



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

September 19, 2018

Interview Summaries

METEOROLOGY

WPR18FA073

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A. ACCIDENT

Location: Elko, Nevada
Date: January 11, 2018
Time: 1802 Pacific standard time (PST)
0202 Coordinated Universal Time (UTC) on January 12
Airplane: Piper PA-23-250, Registration: N54857

B. METEOROLOGY GROUP

Paul Suffern
Group Chairman
Operational Factors Division (AS-30)
National Transportation Safety Board

Scott Birch
National Weather Service
Regional Aviation Meteorologist
NWS Western Region Headquarters

C. FACTUAL INFORMATION

1.0 Interview Summary

Interviewee: Robert C Woods

Date / Time: February 9, 2018, 1530 EST

Location: Phone call

Present: Paul Suffern – National Transportation Safety Board (NTSB); Scott Birch – National Weather Service (NWS)

Investigator: Paul Suffern

During the interview, Mr. Woods stated the following:

His name is Robert C Woods and he has been a Center Weather Service Unit (CWSU) forecaster at Salt Lake City Air Route Traffic Control Center (ZLC ARTCC) for 22.5 years. He has a degree in meteorology from Metropolitan State University in Denver, Colorado. He worked a regular schedule leading up to the accident day and worked between 1330 and 2130 MST on the accident day. Nothing unusual occurred during the 72 hours before the accident time and no one was training with him at the accident time or on the accident day. The accident day was a routine day with no distractions. He holds collateral duties of time and attendance and scheduling for the CWSU at ZLC.

On a scale of 1 to 5 (with 5 being the most complex), he rated the weather conditions as a 3 on the accident day. The type of weather conditions that day across ZLC airspace were common, “they see it a lot,” and the aviation weather center (AWC) had good coverage of the area with their products. If AWC did not have as good a coverage of their products, then it would have been more of a workload issue. On the accident day the AIRMETs were quite generous and described the weather in the area quite well. Air traffic control (ATC) was in the know with the information. He doesn’t enforce whether ATC reads the weather forecast or products or not, but he (CWSU ZLC) and AWC had the weather forecasts and products out there, and it is up to the ATC managers to make sure the ATC professionals read (or are knowledgeable) of the weather forecast and products. He had a chance to review the weather package he generated on the evening of the accident before this interview.

Mr. Woods described the weather conditions around the accident time as all the active weather was up in the northern part of the ZLC airspace across Montana and Wyoming with the majority of the pilot reports (PIREPs) up north. There was a nice strong jet out of the northwest. He doesn’t recall what was happening at the surface across the northern part of the airspace. He recalled no precipitation across the southern part of the airspace. The weather conditions on the accident day were quite common for that time of year and every season has its weather challenges out in the West.

The first time he became aware of the accident was when the front line manager (FLM) told him that they (ZLC ATC) had lost contact with the accident plane. Mr. Woods did not remember the reason they lost contact with the accident plane, but that the FLM stated they had lost contact and could have a potential aircraft accident. The FLM stated the accident airplane could be down on a road or a smaller airport, but requested a weather package be started in case a weather related accident. The FLM didn’t ask anything else other than that. Mr. Woods did not provide any tactical weather assistance with the accident plane. In general, ZLC ATC requests tactical weather assistance about once a month or once every 2 months.

Mr. Woods has had several individual interactions with ZLC ATC about the new recorded weather briefings provided directly to individual ATC personnel and all the interactions have given positive reviews to the new recorded weather briefings at ZLC.

Mr. Woods stated that he maintains situational awareness on shift by constantly monitoring METARs, radar, satellite, upper air jet stream, and AWC products. They have access to the terminal doppler weather radar (TDWR) near Salt Lake City, Utah, and can have “Harris” data too. Mr. Woods stated that he monitors and forecast areas of mountain wave in ZLC airspace by first going to AWC products and looking at what they are issuing and using that as good guidance. He uses the AWC products then uses his knowledge of the airspace and local expertise to add information/products where he can. He uses satellite imagery to determine or “clue himself in” on where mountain waves are occurring along with PIREPs. He uses PIREPs constantly to determine areas for mountain waves. Mr. Woods stated that he determines areas of icing in ZLC airspace by reviewing AWC AIRMETs then looking at the freezing level and temperature profile to see areas of icing. He looks at icing PIREPs as that is one of the most critical things to determine where icing is.

Mr. Woods stated that his criteria for issuing a meteorological impact statement (MIS) is that the weather event has to be long duration and it is left up to the meteorologist on duty to determine that, but has to be longer than 2 hours, and things such as severe icing/mountain wave, prolonged fog, strong low-level wind shear (LLWS) could all trigger MIS. MIS are strictly for the FAA controllers in house, it is meant for them and to educate them and made for their awareness. Center Weather Advisories (CWA) only go out 2 hours and he would issue them for a severe event that he has confidence in that will continue for that 2 hour period. A weather event such as a severe mountain wave event, especially if he had a PIREP of those conditions, he would issue a CWA for, but he would have to be very confident to issue a CWA without PIREPs verifying those weather conditions were happening. His criteria for issuing a CWA for icing is moderate to severe icing conditions, a lot of moderate conditions or isolated severe. If there was a SIGMET out for icing conditions he would not try and overlap the SIGMET unless he could provide additional information and what would be useful for ATC to know about, including if the weather conditions were widespread.

Mr. Woods stated that weather social media posts by CWSU ZLC are handled differently by each CWSU forecaster and his responsibility is to the ATC at ZLC and making sure that ATC is aware of the weather conditions and he is contracted to them and for their support. He doesn't know anyone in the building that is monitoring Twitter or Facebook during their ATC shift and he gives weather conditions to ATC face to face, at stand-up times, or walking to the ATC areas at ZLC. He doesn't feel that social media posts with weather conditions in ZLC airspace are useful to ATC since they are on sector and since ZLC ATC understand their work for that day. Mr. Woods stated that he sees the CWSU ZLC weather forecast audience as the ATC personnel in his airspace including ZLC but also ATC towers and those ATC personnel are who he is tasked with keeping knowledgeable of the weather conditions.

Mr. Woods stated that during his shift on the day of the accident he started the preliminary weather package, but didn't find out the plane went down officially until several days later and all he knew is that the plane was missing. Leading up to the accident time he had no reports of LLWS or mountain waves in that area and doesn't recall anything out of the ordinary. He remembered there was a PIREP from near Baker, Oregon, that had a severe turbulence report with +/- 1000 ft/min in mountain wave, and therefore issued a CWA based on that PIREP near Baker. While Mr. Woods did not start the CWA due to the possibility of the downed plane (he started the CWA due to the PIREP near Baker), he did extend the CWA boundary further south to cover the area of the possible downed plane. The METARs across northeastern Nevada were "pretty" benign around the accident time. ZLC airspace covers most of Montana, Idaho, eastern Oregon, most of Nevada and Utah, western Wyoming and North Dakota, and northwestern South Dakota.

Interview concluded.

2.0 Interview Summary

Interviewee: Sarah Allen Rogowski

Date / Time: February 22, 2018, 1400 EST

Location: Phone call

Present: Paul Suffern – National Transportation Safety Board (NTSB); Scott Birch – National Weather Service (NWS)

Investigator: Paul Suffern

During the interview, Ms. Rogowski stated the following:

Her name is Sarah Allen Rogowski and she has been a CWSU meteorologist at ZLC ARTCC for 9 years. She has a Bachelor of Science in atmospheric science from the University of Louisiana Monroe. She worked a regular schedule leading up to the accident day and worked between 0620 and 1430 MST on the accident day. During the night (before her shift), the computers and equipment in the CWSU had powered off (due to a power outage). Another forecaster working a supernumerary shift started powering up the computers around 0600 MST. During the first part of her shift she had to restart all the computers and she was able to start preparing for stand up by 0805 MST. She gave a tour that morning along with having satellite training on Advanced Weather Interactive Processing System (AWIPS) for 45 minutes on or around 1600 UTC. She holds collateral duties as the training and outreach focal point along with being the focal point for social media and the Integrated Terminal Weather System (ITWS) system. Very little work involved with ITWS lately.

On a scale of 1 to 5 (with 5 being the most complex), she rated the weather conditions as a 2 to 3 on the accident day. The jet stream was in place over the airspace (ZLC) and precipitation with a fairly active pattern. It was a semi normal day for winter time across ZLC, but not a super strong frontal system, and nothing noteworthy per the shift log during her shift. Had the unusual distraction during the first part of her shift with the power outage the night before and having to restart the CWSU computers and systems at the start of her shift. It was extra spin up during the first part of her shift. She has had a chance to review the weather conditions on the accident day before this interview.

Ms. Rogowski described the weather conditions on the accident day as having a westerly wind aloft across the northern and central part of the airspace with areas of snow and low clouds mainly across Wyoming and Montana. She was looking for areas of mountain waves. Some turbulence to the south due to the jet and due to the westerly flow, some mountain wave activity. She expected those weather conditions to continue with icing, low clouds, IFR, more in the central and northern part of the airspace through midday. Those weather conditions are not unusual at all for that time of year. Seems like this pattern has been more active lately over ZLC airspace as the winter overall has been relatively warm and dry. With this pattern she expected widespread mountain obscuration and IFR conditions with increased icing and snow. The winter has seen more of a rain and snow mix across the airspace than usual with mountain waves being a little more prevalent in the cold season as well. Depends on the day and situation as for how much weather assistance ATC at ZLC

asks for, and she has gotten fewer questions overall since the new video weather briefings have come out. Most of the questions from ATC come when a cold front impacts Salt Lake City area and around the holidays. A lot of ATC like the new video weather briefings, especially getting the weather information first hand rather than having to go through the ATC supervisor (SUP) to get weather information before a shift. She tries to sit with ATC every quarter and see how they are liking the weather information provided in the weather videos and so far has received no feedback from ATC on things to improve or change about the weather video briefings. When she posts a new weather video briefing she lets the ZLC Operations Manager in Charge (OMIC) know the new briefing is up to make sure it makes it over to the FAA computer system for viewing and it is logged.

She stays updated on the latest weather changes and conditions through the CWSU AWIPS display with satellite and weather model data and then has several weather internet sites up for monitoring including the AWC webpage; all of this is part of situation display. She keeps track of PIREPs, satellite, radar, WARP, and have IR satellite with PIREPs overlaid. At ZLC flight data enters the PIREPs so when she sees SUPs or Traffic Management Unit (TMU) going to flight data frequently with PIREP entry sheets she knows things are getting the busiest. She has WARP displayed with PIREPs on it for situational awareness. Most of the time when there is a severe PIREP, flight data will let the CWSU know about it, even before entering into the FAA system for NAS wide distribution. The situational display she has up also has web cameras up from around ZLC, with the Salt Lake City cameras usually looking north of the SLC airport to see things nearby.

She detects and forecasts areas of mountain waves at ZLC through monitoring jet stream direction and surface wind gusts, including looking for a cross mountain jet and general west to east flow, but in some cases northwest to southeast flow. The stronger the surface wind gusts the more increased mountain wave activity there will be. She uses the AWC webpage to monitor GTG and looks for a washboard pattern on the weather satellite data. She detects and forecast areas of icing at ZLC through reviewing satellite and weather radar information, especially with mixed precipitation. In freezing fog conditions, she looks for increased low-level icing conditions, and she uses web cameras to see where clouds are to see where it is overcast and to look for icing PIREPs in those locations. Looks at areas that have AIRMETs for turbulence and icing too.

They don't have specific criteria for when to issue CWA for mountain waves in the airspace, but they do have criteria to determine if mountain wave conditions are moderate or severe with the break point between moderate and severe being +/- 500 feet per minute and +/- 20 knot speed changes. For issuing a CWA depends on what type of aircraft is giving the PIREP and where it was and if pilot specifically mentions "severe mountain wave" or not. Will mention mountain waves in a MIS if the potential conditions are a lower threshold and will coordinate with AWC to see if conditions are isolated or for shorter and longer duration events.

There is no assigned criteria for issuing a CWA for icing conditions at ZLC but it is a general practice to issue if they have a severe icing report. If there are a lot of moderates then a moderate to severe icing report then may issue CWA, but if just getting a lot of moderate reports and an AIRMET is out will lean against issuing CWA. If they get a moderate to severe report and no AIRMET is out she will lean towards issuing a CWA.

There is no criteria for issuing a MIS and it is very much forecaster discretion. ZLC has been much more proactive to issue MIS for mountain wave conditions in the last few years. If there is widespread snow across an area they will issue MIS for those conditions and they've been more proactive over past few years. The wording, "PILOTS, ESPECIALLY GENERAL AVIATION AND THOSE UNFAMILIAR WITH LOCAL TERRAIN, SHOULD GET A DETAILED BRIEFING", was used in the MIS that she issued on the accident day. This phraseology was brought into the MIS at ZLC this season and she could not remember which forecaster first used the phraseology, but want to use it since the weather pattern this winter has been more longer benign stretches in between active days. She will listen to controllers and hear them say, "we need to watch out for the little guys," because they might not realize it is still winter across the airspace. They could have more general aviation folks get in trouble during winter. The phraseology is used fairly often at ZLC, as forecasters can use templates when issue a MIS and there are 2 to 3 folks at ZLC CWSU that use the phraseology. About half the time when a MIS is issued that type of phraseology is used.

For social media posts from ZLC CWSU they have Facebook business and Tweetdeck. They have weather pages and accounts they follow and will retweet a lot of the information so that the information and local expertise is sent to a larger audience. They will put aviation spin on the posts to make relevant for situational awareness. They issue a weather story through Facebook and Twitter as well. It is forecaster discretion as to when to issue social media post at ZLC CWSU.

She sees the audience of ZLC CWSU weather products as first ATC and try to gear the information towards them and pilots both, because pilots can see the information too. She tries to reach out to pilots, because if pilots know the conditions they won't go up in them and then get into a weather situation where they need lots of help from ATC too. The social media posts are for aviation and general public as she would rather get the information out there. General aviation is part of audience for MIS and want them to watch out for weather conditions as well.

Interview concluded.

Submitted by:

Paul Suffern
Senior Meteorologist

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