorthCentral_1560iis	00544	SW	17:24:11	17:29:47	136.4	
USGS_WA_NorthCentral_1560iis	00545	NE	17:32:36	17:37:51	145.9	
USGS_WA_NorthCentral_1560iis	00546	SW	17:40:41	17:46:23	134.0	
USGS_WA_NorthCentral_1560iis	X-line	NW	17:51:11	17:53:13	139.1	X-line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20211003_F1	Mission Notes
Mission Date	10/3/2021	One lift today after frontal passage and the winds died down over the mountains.
Aircraft	N208JA	
Pilot	Robert Cale	
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	3:22:00 PM	
Arrival (Local Time)	6:26:00 PM	

Flightplan	Line	Heading	Start Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00148	N	22:56:56	23:02:52	147.8	
USGS_WA_NorthCentral_1560iis	00149	S	23:06:12	23:12:12	147.1	
USGS_WA_NorthCentral_1560iis	00150	N	23:14:30	23:20:25	145.9	
USGS_WA_NorthCentral_1560iis	00151	S	23:23:15	23:29:12	145.4	
USGS_WA_NorthCentral_1560iis	00152	N	23:31:48	23:37:41	145.9	
USGS_WA_NorthCentral_1560iis	00153	S	23:40:17	23:46:10	145.7	
USGS_WA_NorthCentral_1560iis	00154	N	23:49:11	23:55:06	144.6	
USGS_WA_NorthCentral_1560iis	X-line	SW	23:57:58	00:00:48	127.8	X-line
USGS_WA_NorthCentral_1560iis	00525	SW	00:08:20	00:11:34	145.3	Reflight
USGS_WA_NorthCentral_1560iis	00547	NE	00:15:44	00:20:59	146.0	
USGS_WA_NorthCentral_1560iis	00548	SW	00:23:47	00:29:09	142.8	
USGS_WA_NorthCentral_1560iis	00549	NE	00:31:26	00:36:30	147.8	
USGS_WA_NorthCentral_1560iis	00550	SW	00:39:26	00:44:43	140.5	
USGS_WA_NorthCentral_1560iis	X-line	SE	00:48:17	00:49:50	186.8	X-line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20211004_F1	Mission Notes
Mission Date	10/4/2021	One lift today. Completed the Okanagan NIR Reflies in Canada, then moved to the US side of the border and continued acquisition of 19 lines on WA_North Central as well.
Aircraft	N208JA	
Pilot	Robert Cale	NOTE: THE FLIGHT MANAGEMENT FILE ENTITLED 20211004_SN3061_A_R039483 also CONTAINS THE LINE FROM R037889_WA_NORTHCENTRAL FOR TODAY'S FLIGHT.
Co-Pilot		
Operator	Steve Krohn	
Co-Operator		
Vendor	NV5 Geospatial	2.2 HOURS ONLINE SHOULD BE ATTRIBUTED TO THE OKANANGAN NIR REFLIES, AND 1.6 HOURS ONLINE SHOULD BE ATTRIBUTED TO WA NORTH CENTRAL.
Base Airport	KEAT	
Departure (Local Time)	10:05:00 AM	
Arrival (Local Time)	4:04:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00001	N	17:49:47	17:52:04	148.9	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00002	S	17:57:22	17:59:51	136.0	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00003	N	18:06:42	18:09:01	146.3	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00002	S	18:11:19	18:13:50	134.8	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00001	N	18:15:15	18:17:33	145.6	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00006	N	18:20:26	18:24:27	145.7	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00007	S	18:29:43	18:34:00	134.7	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00008	N	18:35:44	18:38:12	145.0	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00004	N	18:47:31	18:48:39	143.4	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00005	S	18:50:38	18:51:43	145.5	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00018	N	18:55:01	18:58:44	144.2	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00009	NE	19:00:09	19:03:52	148.9	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00010	SW	19:05:32	19:09:28	143.7	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00011	NE	19:12:28	19:17:49	145.8	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00012	SW	19:20:48	19:25:47	139.7	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00013	NE	19:27:21	19:30:30	146.6	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00014	SW	19:32:13	19:34:48	145.0	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00015	NE	19:36:22	19:38:56	146.1	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00016	SW	19:40:50	19:43:14	145.0	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	X-LINE	NW	19:46:21	19:48:51	150.0	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00017	S	19:52:07	19:54:13	141.9	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00019	N	19:57:26	20:01:04	146.6	OKANAGAN REFLIES
USGS_WA_NorthCentral_1560iis	00683	SE	20:49:54	20:51:20	139.1	
USGS_WA_NorthCentral_1560iis	00684	NW	20:53:39	20:55:26	146.3	
USGS_WA_NorthCentral_1560iis	00685	SE	20:57:43	20:59:52	146.1	
USGS_WA_NorthCentral_1560iis	00686	NW	21:01:53	21:04:12	146.2	
USGS_WA_NorthCentral_1560iis	00687	SE	21:06:50	21:09:13	146.3	
USGS_WA_NorthCentral_1560iis	00688	NW	21:11:04	21:13:38	145.7	
USGS_WA_NorthCentral_1560iis	00689	SE	21:15:42	21:18:20	146.8	
USGS_WA_NorthCentral_1560iis	00690	NW	21:20:26	21:23:11	144.5	
USGS_WA_NorthCentral_1560iis	00691	SE	21:25:21	21:28:09	146.2	
USGS_WA_NorthCentral_1560iis	00692	NW	21:29:58	21:32:45	146.1	
USGS_WA_NorthCentral_1560iis	00693	SE	21:34:39	21:37:25	148.3	
USGS_WA_NorthCentral_1560iis	00694	NW	21:39:29	21:42:15	146.5	
USGS_WA_NorthCentral_1560iis	00695	SE	21:44:13	21:47:07	145.9	
USGS_WA_NorthCentral_1560iis	00696	NW	21:48:59	21:51:58	145.5	
USGS_WA_NorthCentral_1560iis	00697	SE	21:53:43	21:56:41	146.6	
USGS_WA_NorthCentral_1560iis	00698	NW	21:58:19	22:01:18	147.5	
USGS_WA_NorthCentral_1560iis	00699	SE	22:03:28	22:06:29	147.1	
USGS_WA_NorthCentral_1560iis	00700	NW	22:08:22	22:11:23	145.8	
USGS_WA_NorthCentral_1560iis	00701	SE	22:13:25	22:16:25	145.6	
USGS_WA_NorthCentral_1560iis	X-LINE	NE	22:19:07	22:21:49	195.9	X-LINE

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223061_20211007_F1	Mission Notes
Mission Date	10/7/2021	
Aircraft	N208JA	
Pilot	Robert Cale	
Co-Pilot		
Operator	Mark Smith	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	10:53:00 AM	
Arrival (Local Time)	12:16:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00147	N	18:30:13	18:36:21	145.1	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223061_20211007_F2	Mission Notes
Mission Date	10/7/2021	
Aircraft	N208JA	
Pilot	Robert Cale	
Co-Pilot		
Operator	Mark Smith	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	10:53:00 AM	
Arrival (Local Time)	12:16:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00147	N	18:30:13	18:36:21	145.2	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20211008_F1	Mission Notes
Mission Date	10/8/2021	
Aircraft	N208JA	
Pilot	Robert Cale	
Co-Pilot		
Operator	Mark Smith	
Co-Operator		
Vendor	NV5 Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:07:00 AM	
Arrival (Local Time)	3:07:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00702	NW	16:41:57	16:44:50	145.7	
USGS_WA_NorthCentral_1560iis	00703	SE	16:47:37	16:50:31	145.8	
USGS_WA_NorthCentral_1560iis	00704	NW	16:53:24	16:56:33	143.9	
USGS_WA_NorthCentral_1560iis	00705	SE	16:59:54	17:03:09	144.9	
USGS_WA_NorthCentral_1560iis	00706	NW	17:05:18	17:08:42	145.1	
USGS_WA_NorthCentral_1560iis	00707	SE	17:11:07	17:14:35	145.2	
USGS_WA_NorthCentral_1560iis	00708	NW	17:16:54	17:20:21	145.3	
USGS_WA_NorthCentral_1560iis	Xline	NE	17:24:07	17:25:51	168.0	
USGS_WA_NorthCentral_1560iis	00551	NE	17:33:45	17:38:43	145.4	
USGS_WA_NorthCentral_1560iis	00552	SW	17:40:57	17:45:46	144.3	
USGS_WA_NorthCentral_1560iis	00553	NE	17:48:08	17:52:46	145.7	
USGS_WA_NorthCentral_1560iis	00554	SW	17:56:16	18:00:32	145.1	
USGS_WA_NorthCentral_1560iis	00555	NE	18:02:54	18:06:20	145.4	
USGS_WA_NorthCentral_1560iis	00425	N	18:17:08	18:25:33	146.1	
USGS_WA_NorthCentral_1560iis	00426	S	18:27:48	18:36:15	146.0	
USGS_WA_NorthCentral_1560iis	00427	N	18:38:07	18:46:40	145.1	
USGS_WA_NorthCentral_1560iis	00428	S	18:48:51	18:57:22	146.3	
USGS_WA_NorthCentral_1560iis	00429	N	18:59:55	19:08:33	145.2	
USGS_WA_NorthCentral_1560iis	00430	S	19:10:36	19:19:02	145.5	
USGS_WA_NorthCentral_1560iis	00431	N	19:20:59	19:29:23	146.4	
USGS_WA_NorthCentral_1560iis	00432	S	19:31:32	19:40:03	145.2	
USGS_WA_NorthCentral_1560iis	00433	N	19:42:12	19:50:44	145.8	
USGS_WA_NorthCentral_1560iis	00434	S	19:52:57	20:01:32	145.5	
USGS_WA_NorthCentral_1560iis	00435	N	20:03:49	20:12:13	145.5	
USGS_WA_NorthCentral_1560iis	00436	S	20:14:22	20:22:48	146.0	
USGS_WA_NorthCentral_1560iis	00437	N	20:24:55	20:33:25	145.4	
USGS_WA_NorthCentral_1560iis	00438	S	20:35:33	20:44:03	145.9	
USGS_WA_NorthCentral_1560iis	00439	N	20:45:56	20:54:30	145.6	
USGS_WA_NorthCentral_1560iis	00440	S	20:56:38	21:05:00	146.0	
USGS_WA_NorthCentral_1560iis	00441	N	21:07:05	21:15:27	145.8	
USGS_WA_NorthCentral_1560iis	00442	S	21:17:08	21:25:37	146.0	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223061_20211012_F1	Mission Notes
Mission Date	10/12/2021	
Aircraft	N208JA	
Pilot	Robert Cale	
Co-Pilot		
Operator	Mark Smith	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:10:00 AM	
Arrival (Local Time)	1:25:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00443	N	16:51:40	17:00:09	146.1	
USGS_WA_NorthCentral_1560iis	00444	S	17:02:11	17:10:42	146.1	
USGS_WA_NorthCentral_1560iis	00445	N	17:12:56	17:21:16	145.9	
USGS_WA_NorthCentral_1560iis	00446	S	17:23:13	17:31:35	146.2	
USGS_WA_NorthCentral_1560iis	00447	N	17:33:55	17:42:21	145.4	
USGS_WA_NorthCentral_1560iis	00448	S	17:44:24	17:52:51	145.7	
USGS_WA_NorthCentral_1560iis	00449	N	17:54:53	18:03:24	145.6	
USGS_WA_NorthCentral_1560iis	00450	S	18:05:31	18:14:01	146.7	
USGS_WA_NorthCentral_1560iis	00451	N	18:16:31	18:24:54	145.5	
USGS_WA_NorthCentral_1560iis	00452	S	18:26:49	18:35:10	146.9	
USGS_WA_NorthCentral_1560iis	00453	N	18:37:36	18:46:02	146.5	
USGS_WA_NorthCentral_1560iis	00454	S	18:48:41	18:57:09	146.5	
USGS_WA_NorthCentral_1560iis	00455	N	19:00:23	19:08:46	145.0	
USGS_WA_NorthCentral_1560iis	00456	S	19:10:39	19:19:00	146.5	
USGS_WA_NorthCentral_1560iis	00681	SW	19:36:55	19:46:02	145.4	
USGS_WA_NorthCentral_1560iis	11111	SE	19:48:05	19:49:05	159.9	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20220304_F1	Mission Notes
Mission Date	3/4/2022	Launched from Reno, mob to AOI, clouds started to be an issue right away. Moved to the west side and were able to acquire a few shorter lines before clouds pushed us to KEAT.
Aircraft	N441CJ	
Pilot	Josey Billington	
Co-Pilot		
Operator	Benjamin Miller	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	9:29:00 AM	
Arrival (Local Time)	12:53:00 PM	

Flightplan	Line	Heading	Start Time (UTC) Stop Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00873	N	19:27:09	19:38:27	160.6	
USGS_WA_NorthCentral_1560iis	00800	S	19:54:24	20:00:55	173.2	
USGS_WA_NorthCentral_1560iis	00799	N	20:04:05	20:11:49	152.0	
USGS_WA_NorthCentral_1560iis	00798	S	20:16:00	20:23:33	163.2	
USGS_WA_NorthCentral_1560iis	00797	N	20:26:50	20:36:05	138.0	
USGS_WA_NorthCentral_1560iis	x	E	20:40:17	20:42:18	174.1	cross line

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20220305_F1	Mission Notes
Mission Date	3/5/2022	Launched for east side of aoi, worked west, clouds pushed us further west.
Aircraft	N441CJ	
Pilot	Josey Billington	
Co-Pilot		
Operator	Benjamin Miller	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:23:00 AM	
Arrival (Local Time)	1:05:00 PM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560iis	00873	S	16:50:43	17:02:05	160.7	
USGS_WA_NorthCentral_1560iis	00872	N	17:04:43	17:16:14	162.4	
USGS_WA_NorthCentral_1560iis	00871	S	17:19:05	17:31:18	159.1	
USGS_WA_NorthCentral_1560iis	00870	N	17:38:41	17:50:25	161.1	
USGS_WA_NorthCentral_1560iis	00869	S	17:53:08	18:04:47	162.9	
USGS_WA_NorthCentral_1560iis	00868	N	18:07:44	18:19:48	157.1	
USGS_WA_NorthCentral_1560iis	00867	S	18:22:22	18:33:21	172.8	
USGS_WA_NorthCentral_1560iis	00866	N	18:36:16	18:48:07	160.1	
USGS_WA_NorthCentral_1560iis	00865	S	18:50:32	19:02:05	164.3	
USGS_WA_NorthCentral_1560iis	00864	N	19:05:12	19:16:59	161.0	
USGS_WA_NorthCentral_1560iis	00863	S	19:19:42	19:31:19	163.6	
USGS_WA_NorthCentral_1560iis	00862	N	19:34:45	19:46:25	161.7	
USGS_WA_NorthCentral_1560iis	00861	S	19:48:42	19:59:52	168.9	
USGS_WA_NorthCentral_1560iis	00856	N	20:03:21	20:16:55	129.1	
USGS_WA_NorthCentral_1560iis	00855	S	20:19:13	20:30:01	162.2	
USGS_WA_NorthCentral_1560iis	00854	N	20:33:30	20:45:22	148.3	
USGS_WA_NorthCentral_1560iis	00853	S	20:48:03	20:58:06	174.2	
USGS_WA_NorthCentral_1560iis	x	E	21:03:29	21:08:54	166.1	cross

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	

Mission Name	S2223061_20220305_F2	Mission Notes
Mission Date	3/5/2022	Sec short lift, no issues. Ended just before GPS midnight.
Aircraft	N441CJ	
Pilot	Josey Billington	
Co-Pilot		
Operator	Benjamin Miller	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	2:10:00 PM	
Arrival (Local Time)	4:16:00 PM	

Flightplan	Line	Heading	Start Time (UTC) Stop Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560iis	00851	S	22:32:44	22:43:20	165.3	
USGS_WA_NorthCentral_1560iis	00852	N	22:46:54	22:58:44	147.9	
USGS_WA_NorthCentral_1560iis	00849	S	23:01:10	23:11:43	171.2	
USGS_WA_NorthCentral_1560iis	00850	N	23:15:14	23:27:02	152.1	
USGS_WA_NorthCentral_1560iis	00847	S	23:28:49	23:39:54	162.9	
USGS_WA_NorthCentral_1560iis	00848	N	23:43:09	23:54:47	155.2	
USGS_WA_NorthCentral_1560iis	x	E	23:57:00	23:59:02	170.7	cross

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560iis	
Mission Name	S2223061_20220306_F1	Mission Notes
Mission Date	3/6/2022	On standby all morning waiting for weather to clear by KOLM, no go. Launched for 37889, acquired until dark.
Aircraft	N441CJ	
Pilot	Josey Billington	
Co-Pilot		
Operator	Benjamin Miller	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	1:11:00 PM	
Arrival (Local Time)	6:13:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560iis	00857	S	21:31:23	21:42:03	164.4	
USGS_WA_NorthCentral_1560iis	00858	N	21:44:48	21:56:01	156.3	
USGS_WA_NorthCentral_1560iis	00859	S	21:58:19	22:08:56	165.3	
USGS_WA_NorthCentral_1560iis	00860	SW	22:09:16	22:09:21	178.3	misfire
USGS_WA_NorthCentral_1560iis	00860	N	22:15:13	22:26:42	158.1	
USGS_WA_NorthCentral_1560iis	00846	S	22:31:27	22:42:02	170.6	
USGS_WA_NorthCentral_1560iis	00845	N	22:45:02	22:56:37	156.2	
USGS_WA_NorthCentral_1560iis	00844	S	22:58:44	23:09:14	171.8	
USGS_WA_NorthCentral_1560iis	00843	N	23:12:08	23:23:32	158.4	
USGS_WA_NorthCentral_1560iis	00842	S	23:26:05	23:36:49	167.7	
USGS_WA_NorthCentral_1560iis	00841	N	23:39:40	23:50:46	162.5	
USGS_WA_NorthCentral_1560iis	00840	S	23:53:19	00:04:07	167.1	
USGS_WA_NorthCentral_1560iis	00839	N	00:06:57	00:18:20	158.7	
USGS_WA_NorthCentral_1560iis	00838	S	00:20:49	00:31:48	164.2	
USGS_WA_NorthCentral_1560iis	00837	N	00:35:03	00:46:14	161.4	
USGS_WA_NorthCentral_1560iis	00836	S	00:49:05	01:00:06	164.3	
USGS_WA_NorthCentral_1560iis	00835	N	01:03:09	01:14:12	163.6	
USGS_WA_NorthCentral_1560iis	00834	S	01:16:57	01:27:50	165.9	
USGS_WA_NorthCentral_1560iis	00833	N	01:30:21	01:41:39	160.1	
USGS_WA_NorthCentral_1560iis	x	E	01:44:00	01:50:19	187.5	cross

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2224046_20210825_F1	Mission Notes
Mission Date	8/25/2021	
Aircraft	N604MD	
Pilot	Dan Braden	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:37:00 AM	
Arrival (Local Time)	3:09:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560ii	01001	NW	16:01:42	16:08:20	139.7	
USGS_WA_NorthCentral_1560ii	00681	E	16:13:28	16:18:05	141.2	
USGS_WA_NorthCentral_1560ii	00682	SW	16:19:45	16:24:48	133.9	
USGS_WA_NorthCentral_1560ii	00683	E	16:27:02	16:31:46	143.7	
USGS_WA_NorthCentral_1560ii	00684	SW	16:33:30	16:38:26	136.9	
USGS_WA_NorthCentral_1560ii	00685	E	16:40:30	16:45:09	142.7	
USGS_WA_NorthCentral_1560ii	00686	SW	16:47:02	16:51:46	138.1	
USGS_WA_NorthCentral_1560ii	00687	E	16:53:47	16:58:15	144.3	
USGS_WA_NorthCentral_1560ii	00688	SW	17:00:05	17:04:40	138.4	
USGS_WA_NorthCentral_1560ii	00689	E	17:06:46	17:11:07	144.9	
USGS_WA_NorthCentral_1560ii	00690	SW	17:12:54	17:17:21	140.1	
USGS_WA_NorthCentral_1560ii	00691	E	17:19:11	17:23:38	144.3	
USGS_WA_NorthCentral_1560ii	00692	SW	17:25:29	17:30:02	140.2	
USGS_WA_NorthCentral_1560ii	00693	E	17:31:54	17:36:19	143.8	
USGS_WA_NorthCentral_1560ii	00694	SW	17:38:20	17:43:14	140.8	
USGS_WA_NorthCentral_1560ii	00695	E	17:45:00	17:49:44	144.2	
USGS_WA_NorthCentral_1560ii	00696	SW	17:51:33	17:56:26	138.5	
USGS_WA_NorthCentral_1560ii	00697	E	17:58:18	18:02:54	145.5	
USGS_WA_NorthCentral_1560ii	00698	SW	18:04:47	18:09:32	139.3	
USGS_WA_NorthCentral_1560ii	00699	E	18:11:30	18:15:58	146.0	
USGS_WA_NorthCentral_1560ii	00700	SW	18:17:47	18:22:29	137.0	
USGS_WA_NorthCentral_1560ii	00701	E	18:24:14	18:28:01	143.0	
USGS_WA_NorthCentral_1560ii	00702	SW	18:29:55	18:33:49	133.5	
USGS_WA_NorthCentral_1560ii	00703	E	18:35:34	18:39:03	142.4	
USGS_WA_NorthCentral_1560ii	00704	SW	18:40:43	18:44:12	135.5	
USGS_WA_NorthCentral_1560ii	00705	E	18:46:07	18:49:10	141.5	
USGS_WA_NorthCentral_1560ii	00706	SW	18:51:02	18:54:06	135.0	
USGS_WA_NorthCentral_1560ii	00707	E	18:55:54	18:58:31	143.6	
USGS_WA_NorthCentral_1560ii	00708	SW	19:00:18	19:03:00	131.4	
USGS_WA_NorthCentral_1560ii	00709	E	19:04:53	19:07:05	144.1	
USGS_WA_NorthCentral_1560ii	01002	SE	19:18:01	19:24:36	140.5	
USGS_WA_NorthCentral_1560ii	01003	NW	19:26:33	19:33:04	141.9	
USGS_WA_NorthCentral_1560ii	01004	SE	19:35:12	19:40:45	142.2	
USGS_WA_NorthCentral_1560ii	01005	NW	19:42:34	19:48:03	141.3	
USGS_WA_NorthCentral_1560ii	01006	SE	19:49:46	19:55:11	141.2	
USGS_WA_NorthCentral_1560ii	01007	NW	19:57:10	20:02:07	138.8	
USGS_WA_NorthCentral_1560ii	01008	SE	20:03:39	20:07:43	141.9	
USGS_WA_NorthCentral_1560ii	01009	NW	20:09:38	20:13:11	141.7	
USGS_WA_NorthCentral_1560ii	01010	SE	20:15:05	20:18:44	141.7	
USGS_WA_NorthCentral_1560ii	01011	NW	20:20:31	20:23:59	144.9	
USGS_WA_NorthCentral_1560ii	01012	SE	20:25:30	20:29:13	138.9	
USGS_WA_NorthCentral_1560ii	01013	NW	20:31:01	20:34:15	141.2	
USGS_WA_NorthCentral_1560ii	01014	SE	20:36:11	20:39:37	141.7	
USGS_WA_NorthCentral_1560ii	01015	NW	20:41:10	20:44:29	139.9	
USGS_WA_NorthCentral_1560ii	01016	SE	20:46:04	20:49:10	145.9	
USGS_WA_NorthCentral_1560ii	01017	NW	20:50:53	20:54:04	142.0	
USGS_WA_NorthCentral_1560ii	01018	SE	20:55:33	20:58:37	144.4	
USGS_WA_NorthCentral_1560ii	01019	NW	21:00:20	21:03:17	142.4	
USGS_WA_NorthCentral_1560ii	01021	NW	21:11:07	21:13:41	144.1	
USGS_WA_NorthCentral_1560ii	01022	SE	21:15:08	21:17:36	146.1	
USGS_WA_NorthCentral_1560ii	01023	NW	21:19:27	21:21:26	144.8	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2224046_20210826_F1	Mission Notes
Mission Date	8/26/2021	
Aircraft	N604MD	
Pilot	Dan Braden	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:37:00 AM	
Arrival (Local Time)	3:09:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560ii	00376	N	16:35:05	16:36:45	137.4	
USGS_WA_NorthCentral_1560ii	00377	S	16:38:26	16:40:03	143.3	
USGS_WA_NorthCentral_1560ii	00378	N	16:42:12	16:43:51	139.7	
USGS_WA_NorthCentral_1560ii	00379	S	16:45:44	16:48:11	142.3	
USGS_WA_NorthCentral_1560ii	00380	N	16:49:58	16:52:51	140.2	
USGS_WA_NorthCentral_1560ii	00381	S	16:54:36	16:57:26	142.7	
USGS_WA_NorthCentral_1560ii	00382	N	16:59:10	17:01:58	145.3	
USGS_WA_NorthCentral_1560ii	00383	S	17:03:39	17:06:28	143.5	
USGS_WA_NorthCentral_1560ii	00384	N	17:08:15	17:11:20	142.4	
USGS_WA_NorthCentral_1560ii	00385	S	17:12:57	17:16:01	143.3	
USGS_WA_NorthCentral_1560ii	00386	N	17:17:41	17:20:55	143.0	
USGS_WA_NorthCentral_1560ii	00387	S	17:22:31	17:25:45	141.5	
USGS_WA_NorthCentral_1560ii	00388	N	17:27:36	17:30:46	144.7	
USGS_WA_NorthCentral_1560ii	00391	S	17:31:53	17:39:35	141.4	
USGS_WA_NorthCentral_1560ii	00392	N	17:42:00	17:50:35	142.7	
USGS_WA_NorthCentral_1560ii	00393	S	17:52:11	18:00:49	142.4	
USGS_WA_NorthCentral_1560ii	00394	N	18:02:48	18:11:23	143.3	
USGS_WA_NorthCentral_1560ii	00395	S	18:13:00	18:21:44	141.4	
USGS_WA_NorthCentral_1560ii	00396	N	18:23:35	18:32:09	144.6	
USGS_WA_NorthCentral_1560ii	00397	S	18:33:56	18:42:30	141.4	
USGS_WA_NorthCentral_1560ii	00398	N	18:44:14	18:52:37	144.9	
USGS_WA_NorthCentral_1560ii	00399	S	18:54:12	19:02:54	140.5	
USGS_WA_NorthCentral_1560ii	00400	N	19:04:37	19:12:56	147.1	
USGS_WA_NorthCentral_1560ii	00401	S	19:14:27	19:23:12	140.2	
USGS_WA_NorthCentral_1560ii	00402	N	19:24:57	19:33:26	145.3	
USGS_WA_NorthCentral_1560ii	00403	S	19:35:02	19:43:52	139.9	
USGS_WA_NorthCentral_1560ii	00404	N	19:45:22	19:53:44	144.3	
USGS_WA_NorthCentral_1560ii	00405	S	19:55:26	20:04:08	139.5	
USGS_WA_NorthCentral_1560ii	00406	N	20:05:41	20:13:59	146.6	
USGS_WA_NorthCentral_1560ii	00407	S	20:15:41	20:24:19	141.5	
USGS_WA_NorthCentral_1560ii	00408	N	20:25:48	20:34:05	148.0	
USGS_WA_NorthCentral_1560ii	00409	S	20:35:41	20:44:34	138.9	
USGS_WA_NorthCentral_1560ii	00410	N	20:46:08	20:54:18	148.4	
USGS_WA_NorthCentral_1560ii	00411	S	20:55:45	21:04:31	137.9	
USGS_WA_NorthCentral_1560ii	00412	N	21:05:58	21:14:09	148.7	
USGS_WA_NorthCentral_1560ii	00413	S	21:15:43	21:24:37	137.0	
USGS_WA_NorthCentral_1560ii	01097	SW	21:39:20	21:47:51	137.4	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2224046_20210827_F1	Mission Notes
Mission Date	8/27/2021	
Aircraft	N604MD	
Pilot	Dan Braden	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:45:00 AM	
Arrival (Local Time)	3:21:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560ii	01096	NE	16:06:41	16:15:53	127.2	
USGS_WA_NorthCentral_1560ii	00654	NE	16:19:25	16:29:51	122.6	
USGS_WA_NorthCentral_1560ii	00414	N	16:32:25	16:42:59	116.2	
USGS_WA_NorthCentral_1560ii	00415	S	16:44:24	16:52:26	149.6	
USGS_WA_NorthCentral_1560ii	00655	NE	16:55:12	16:55:15	135.4	
USGS_WA_NorthCentral_1560ii	00655	SW	16:56:14	17:05:34	139.3	
USGS_WA_NorthCentral_1560ii	01095	SW	17:08:27	17:16:51	139.7	
USGS_WA_NorthCentral_1560ii	01094	NE	17:19:11	17:27:45	135.0	
USGS_WA_NorthCentral_1560ii	00656	NE	17:30:52	17:40:36	135.3	
USGS_WA_NorthCentral_1560ii	00416	N	17:42:52	17:52:49	121.3	
USGS_WA_NorthCentral_1560ii	00417	S	17:54:13	18:02:16	150.8	
USGS_WA_NorthCentral_1560ii	00418	N	18:04:15	18:14:01	124.9	
USGS_WA_NorthCentral_1560ii	00419	S	18:15:15	18:23:28	149.2	
USGS_WA_NorthCentral_1560ii	00420	N	18:25:32	18:35:43	120.4	
USGS_WA_NorthCentral_1560ii	00421	S	18:37:09	18:45:17	147.9	
USGS_WA_NorthCentral_1560ii	00657	NE	18:47:56	18:48:03	128.9	
USGS_WA_NorthCentral_1560ii	00657	SW	18:48:49	18:58:10	142.9	
USGS_WA_NorthCentral_1560ii	01093	SW	19:00:58	19:08:45	146.1	
USGS_WA_NorthCentral_1560ii	01092	NE	19:10:28	19:18:11	145.0	
USGS_WA_NorthCentral_1560ii	01056	SW	19:25:06	19:26:53	143.0	
USGS_WA_NorthCentral_1560ii	01057	NE	19:29:10	19:34:11	141.5	
USGS_WA_NorthCentral_1560ii	01058	SW	19:35:57	19:41:11	140.9	
USGS_WA_NorthCentral_1560ii	01059	NE	19:43:02	19:48:20	141.1	
USGS_WA_NorthCentral_1560ii	01060	SW	19:50:20	19:55:53	140.2	
USGS_WA_NorthCentral_1560ii	01061	NE	19:57:31	20:03:17	140.3	
USGS_WA_NorthCentral_1560ii	01062	SW	20:05:07	20:10:55	145.4	
USGS_WA_NorthCentral_1560ii	01063	NE	20:12:38	20:18:47	139.8	
USGS_WA_NorthCentral_1560ii	01064	SW	20:20:52	20:26:38	144.8	
USGS_WA_NorthCentral_1560ii	01065	NE	20:28:33	20:34:29	142.4	
USGS_WA_NorthCentral_1560ii	01066	N	20:34:55	20:35:00	154.0	
USGS_WA_NorthCentral_1560ii	01066	SW	20:36:11	20:42:19	147.4	
USGS_WA_NorthCentral_1560ii	00657	NE	20:54:51	20:59:46	140.0	
USGS_WA_NorthCentral_1560ii	01091	SW	21:08:51	21:16:31	145.1	
USGS_WA_NorthCentral_1560ii	01090	NE	21:18:16	21:26:01	140.5	
USGS_WA_NorthCentral_1560ii	01089	SW	21:27:57	21:35:37	140.1	
USGS_WA_NorthCentral_1560ii	01088	NE	21:37:09	21:44:37	142.1	
USGS_WA_NorthCentral_1560ii	01087	SW	21:46:30	21:54:10	137.5	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2224046_20210828_F1	Mission Notes
Mission Date	8/28/2021	
Aircraft	N604MD	
Pilot	Dan Braden	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:36:00 AM	
Arrival (Local Time)	3:43:00 PM	

Flightplan	Line	Heading	Start Time (UTC) Stop Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560ii	00085	N	16:20:43	16:29:04	126.1	
USGS_WA_NorthCentral_1560ii	00084	S	16:30:30	16:37:20	142.2	
USGS_WA_NorthCentral_1560ii	00083	N	16:39:53	16:46:07	126.7	
USGS_WA_NorthCentral_1560ii	00082	S	16:47:21	16:51:36	140.9	
USGS_WA_NorthCentral_1560ii	00081	N	16:53:45	16:58:20	125.1	
USGS_WA_NorthCentral_1560ii	00080	S	16:59:56	17:02:24	141.4	
USGS_WA_NorthCentral_1560ii	00079	N	17:04:05	17:06:49	130.9	
USGS_WA_NorthCentral_1560ii	00078	S	17:08:13	17:10:51	135.6	
USGS_WA_NorthCentral_1560ii	00077	N	17:12:50	17:15:35	128.7	
USGS_WA_NorthCentral_1560ii	00076	S	17:17:28	17:19:56	143.3	
USGS_WA_NorthCentral_1560ii	00075	N	17:21:38	17:24:19	129.5	
USGS_WA_NorthCentral_1560ii	00074	S	17:26:05	17:28:34	139.6	
USGS_WA_NorthCentral_1560ii	00073	N	17:30:22	17:33:00	130.6	
USGS_WA_NorthCentral_1560ii	00072	S	17:34:56	17:36:56	140.8	
USGS_WA_NorthCentral_1560ii	00071	N	17:39:17	17:41:31	127.6	
USGS_WA_NorthCentral_1560ii	00070	S	17:43:06	17:45:07	139.1	
USGS_WA_NorthCentral_1560ii	00069	N	17:47:19	17:49:17	127.1	
USGS_WA_NorthCentral_1560ii	00068	S	17:50:49	17:52:23	145.0	
USGS_WA_NorthCentral_1560ii	00067	N	17:54:08	17:55:44	132.6	
USGS_WA_NorthCentral_1560ii	00066	S	17:57:38	17:58:50	146.1	
USGS_WA_NorthCentral_1560ii	00106	N	18:06:54	18:07:04	140.9	
USGS_WA_NorthCentral_1560ii	00106	S	18:07:59	18:15:01	138.8	
USGS_WA_NorthCentral_1560ii	00105	N	18:16:39	18:24:00	133.2	
USGS_WA_NorthCentral_1560ii	00104	S	18:25:18	18:32:10	143.0	
USGS_WA_NorthCentral_1560ii	00103	N	18:33:46	18:41:09	133.0	
USGS_WA_NorthCentral_1560ii	00102	S	18:42:15	18:49:07	143.0	
USGS_WA_NorthCentral_1560ii	00101	N	18:50:42	18:58:19	129.4	
USGS_WA_NorthCentral_1560ii	00100	S	18:59:33	19:06:22	144.5	
USGS_WA_NorthCentral_1560ii	00099	N	19:08:02	19:15:28	132.8	
USGS_WA_NorthCentral_1560ii	00098	S	19:17:01	19:23:55	145.9	
USGS_WA_NorthCentral_1560ii	00097	N	19:25:23	19:32:50	134.9	
USGS_WA_NorthCentral_1560ii	00096	S	19:34:10	19:41:09	144.2	
USGS_WA_NorthCentral_1560ii	00095	N	19:42:50	19:50:18	135.1	
USGS_WA_NorthCentral_1560ii	00094	S	19:51:48	19:58:51	143.2	
USGS_WA_NorthCentral_1560ii	00093	N	20:00:24	20:07:54	134.9	
USGS_WA_NorthCentral_1560ii	00092	S	20:09:28	20:16:26	145.9	
USGS_WA_NorthCentral_1560ii	00091	N	20:18:03	20:25:46	133.3	
USGS_WA_NorthCentral_1560ii	00090	S	20:27:02	20:34:08	146.4	
USGS_WA_NorthCentral_1560ii	00089	N	20:35:47	20:43:27	134.7	
USGS_WA_NorthCentral_1560ii	00088	S	20:44:47	20:51:41	149.9	
USGS_WA_NorthCentral_1560ii	00087	N	20:53:11	21:00:50	135.0	
USGS_WA_NorthCentral_1560ii	00086	S	21:01:53	21:08:53	147.8	
USGS_WA_NorthCentral_1560ii	00110	N	21:16:21	21:23:27	132.3	
USGS_WA_NorthCentral_1560ii	00109	S	21:24:24	21:30:59	145.7	
USGS_WA_NorthCentral_1560ii	00108	N	21:32:30	21:39:43	133.3	
USGS_WA_NorthCentral_1560ii	00107	E	21:40:40	21:55:40	140.6	
USGS_WA_NorthCentral_1560ii	00111	S	21:56:54	22:03:22	147.4	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	

Mission Name	S2224046_20210828_F2	Mission Notes
Mission Date	8/28/2021	Submission to fix flight lines.
Aircraft	N604MD	
Pilot	Dan Braden	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)		
Arrival (Local Time)	12:04:00 AM	

Flightplan	Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
USGS_WA_NorthCentral_1560ii	00112	S	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii	00132	S	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii	01020	SE	12:00:00	12:30:00		

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2224046_20210829_F1	Mission Notes
Mission Date	8/29/2021	
Aircraft	N604MD	
Pilot	Dan Braden	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	8:29:00 AM	
Arrival (Local Time)	3:33:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560ii	00139	N	16:14:43	16:21:13	133.6	
USGS_WA_NorthCentral_1560ii	00138	S	16:22:41	16:29:20	130.6	
USGS_WA_NorthCentral_1560ii	00137	N	16:30:42	16:37:02	137.6	
USGS_WA_NorthCentral_1560ii	00136	S	16:38:26	16:45:12	129.0	
USGS_WA_NorthCentral_1560ii	00135	N	16:46:23	16:52:52	134.6	
USGS_WA_NorthCentral_1560ii	00134	S	16:54:13	17:01:03	129.8	
USGS_WA_NorthCentral_1560ii	00133	SW	17:02:33	17:17:08	133.2	
USGS_WA_NorthCentral_1560ii	00131	N	17:18:43	17:25:12	138.2	
USGS_WA_NorthCentral_1560ii	00130	S	17:26:35	17:33:07	137.0	
USGS_WA_NorthCentral_1560ii	00129	N	17:34:32	17:40:56	140.4	
USGS_WA_NorthCentral_1560ii	00128	S	17:42:14	17:48:44	138.4	
USGS_WA_NorthCentral_1560ii	00127	N	17:50:14	17:56:56	137.4	
USGS_WA_NorthCentral_1560ii	00126	S	17:58:13	18:05:03	134.7	
USGS_WA_NorthCentral_1560ii	00125	N	18:06:21	18:13:01	138.4	
USGS_WA_NorthCentral_1560ii	00124	S	18:14:16	18:21:19	130.9	
USGS_WA_NorthCentral_1560ii	00123	N	18:22:43	18:29:29	136.7	
USGS_WA_NorthCentral_1560ii	00122	S	18:30:49	18:37:51	132.0	
USGS_WA_NorthCentral_1560ii	00121	N	18:39:01	18:45:36	141.2	
USGS_WA_NorthCentral_1560ii	00120	S	18:46:53	18:53:48	134.4	
USGS_WA_NorthCentral_1560ii	00119	N	18:55:06	19:01:54	137.1	
USGS_WA_NorthCentral_1560ii	00118	S	19:03:17	19:10:22	131.2	
USGS_WA_NorthCentral_1560ii	00117	N	19:11:47	19:18:35	139.3	
USGS_WA_NorthCentral_1560ii	00116	S	19:19:45	19:26:46	135.2	
USGS_WA_NorthCentral_1560ii	00115	N	19:28:03	19:34:53	139.1	
USGS_WA_NorthCentral_1560ii	00114	S	19:36:00	19:43:07	134.0	
USGS_WA_NorthCentral_1560ii	00113	N	19:44:31	19:51:14	142.0	
USGS_WA_NorthCentral_1560ii	00710	E	19:52:53	19:58:08	143.4	
USGS_WA_NorthCentral_1560ii	00711	SW	19:59:47	20:00:43	129.0	
USGS_WA_NorthCentral_1560ii	00712	E	20:02:00	20:03:16	147.1	
USGS_WA_NorthCentral_1560ii	00713	SW	20:05:39	20:07:58	135.1	
USGS_WA_NorthCentral_1560ii	00714	E	20:09:07	20:12:30	144.6	
USGS_WA_NorthCentral_1560ii	00715	SW	20:14:45	20:19:24	133.2	
USGS_WA_NorthCentral_1560ii	00716	E	20:20:37	20:24:54	146.3	
USGS_WA_NorthCentral_1560ii	00717	NE	20:25:42	20:25:47	155.9	
USGS_WA_NorthCentral_1560ii	00717	SW	20:26:56	20:32:31	131.6	
USGS_WA_NorthCentral_1560ii	00718	E	20:33:57	20:39:31	147.7	
USGS_WA_NorthCentral_1560ii	00719	SW	20:41:36	20:48:39	135.6	
USGS_WA_NorthCentral_1560ii	00720	E	20:49:55	20:57:35	149.6	
USGS_WA_NorthCentral_1560ii	00721	SW	20:59:28	21:08:04	133.8	
USGS_WA_NorthCentral_1560ii	00722	E	21:09:22	21:17:09	148.5	
USGS_WA_NorthCentral_1560ii	00723	SW	21:18:56	21:27:44	131.6	
USGS_WA_NorthCentral_1560ii	00724	E	21:29:02	21:37:00	146.1	
USGS_WA_NorthCentral_1560ii	00725	SW	21:38:26	21:47:21	130.8	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2224046_20210830_F1	Mission Notes
Mission Date	8/30/2021	
Aircraft	N604MD	
Pilot	Dan Braden	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	7:21:00 AM	
Arrival (Local Time)	2:25:00 PM	

Flightplan	Line	Heading	Start Time (UTC) Stop Time (UTC)		Speed (kt)	Notes
USGS_WA_NorthCentral_1560ii	00726	E	15:04:43	15:12:41	147.1	
USGS_WA_NorthCentral_1560ii	00727	SW	15:14:17	15:24:00	121.0	
USGS_WA_NorthCentral_1560ii	00728	E	15:25:29	15:33:22	149.9	
USGS_WA_NorthCentral_1560ii	00729	SW	15:34:55	15:44:48	119.7	
USGS_WA_NorthCentral_1560ii	00730	E	15:46:22	15:54:31	146.4	
USGS_WA_NorthCentral_1560ii	00731	SW	15:56:11	16:06:05	120.4	
USGS_WA_NorthCentral_1560ii	00150	N	16:08:25	16:11:56	142.3	
USGS_WA_NorthCentral_1560ii	00151	S	16:13:30	16:16:56	126.6	
USGS_WA_NorthCentral_1560ii	00152	N	16:19:25	16:20:59	145.0	
USGS_WA_NorthCentral_1560ii	00732	E	16:25:17	16:33:27	147.1	
USGS_WA_NorthCentral_1560ii	00733	SW	16:34:46	16:44:29	123.6	
USGS_WA_NorthCentral_1560ii	00734	E	16:46:17	16:54:33	145.7	
USGS_WA_NorthCentral_1560ii	00735	SW	16:56:15	17:06:02	123.5	
USGS_WA_NorthCentral_1560ii	00736	E	17:06:56	17:15:44	144.9	
USGS_WA_NorthCentral_1560ii	00737	SW	17:17:42	17:27:52	125.8	
USGS_WA_NorthCentral_1560ii	00738	E	17:29:09	17:37:56	146.2	
USGS_WA_NorthCentral_1560ii	00739	SW	17:39:38	17:49:40	128.3	
USGS_WA_NorthCentral_1560ii	00740	E	17:51:14	17:59:59	147.8	
USGS_WA_NorthCentral_1560ii	00741	SW	18:01:45	18:11:53	127.6	
USGS_WA_NorthCentral_1560ii	00742	E	18:13:42	18:22:32	147.3	
USGS_WA_NorthCentral_1560ii	00493	N	18:39:59	18:41:15	145.6	
USGS_WA_NorthCentral_1560ii	00492	S	18:42:59	18:44:55	120.3	
USGS_WA_NorthCentral_1560ii	00491	N	18:47:00	18:49:20	151.0	
USGS_WA_NorthCentral_1560ii	00490	S	18:51:09	18:55:17	116.2	
USGS_WA_NorthCentral_1560ii	00489	N	18:56:40	18:59:57	146.4	
USGS_WA_NorthCentral_1560ii	00488	S	19:01:43	19:06:32	126.3	
USGS_WA_NorthCentral_1560ii	00487	N	19:08:12	19:12:33	151.4	
USGS_WA_NorthCentral_1560ii	00486	S	19:14:21	19:20:01	133.4	
USGS_WA_NorthCentral_1560ii	00485	N	19:21:21	19:26:36	149.7	
USGS_WA_NorthCentral_1560ii	00484	S	19:28:21	19:35:17	129.3	
USGS_WA_NorthCentral_1560ii	00483	N	19:37:03	19:43:27	150.7	
USGS_WA_NorthCentral_1560ii	00482	S	19:45:03	19:53:00	129.2	
USGS_WA_NorthCentral_1560ii	00481	N	19:54:31	20:01:22	150.5	
USGS_WA_NorthCentral_1560ii	00480	S	20:03:04	20:11:42	133.9	
USGS_WA_NorthCentral_1560ii	00479	N	20:13:20	20:21:06	149.0	
USGS_WA_NorthCentral_1560ii	00478	S	20:22:33	20:31:42	130.2	
USGS_WA_NorthCentral_1560ii	00505	SW	20:33:55	20:42:46	134.4	
USGS_WA_NorthCentral_1560ii	01086	SW	20:55:31	21:03:09	136.2	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2224046_20210831_F1	Mission Notes
Mission Date	8/31/2021	
Aircraft	N604MD	
Pilot	Dan Braden	
Co-Pilot		
Operator	Noah Edelson	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	7:42:00 AM	
Arrival (Local Time)	1:51:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time	Stop Time		
USGS_WA_NorthCentral_1560ii	01085	NE	15:05:25	15:12:50	140.2	
USGS_WA_NorthCentral_1560ii	00658	NE	15:16:45	15:26:32	138.1	
USGS_WA_NorthCentral_1560ii	00506	E	15:30:11	15:34:48	148.2	
USGS_WA_NorthCentral_1560ii	00506	SW	15:39:48	15:49:14	126.4	
USGS_WA_NorthCentral_1560ii	00507	E	15:50:50	15:58:39	153.8	
USGS_WA_NorthCentral_1560ii	00521	SW	16:01:48	16:11:23	128.5	
USGS_WA_NorthCentral_1560ii	00522	E	16:12:53	16:21:13	149.1	
USGS_WA_NorthCentral_1560ii	00523	SW	16:22:57	16:33:10	122.4	
USGS_WA_NorthCentral_1560ii	00524	E	16:34:52	16:43:11	151.2	
USGS_WA_NorthCentral_1560ii	00537	SW	16:45:27	16:56:21	127.8	
USGS_WA_NorthCentral_1560ii	01024	SW	17:03:40	17:05:14	144.7	
USGS_WA_NorthCentral_1560ii	01025	NE	17:07:10	17:08:54	137.5	
USGS_WA_NorthCentral_1560ii	01026	SW	17:10:29	17:12:17	137.5	
USGS_WA_NorthCentral_1560ii	01027	NE	17:14:09	17:16:03	136.6	
USGS_WA_NorthCentral_1560ii	01028	SW	17:18:22	17:21:21	141.5	
USGS_WA_NorthCentral_1560ii	01029	NE	17:23:29	17:26:45	133.9	
USGS_WA_NorthCentral_1560ii	01030	SW	17:28:05	17:31:08	147.7	
USGS_WA_NorthCentral_1560ii	01031	NE	17:33:03	17:36:35	136.9	
USGS_WA_NorthCentral_1560ii	01032	SW	17:37:53	17:41:25	146.2	
USGS_WA_NorthCentral_1560ii	01033	NE	17:43:00	17:47:02	138.5	
USGS_WA_NorthCentral_1560ii	01034	SW	17:48:33	17:52:36	146.5	
USGS_WA_NorthCentral_1560ii	01035	NE	17:54:08	17:58:47	136.5	
USGS_WA_NorthCentral_1560ii	00668	NE	18:01:34	18:09:22	136.6	
USGS_WA_NorthCentral_1560ii	00667	SW	18:10:49	18:18:27	143.2	
USGS_WA_NorthCentral_1560ii	00666	NE	18:20:25	18:28:33	144.3	
USGS_WA_NorthCentral_1560ii	00665	SW	18:30:11	18:38:44	145.4	
USGS_WA_NorthCentral_1560ii	00664	NE	18:40:20	18:49:08	145.4	
USGS_WA_NorthCentral_1560ii	00663	SW	18:49:57	18:58:59	144.3	
USGS_WA_NorthCentral_1560ii	00662	NE	19:00:35	19:09:48	143.6	
USGS_WA_NorthCentral_1560ii	00661	SW	19:10:40	19:20:08	140.7	
USGS_WA_NorthCentral_1560ii	00660	NE	19:21:23	19:30:36	145.5	
USGS_WA_NorthCentral_1560ii	00659	SW	19:31:49	19:41:41	136.9	
USGS_WA_NorthCentral_1560ii	01084	SW	19:45:40	19:53:02	141.1	
USGS_WA_NorthCentral_1560ii	01083	NE	19:54:25	20:01:37	142.8	
USGS_WA_NorthCentral_1560ii	01082	SW	20:03:12	20:10:24	140.7	
USGS_WA_NorthCentral_1560ii	01081	NE	20:11:53	20:18:48	147.2	
USGS_WA_NorthCentral_1560ii	01080	SW	20:20:20	20:27:38	140.9	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii	
Mission Name	S2224046_20210906_F1	Mission Notes
Mission Date	9/6/2021	
Aircraft	N604MD	
Pilot	Mike Schrum	
Co-Pilot		
Operator	Joe Szkutnik	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	12:08:00 PM	
Arrival (Local Time)	5:13:00 PM	

Flightplan	Line	Heading	Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560ii	00536	E	21:00:02	21:09:45	142.8	
USGS_WA_NorthCentral_1560ii	00535	SW	21:11:41	21:21:36	139.2	
USGS_WA_NorthCentral_1560ii	00534	E	21:24:04	21:33:42	142.3	
USGS_WA_NorthCentral_1560ii	00533	SW	21:35:59	21:45:45	139.3	
USGS_WA_NorthCentral_1560ii	00532	E	21:47:55	21:57:09	141.5	
USGS_WA_NorthCentral_1560ii	00531	SW	21:59:30	22:08:38	142.4	
USGS_WA_NorthCentral_1560ii	00530	E	22:10:41	22:19:49	141.8	
USGS_WA_NorthCentral_1560ii	00529	SW	22:21:55	22:31:17	137.4	
USGS_WA_NorthCentral_1560ii	00528	E	22:33:28	22:42:26	142.7	
USGS_WA_NorthCentral_1560ii	00527	SW	22:44:59	22:54:08	139.2	
USGS_WA_NorthCentral_1560ii	00526	E	22:56:12	23:04:54	146.0	
USGS_WA_NorthCentral_1560ii	00525	SW	23:07:04	23:16:05	140.0	
USGS_WA_NorthCentral_1560ii	00520	E	23:22:29	23:31:07	142.0	
USGS_WA_NorthCentral_1560ii	00519	SW	23:33:03	23:42:02	135.7	

Project	946621-R037889.00	North Central Washington 3DEP
Flightplan	USGS_WA_NorthCentral_1560ii_Fix	
Mission Name	S2224046_20210907_F1	Mission Notes
Mission Date	9/7/2021	NA
Aircraft	N604MD	
Pilot	Mike Schrum	
Co-Pilot		
Operator	Joe Szkutnik	
Co-Operator		
Vendor	NVS Geospatial	
Base Airport	KEAT	
Departure (Local Time)	10:12:00 AM	
Arrival (Local Time)	4:18:00 PM	

Flightplan	Line	Heading	Start Time (UTC) Stop Time (UTC)		Speed (kt)	Notes
			Start Time (UTC)	Stop Time (UTC)		
USGS_WA_NorthCentral_1560ii_Fix	00508	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00509	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00510	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00511	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00512	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00513	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00514	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00515	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00516	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00517	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	00518	E	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01067	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01068	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01069	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01070	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01071	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01072	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01073	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01074	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01075	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01076	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01077	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01078	NE	12:00:00	12:30:00		
USGS_WA_NorthCentral_1560ii_Fix	01079	NE	12:00:00	12:30:00		