

Investigation Report

Worker fatally injured after fall from barn roof trusses

October 12, 2017

The contents of this report

This document reports Occupational Health and Safety's investigation of a fatal accident when a foreman fell from the rafters of a dairy barn that was under construction in October 2017. It begins with a short summary of what happened. The rest of the report covers this same information in greater detail.

Incident summary

A construction foreman (foreman) was working on an elevated work platform installing fascia on the gable end of a dairy barn under construction. The foreman stepped from the elevated work platform onto the rafters in the barn roof trusses and fell to the barn floor. The foreman sustained severe injuries and was pronounced deceased at the incident site.

Background information

Kozak Holsteins Ltd. (Kozak) was a family owned dairy farm located at 22172 Range Road 492, New Sarepta, Alberta. Kozak incorporated as numbered company (2039697 Alberta Ltd.) on April 26, 2017, and changed the company name to Kozak Holsteins Ltd. on July 5, 2017. Kozak met the definition of farming under the Alberta Occupational Health and Safety Farming and Ranching Exemption Regulation. Kozak contracted Vernon Siemens Construction 2009 Inc. to build a dairy barn and milking parlour on May 24, 2017. The project was planned to take approximately five to six months to construct the main components of the building. Kozak's owner visited the worksite several times a week and was uninvolved in directing the work of Vernon Siemens Construction 2009 Inc. workers.

Vernon Siemens Construction 2009 Inc. (VSC) was a construction company specializing in building agriculture-related structures such as barns and was based in Edberg, Alberta. The company was registered in Alberta in 2009. VSC had varying numbers of employees depending on the workload. At the time of incident, VSC had approximately 20 employees working in three to four crews at different worksites. The incident occurred at the Kozak worksite where VSC was contracted to build a dairy barn and milking parlour. VSC met the definition of farming under the Alberta Occupational Health and Safety Farming and Ranching Exemption Regulation as the worksite was located on a dairy farm and the use of the building was solely for agricultural purposes.

The foreman had worked in construction for over 15 years and started work with VSC in 1996. The foreman completed an orientation package on December 10, 2013, which included safe work procedures. The foreman had completed a fall protection training certificate on June 17, 2013. The foreman was responsible for directing the work of the crew at the worksite, ensuring daily safety meetings were held and that daily hazard assessments were completed. The foreman was the contact between VSC and Kozak at the worksite. The foreman was working from the elevated work platform on the Genie telehandler and moved to the dairy barn's roof trusses at the east end of the barn at the time of the incident.

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Labourer 1 had four years of experience with VSC and had worked on several projects. Labourer 1 had fall protection training on April 20, 2017. Labourer 1 completed an orientation package with VSC at an unspecified date. Labourer 1's duties included framing, installing trusses and roofing material and concrete installation. Labourer 1 usually worked on a different VSC crew and joined the Kozak project approximately three weeks before the incident. Labourer 1 was on the barn roof installing roofing material at the time of the incident.

Labourer 2 had three years of experience with VSC. Labourer 2 had taken fall protection training on August 1, 2016. Labourer 2 completed an orientation package with VSC at an unspecified date. Labourer 2 primarily worked on installing trusses and roofing materials. Labourer 2 was operating the JLG telehandler and was in the man basket working on the south side of the main barn roof edge at the time of the incident.

Labourer 3 had 12 years of experience with 1 month of employment with VSC. Labourer 3 had taken fall protection training previously. Labourer 3 usually worked on ground level activities. Labourer 3 was on the elevated work platform with the foreman at the time of the incident.

Labourer 4 had six weeks of experience, all with VSC. Labourer 4 assisted with work on the ground level. Labourer 4 was inside the barn at the time of the incident.

The carpenter had 45 years of experience and 3 months experience with VSC. The carpenter had taken fall protection training on June 16, 2016. The carpenter completed an orientation package with VSC at an unspecified date. The carpenter was usually working at ground level to cut and prepare materials for workers on the roof and to move powered mobile equipment at the worksite. The carpenter was building concrete forms inside the barn at the time of the incident.

The carpenter apprentice had four years of experience, all with VSC. The carpenter apprentice had taken fall protection training on June 16, 2016. The carpenter apprentice completed an orientation package with VSC at an unspecified date. The carpenter apprentice worked as needed on the ground and installing roofing materials. The carpenter apprentice was on the roof of the barn at the time of the incident.

The concrete finisher had one year of experience with VSC. The concrete finisher completed an orientation package with VSC at an unspecified date. The concrete finisher took fall protection training on September 27, 2017. The concrete finisher worked on concrete fixtures and also assisted with installing roofing materials. The concrete finisher recorded the safety meeting and hazard assessment done at the morning safety meeting on the day of the incident. The concrete finisher was on the roof of the barn at the time of the incident.

Equipment and materials

Dairy barn and milking parlour

Kozak contracted with VSC to build a dairy barn with an attached milking parlour (Figure 1). The dairy barn was 64.6 metres (m) long and 33.5 m wide (Figure 1A). The attached milking parlour was 28 m long and 17.7 m wide (Figure 1B). The building was laid on concrete foundations with concrete brick walls and then framed walls above covered with metal cladding.



Figure 1. Kozak Holsteins Ltd. dairy barn and milking parlour looking north.

- A. Dairy barn
- B. Milking parlour

The roof was constructed of engineered trusses (Figure 2A) which were covered with corrugated sheet metal roofing (Figure 2B). The barn floor was partially covered in concrete, including the area in the central aisle along the length of the main barn (Figure 2C). The distance from the barn floor to the bottom of the roof trusses was 6.3 m (Figure 2D).

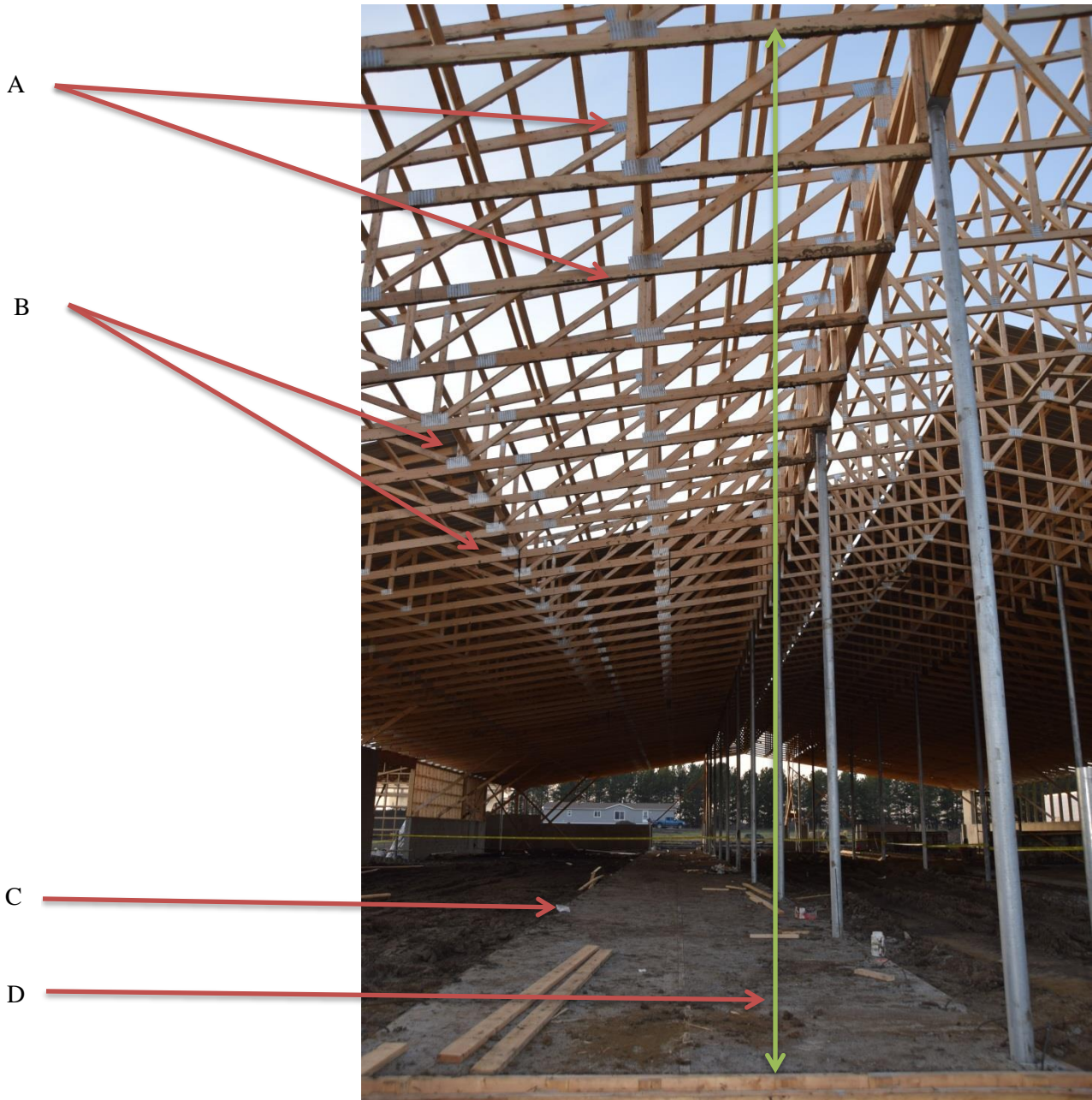


Figure 2. Interior of dairy barn looking west.

- A. Roof trusses
- B. Sheet metal roofing
- C. Concrete centre aisle
- D. Height of rafter above centre aisle (6.3 m)

Genie GTH-1056 telehandler

The Genie telehandler was used to lift materials and workers at the worksite. The Genie telehandler (Figure 3) was in use by the foreman and labourer 3 to access the fascia area at the east end of the dairy barn at the time of the incident.



Figure 3. Genie telehandler in use at the time of the incident. The boom was moved to ground level after the incident.

A metal work platform was attached to the forks of the telehandler (Figure 4A). When lifting materials, the platform railing was removed. When lifting workers, the railing was used some of the time. Workers tied off using fall protection harnesses and attaching a lanyard to the strut above the telehandler forks (Figure 4B).



Figure 4. Genie telehandler with work platform attached to forks.

- A. Work platform*
- B. Tie off anchor point for fall protection*

JLG Telehandler 450AJ

The JLG telehandler was used to lift workers to access work areas at the dairy barn including interior and exterior locations (Figure 5). The JLG telehandler was located on the south side of the dairy barn near the east end. A man basket was attached to the forks (Figure 6A). Workers using the JLG telehandler used fall protection equipment and tied off to the manufactured anchor points in the man basket (Figure 6B). A worker was using the JLG telehandler at the time of the incident.



Figure 5. JLG telehandler with man basket attached. The JLG telehandler was located on the south side and east end of the dairy barn at the time of the incident.

- A. JLG telehandler*
- B. Man basket attached to JLG telehandler's forks*

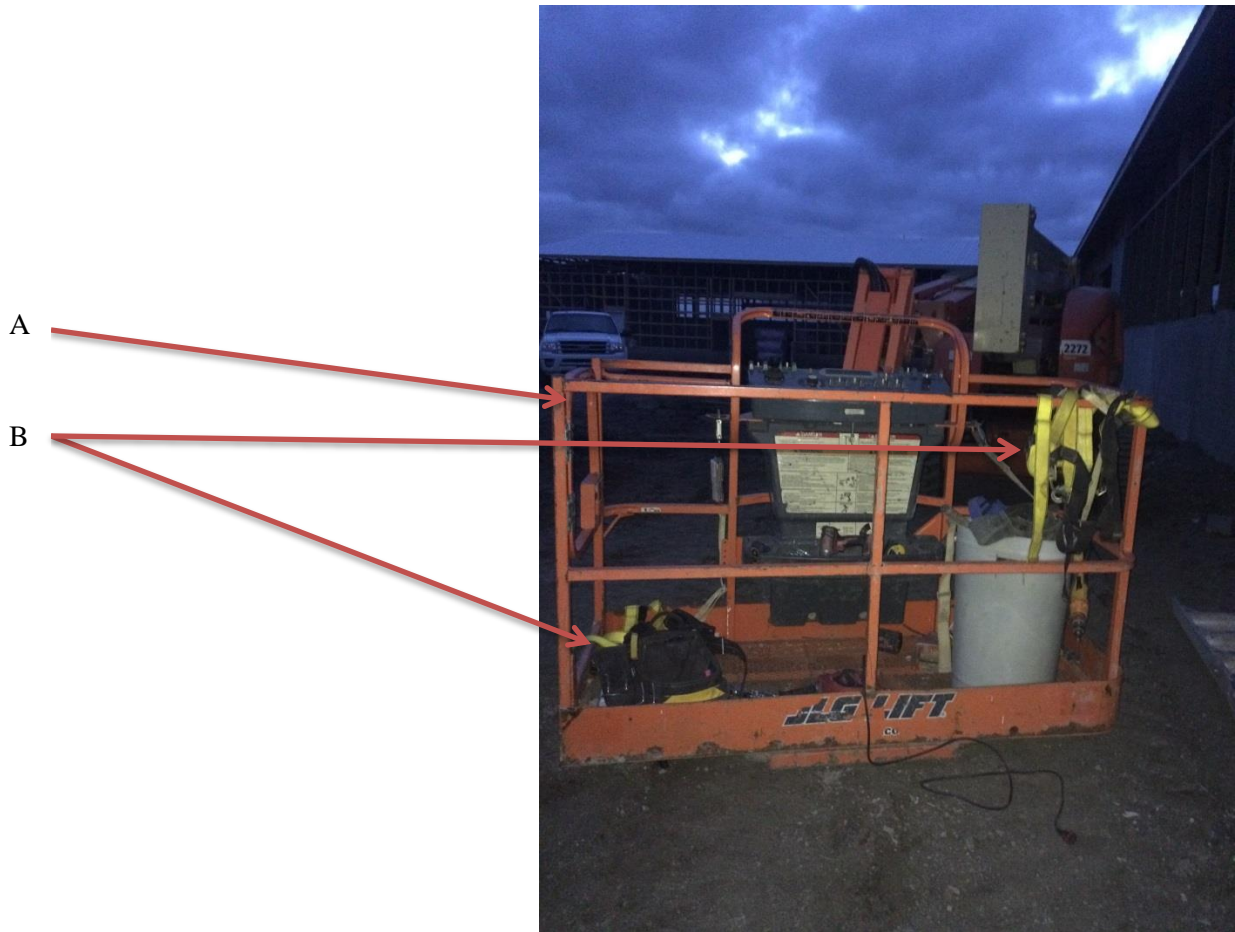


Figure 6. JLG telehandler's man basket with fall protection equipment that was in use at the time of the incident.

- A. Man basket*
- B. Fall protection harnesses*

Sequence of events

On May 24, 2017, Kozak contracted with VSC to construct a dairy barn and attached milking parlour. Work on the project began in June 2017. The owner of Kozak visited the worksite occasionally and spoke with the foreman for updates on progress.

As of September 1, 2017, trusses were being installed and work at heights above 3 m was ongoing. Workers installed anchor points to the peak of the roof trusses and attached retractable lanyards (Figure 7A). Workers wore fall protection harnesses which were tied off to the retractable lanyards. Other work at heights above 3 m was done using the Genie telehandler and the JLG telehandler. On September 21, 2017, a snowfall occurred and more precipitation was expected. At that time, VSC prioritized roof installation to protect the interior of the barn from getting wet.

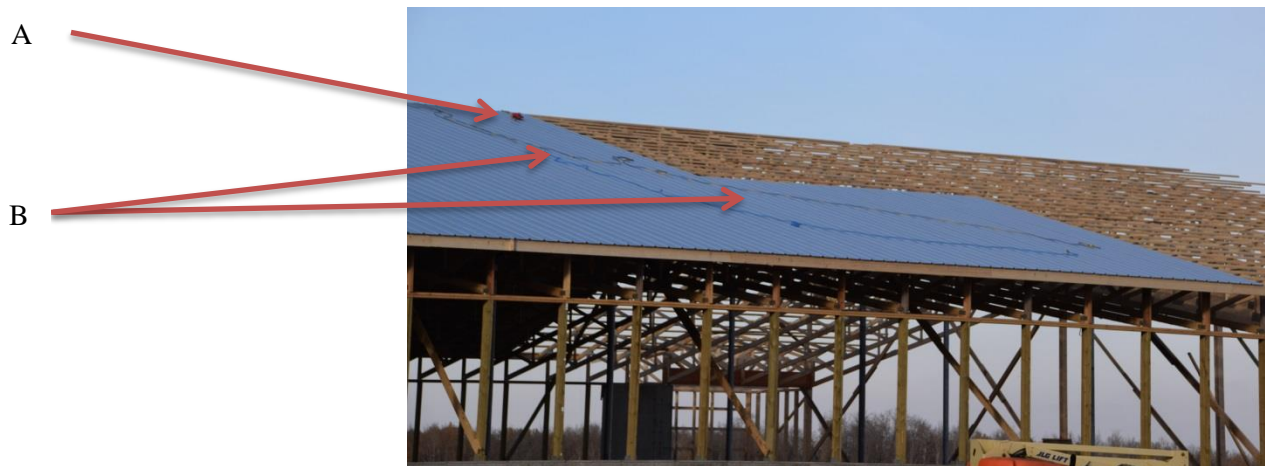


Figure 7. Dairy barn roof with location of one of the retractable lanyards attached to an anchor point.

- A. Anchor point with retractable lanyard attached
- B. Extension cords used for electrical hand tools

On October 12, 2017, VSC workers arrived at the worksite between 6:45 a.m. and 7:30 a.m. At approximately 7:30 a.m., all workers at the site and the foreman met to discuss the work plan for the day and to conduct a daily safety meeting. A hazard assessment was done which included noting the hazard of working at heights and that fall protection equipment should be used. All workers signed off on the hazard assessment, other than the foreman. The foreman, labourer 1, labourer 2, labourer 3, carpenter and concrete finisher donned fall protection harnesses and proceeded to the roof where all workers tied off to previously installed retractable lanyards. The carpenter and labourer 4 worked on the ground without fall protection equipment.

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Work continued through the morning until the break in mid-morning. Workers returned to work until approximately 12:00 p.m. and stopped for their lunch break. The foreman went to the worksite office trailer to make phone calls during the lunch break. The foreman had removed the fall protection harness worn earlier in the day. When work on the barn roof resumed after lunch, workers ensured they were wearing their fall protection harnesses and returned to the barn roof. The carpenter saw the foreman donning the fall protection harness after lunch. Labourer 2 was operating the JLG telehandler with a man basket and was tied off to the anchor points in the basket. The JLG telehandler was located on the south side of the barn near the east end where workers were placing roofing materials.

Shortly after returning to work on the roof, the foreman changed the task from installing roofing materials to installing fascia board on the east end of the barn roof. The foreman and labourer 3 moved the Genie telehandler to the east end of the dairy barn. A work platform was previously installed on the telehandler forks. The railing for the platform was unusable when long sheets of corrugated metal roofing needed to be lifted to the roof (the last use of the telehandler), and the railings for it were at another worksite.

Labourer 3 raised the platform to a height at which workers could access the barn gable end and install fascia boards. Lumber, nails, circular hand saws and two air nailers were on the work platform (Figure 8). The foreman and labourer 3 used an extension ladder to climb up to the platform. The foreman had removed the fall protection harness at some point. Labourer 3 was wearing a fall protection harness and was unsecured to the Genie telehandler forks.



Figure 8. Genie telehandler work platform with tools and materials used to install fascia board on dairy barn.

The foreman and labourer 3 began nailing fascia boards to the gable end (Figure 9).



Figure 9. East end of dairy barn showing location of fascia board installation.

A. Fascia board installed by foreman and labourer 3.

At approximately 2:15 p.m., labourer 3 turned away from the barn briefly and when that happened, the foreman spoke briefly to labourer 3 asking for assistance without giving details. Labourer 3 replied by asking for a moment to get ready to help. The foreman said “never mind” and by the time the labourer turned around, the foreman was already in the trusses, moving along on the rafters. The foreman was carrying an air nailer in the left hand. The foreman slipped or lost balance and fell 6.3 m to the concrete floor directly below (Figure 10A).



Figure 10. Location of incident at east end of dairy barn

A. Location of incident

Labourer 3 called for help and other workers went immediately to assist the foreman. First aid and cardiopulmonary resuscitation were provided. At approximately 2:20 p.m., 911 was called by more than one worker. Emergency Medical Services arrived on site and determined the foreman was deceased.

Completion

A review for enforcement action was completed on April 18, 2019, and it was determined that prosecution or an administrative penalty were not appropriate based on the circumstances.

This investigation was closed on May 8, 2019.

Signatures

ORIGINAL REPORT SIGNED

August 8, 2019

Lead Investigator

Date

ORIGINAL REPORT SIGNED

July 8, 2019

Manager

Date

ORIGINAL REPORT SIGNED

August 8, 2019

Director

Date