

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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AIRPORTS

Specialist's Factual Report

November 6, 2023

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A ACCIDENT

Location: Heyburn, Idaho
Date: April 13, 2022
Time: 0832 mountain daylight time
1432 Coordinated Universal Time (UTC)
Airplane: Cessna 208B [N928JP]

B AIRPORTS SPECIALIST

Specialist Jason T. Fedok
National Transportation Safety Board
Washington, DC

C SUMMARY

On April 13, 2022, about 0832 mountain daylight time, a Cessna 208B Grand Caravan, N928JP, was substantially damaged when it was involved in an accident near Heyburn, Idaho. The pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulation Part 135 cargo flight. According to the operator, the pilot was transporting cargo on an instrument flight rules flight from the Salt Lake City International Airport (SLC), Salt Lake City, Utah, to the Burley Municipal Airport (BYI), Burley, Idaho. Adverse weather present on the day of the accident required the pilot to perform the RNAV (GPS) runway 20 approach. On her first approach the pilot went missed. She did not tell ATC why she went missed, nor did ATC ask her. On her second attempt of the same approach, the pilot struck the agglomerate stack mounted atop Oregon Potato Company's Gem State (Gem State) processing plant.

The Gem State processing plant had numerous vent stacks located on a least two different buildings. A group of six stacks, mounted close to each other, and the agglomerate stack were closely aligned with the extended centerline of runway 02/20.¹ The remaining stacks were installed on adjacent roofs and were not aligned with the extended centerline of the runway. The processing plant was located less than a half nautical mile from the approach end of runway 20 (see figures 1-5).

¹ These seven stacks were measured postaccident to be 100 feet above ground level (AGL).



Figure 1. Google Earth image of BYI. The Gem State processing plant can be seen across the Snake River.



Figure 2. Zoomed in Google Earth image showing the extended centerline of the runway 20 approach with the Gem State processing plant outlined in white.

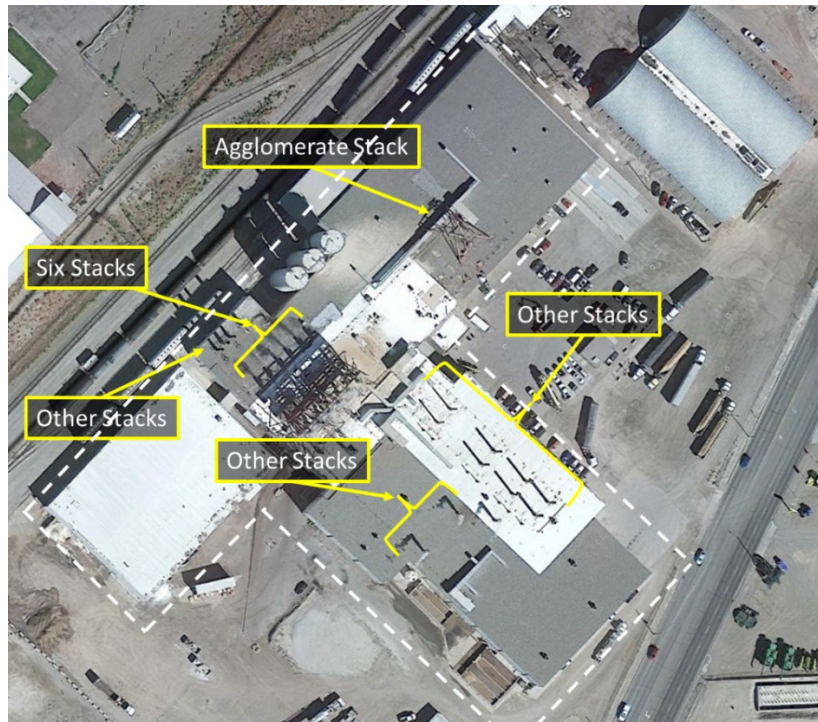


Figure 3. Google Earth image of the Gem State processing plant, showing the multiple vent stacks located on the roofs.



Figure 4. Zoomed in Google Earth image of the Gem State processing plant showing the extended centerline of the runway 20 approach. The group of six vent stacks is circled in red while the agglomerate stack is circled in yellow. All seven were measured to be 100 feet AGL.

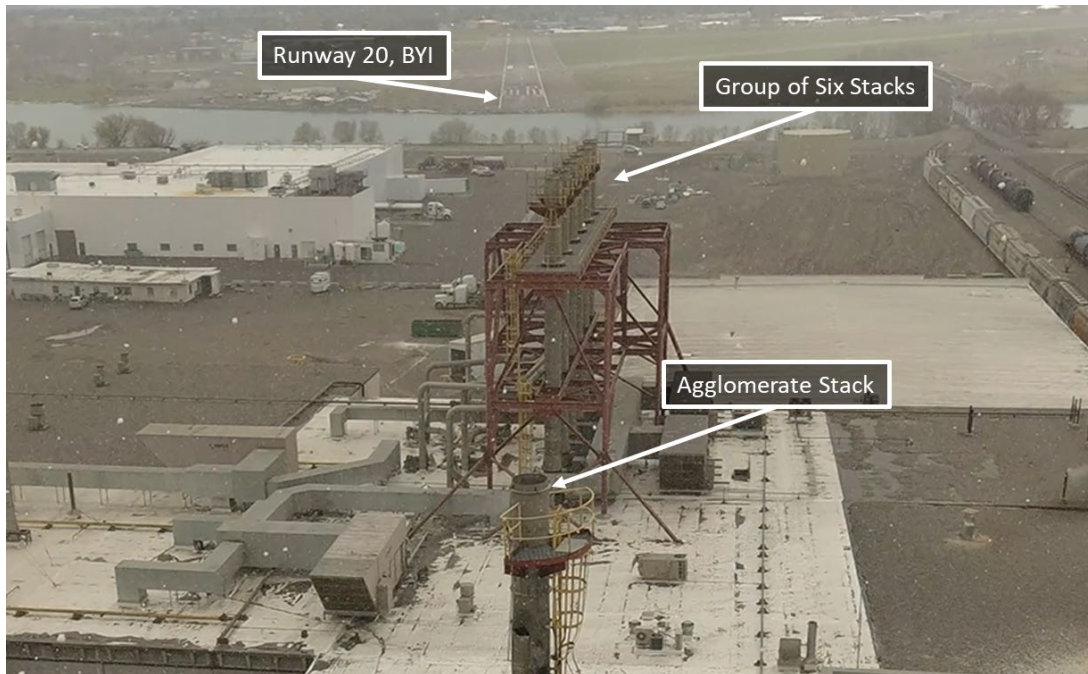


Figure 5. Aerial view of the agglomerate stack and the group of six stacks. Runway 20 is in the background.

D DETAILS OF THE INVESTIGATION

The airports specialist gathered information pertaining to the construction and existence of the stacks.

1.0 Airport Information

Burley Municipal Airport (BYI) was located approximately one mile northeast of Burley, Idaho, and was a publicly owned entity, operated by the City of Burley. The airport property encompassed 220 acres at an elevation of 4153 feet mean sea level. The non-towered airport reported a total of 27,750 operations (of which zero were air carrier and 350 were air taxi) for the 12 months ending March 31, 2020. While the airport was not certificated by the FAA under 14 CFR Part 139, BYI had received Airport Improvement Program (AIP) funding in the form of grant assurances from the Federal Aviation Administration.²

The airport had two runways, runway 02/20 and runway 06/24. Runway 02/20 was 4092 feet in length by 80 feet wide and was paved with asphalt with medium-intensity runway edge lighting installed. Runway 20, on which the accident airplane was trying to land, had non-precision markings and installed runway end identifier

² When airport owners or sponsors, planning agencies, or other organizations accept funds from FAA-administered airport financial assistance programs, they must agree to certain obligations (or assurances). These obligations require the recipients to maintain and operate their facilities safely and efficiently and in accordance with specified conditions.

lights. The FAA airport master record form 5010 noted that runway 20 had a 305 foot displaced threshold and was a 14 CFR Part 77 category C runway. The airport master record noted an obstacle (stack) 60 feet above runway elevation, 2050 feet from the runway end, and 100 feet left of centerline with a 30:1 obstacle clearance slope (39:1 to the displaced threshold). Runway 02 had basic markings and a 4-box Vertical Slope Approach Indicator (VASI)³ on the left side of the runway (with a 3.50 degrees glide path) and a 626 foot displaced threshold.

Runway 06/24 was 4072 feet in length by 75 feet wide and was paved with asphalt. It had basic runway markings with medium-intensity runway edge lighting installed. The FAA airport master record form 5010 noted that runway 06 had a 796 foot displaced threshold and runway 24 had a 115 foot displaced threshold. Runway 06 had an obstacle (railroad) 27 feet above runway elevation, 200 feet from the runway end. Runway 24 had an obstacle (lighted pole) 32 feet above runway elevation, 1012 feet from the runway end, 25:1 obstacle clearance slope. Runway 24 had a 2-box VASI on the right side of the runway (with a 3.00 degrees glide path) and a 626 foot displaced threshold.

2.0 Gem State Potato Processing Plant

The Gem State processing plant was located directly to the northeast of BYI, across the Snake River. The company's website stated that "Gem State Processing is busy around the clock, all year long, cleaning, slicing, dicing, shredding and drying potatoes... potatoes are dried using six drum dryers..."

The NTSB requested the FAA provide records of their knowledge of, and involvement with, the processing plant's vent stacks. Emails provided by the FAA indicated that on March 11, 2016, the BYI airport manager informed the FAA's Helena Airport District Office (ADO) that there were new vent stacks being constructed at Gem State and that they appeared about the same height as the existing stacks already in place. The airport manager believed that six stacks were being added and that the plant wanted to make all the stacks 100 feet high. He asked whether prior approval had been obtained to limit the height of the new stacks to the same height as the existing stacks. The ADO replied that there was no information or approval regarding the construction of new stacks and requested information about the location of the new stacks relative to the runway. The airport manager replied that the stacks were to the left of centerline on the approach to runway 20. The ADO replied that a 7460 form should have been filed prior to construction and requested that a NOTAM be filed with the approximate height, distance from runway 20 end, distance offset from centerline, and that they would likely be unlighted. The ADO followed up with an additional email that the FAA had contacted Gem State and was told that the stacks were 60 feet high and was advised that four additional stacks would be put up

³ The VASI system is a system of lights on the side of an airport runway threshold that provides visual descent guidance information during the approach to a runway.

the following week, further north than the stacks that had been constructed that day. The ADO explained to Gem State that the stacks did not appear in the FAA database and "therefore we are unable to account for these in our publications and our evaluations of instrument approach and departure procedures." Gem State stated that they would file a 7460 form on the new stacks, the six existing stacks, and the three existing silos west of the existing stacks. The ADO added that "Typically, when incompatible land uses are developed that have a negative impact to the airport, we advise the Airport Sponsor there will be no more federal funding until the problem is resolved. As you know, we've already made that decision regarding the Burley Airport. I'll see if there is any other recourse we can take, but I'm not too optimistic."

3.0 FAA Aeronautical Study No. 2016-ANM-878-OE

Gem State filed the 7460 form and the FAA's Obstruction Evaluation Group in the Southwest Regional Office conducted aeronautical study 2016-ANM-878-OE, under the provisions of 49 U.S.C., Section 44718 and Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Agglomerate Vent Stack
Location: Heyburn, ID
Latitude: 42-33-05.92N NAD 83
Longitude: 113-45-34.15W
Heights: 4156 feet site elevation (SE)
70 feet above ground level (AGL)
4226 feet above mean sea level (AMSL)

In a May 18, 2016 "Notice of Presumed Hazard" letter to Gem State, the FAA found that the plant's agglomerate vent stack "exceeds obstruction standards and/or would have an adverse physical or electromagnetic interference effect upon navigable airspace or air navigation facilities. Pending resolution of the issues described below, the structure is presumed to be a hazard to air navigation." (See attachment 1) It further stated that "if the structure were reduced in height so as not to exceed 62 feet above ground level (4218 feet above mean sea level), it would not exceed obstruction standards and a favorable determination could subsequently be issued." The determination added that "any resolution of the issues(s) described above must be communicated with the FAA so that a favorable determination can subsequently be issued."

The project evaluated the heights of 11 vent stacks (dehydrators 1, 2, and drum dryer) and three silos and found that they all exceeded Section 77.17(a)(3) which covered "structure that causes less than the required obstacle clearance within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area resulting in increases to an IFR terminal

minimum altitude. It found that the structures “will penetrate the 40:1 departure surface in the RWY 02 initial climb areas (ICA) by 21-41 feet.”

Further they exceeded Section 77.19(d) which covered “the approach surface area designated to protect aircraft during the final approach phase of flight at an airport” by 16-37 feet. The structures identified by the FAA Technical Operations Division, Operations Engineering Support Center, penetrated the Obstruction Clearance Surface (OCS) for the RWY 20 VASI by 8 feet. It stated that “penetration of the RWY 20 VASI OCS is hazardous to aviation and the RWY 20 VASI system has been placed out-of-service.”

On September 16, 2016, the FAA issued a termination letter for study 2016-ANM-878-OE citing that more than 60 days has elapsed without attempted resolution and that the study was canceled and no longer valid.

A second “Notice of Presumed Hazard” letter for aeronautical study 2016-ANM-878-OE, was sent to Gem State on September 28, 2016. This letter evaluated all the structures from the May 2016 letter and an additional four stacks. The four additional stacks exceeded Section 77.17(a)(3) by 21-32 feet. The four additional stacks exceeded Section 77.19(d) by 28-29 feet. The four additional stacks exceeded OCS for the BYI RWY 20 VASI by 7-17 feet. The findings remained the same with the exception that the FAA modified language to indicate that “if the structure were reduced in height so as not to exceed 52 feet above ground level (4208 feet above mean sea level), it would not exceed obstruction standards and a favorable determination could subsequently be issued (emph. added).”

On March 29, 2017, the FAA issued a termination letter for 2016-ANM-878-OE stating that the study was terminated because it had been replaced by a more recent aeronautical study.

4.0 FAA Aeronautical Study No. 2016-ANM-1617-OE

On June 3, 2016, Gem State submitted a proposal to the FAA for evaluation of a project to increase the height of seven existing stacks in order to meet the Environmental Protection Agency’s PM2.5 Emissions Standard.⁴ Installation of the new stacks was proposed to take place during September 2016. In response, the FAA’s Obstruction Evaluation Group in the Southwest Regional Office conducted a second aeronautical study of Gem State’s stacks (2016-ANM-1617-OE), under the provisions of 49 U.S.C., Section 44718 and Title 14 of the Code of Federal Regulations, part 77, concerning:

⁴ Gem State also provided the FAA with an “email of support for our stack extension project that was sent to you 1/8/15” from the City of Burley.”

Structure: Agglomerate Vent Stack
Location: Heyburn, ID
Latitude: 42-33-05.92N NAD 83
Longitude: 113-45-34.15W
Heights: 4156 feet site elevation (SE)
100 feet above ground level (AGL)⁵
4256 feet above mean sea level (AMSL)

The structures evaluated were six drum dryer vent stacks and one agglomerate vent stack. (See attachment 2) On February 2, 2017, the FAA sent Gem State a "Determination Of No Hazard To Air Navigation" letter stating:

"The structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 L Change 1, Obstruction Marking and Lighting, paint/red lights - Chapters 3 (Marked), 4, 5 (Red), & 12. Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number."

The letter went on to state that all seven stacks exceeded Section 77.17(a)(3) the maximum height by 57-64 feet. It stated that "these structures will penetrate the 40:1 departure surface in the RWY 02 initial climb areas (ICA)." It also stated that all seven stacks exceeded Section 77.19(d) which covered "the approach surface area designated to protect aircraft during the final approach phase of flight at an airport" by 53-61 feet. It stated that "these structures would exceed BYI RWY 20 approach surface area." The FAA found that the penetration of the 20:1 obstruction clearance slope to the only straight in approach procedure would result in night straight in and circling approaches not being authorized, if not equipped with obstruction lighting. It would also cause steeper approaches for day visual air traffic. Finally, it was also found that the RWY 20 VASI Obstruction Clearance Surface (OCS) was adversely impacted. These stacks penetrated the BYI RWY 20 VASI OCS by 51 feet.

⁵ The study stated that "the project was originally submitted at 120 AGL and has been revised to the lower 100 AGL heights."

The FAA stated in Section 5 of the determination that “the proposed structures would have a substantial adverse effect on the safe and efficient use of the navigable airspace by aircraft at the current location.” The study stated that the Helena Airports District Office, was “conducting a site selection study for a new airport location due to the existing BYL airport design standards deficiencies, existing penetrations of departure surfaces, and incompatible land uses within the runway protection zones which adversely impact the current airport. Increases in structure heights at the Gem State Processing facility will further adversely impact the current airport.” It further noted that “the FAA acknowledges that these structures will be constructed to meet EPA standards and that the city and airport management have formally, via the submitted 7480-1s, announced their support to keep the Gem State Processing facility as a viable employer. Thus, the FAA has initiated actions to make the aeronautical operations at BYL safe until the current airport is abandoned and the new airport is constructed.”⁶ However, the FAA also stated that “the airport relocation planning may or may not be successful in moving the airport.”

Finally, an electronic note to the file of this study indicated that Gem State reported on August 17, 2017, that “stainless steel stack with red painted maintenance platform, safety yellow painted access ladder and red oxidized painted support structures.” Gem State also reported on September 28, 2017, that “lights will be installed by 10/20/17.”

5.0 NTSB Questions To FAA

To provide clarity on the FAA’s determination, the NTSB submitted questions to the FAA to provide a detailed explanation as to how the determination of “No Hazard To Air Navigation” was reached despite the deficiencies and penetrations raised in the determination letter. The FAA responded on July 10, 2023, that the initial aeronautical studies contained in 2016-ANM-878-OE were terminated prior to the FAA deciding whether the aeronautical effects would be significant enough to result in a determination of hazard under 14 CFR Part 77. The FAA explained that the “Notice of Presumed Hazard” issued on May 18, 2016, was a preliminary response to the Gem State’s initial proposal and that it identified concerns requiring further study or modifications to arrive at a no hazard determination. The sponsor then had an opportunity to modify their proposal, request further study, or terminate the study.

In this case, Gem State modified their proposal which resulted in FAA determination 2016-ANM-1617-OE. While the FAA determined the new structures would be obstructions, it was explained that they would not have significant adverse

⁶ As a short-term safety measure, the City of Burley submitted two FAA 7480-1, *Notice of Landing Area Proposal*, forms declaring their intention to implement revised declared distances for both runways, which would reduce available length of both runways. The FAA initiated aeronautical studies 2017-ANM-232-NRA for RWY 02/20 and 2017-ANM-233-NRA for RWY 06/24 as a result.

effect on safe and efficient use of navigable airspace based on the following mitigations:

1. the proposed height (100 feet AGL) and location of the stacks (height modified from original proposal),
2. removal of the RWY 20 VASI,
3. marking and lighting of the stacks,
4. new take-off minimums and departure notes for the affected runway,
5. existing altitude restrictions for IFR arrivals, and
6. information published in the Chart Supplement on obstructions and airport conditions.

Additionally, the instrument approach procedures (IAPs) for this airport were reviewed and it was determined the procedures were adequate and appropriate to ensure obstacle and terrain clearance for each respective IAP. Finally, it was noted that the City of Burley had submitted *Notice of Landing Area Proposals* forms to reduce declared distances for runway 02/20. Because of these issues and other airport limitations (e.g. the inability to expand), the City of Burley was continuing to work with the Helena Airports District Office on site selection for a new airport location, which was expected to be a multi-year process.

Finally, the NTSB asked for clarification whether the stacks in question were required to be both marked and lighted in accordance with FAA Advisory Circular 70/7460-1. The FAA confirmed that "as a condition of the No Hazard Determination, dated February 2, 2017, the stacks were required to be painted with white and aviation orange paint, and lit with red obstruction lights, per FAA Advisory Circular 70/7460-1." The NTSB noted during the investigation that neither the agglomerate stack (that the airplane struck) nor the six drum dryer stacks were painted with white and orange aviation paint. A June 3, 2016 email from Gem State to the FAA indicated that "we currently have red warning lights on silos #1 & #3 (outside ones) and plan on adding red warning lights to our other stacks." A photo taken on the day of the accident revealed that five of the six aircraft warning lights on the group of six drum dryer stacks were illuminated, as shown in figure 6.



Figure 6. The group of six vent stacks with their aircraft warning lights. Five of the six lights were noted to be illuminated postaccident. The non-illuminated light is circled.

The agglomerate stack was also equipped with an aircraft warning light as shown in figure 7; however, the light was reported stolen to the Heyburn Police Department after the stack was removed from the rooftop and placed on the ground. It was not available for subsequent NTSB examination.



Figure 7. Postaccident photo of the agglomerate stack that the airplane struck.

Submitted by:

Jason T. Fedok
Senior Survival Factors Investigator

ATTACHMENTS

Attachment 1 - FAA Aeronautical Study No. 2016-ANM-878-OE
Attachment 2 - FAA Aeronautical Study No. 2016-ANM-1617-OE