

Investigation of December 2, 2020 Fatality, Lease OCS-P 216, Pacific Region, Los Angeles Block 6862

January 10, 2021



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List of Acronyms

BSEE	Bureau of Safety and Environmental Enforcement
IP	Injured Person
JSA	Job Safety Analysis
M/V	Motor Vessel
PIC	Person in Charge
PA	Public Address System
SWP	Safe Work Permit
SWA	Stop Work Authority
UWA	Ultimate Work Authority
USCG	United States Coast Guard

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Executive Summary

On Dec. 2, 2020, a man-overboard incident occurred on Platform Gilda, operated by DCOR, LLC (DCOR), resulting in one fatality and one serious injury. Platform Gilda is located approximately 8.8 miles west of Ventura, CA, in the Pacific Ocean, Los Angeles Area, Block 6862.

A three-member construction crew, employed by DCOR, was repairing a section of the galley floor in the main living quarters, on the first floor, that had sustained water damage. The main living quarters building is located at the drill deck level. The flooring consisted of a layer of linoleum, a 4-by-8-foot sheet of 1-inch plywood, a 1.5-by-3-inch wooden floor joist, and a 5-millimeter composite flooring (moisture barrier) material set on top of a steel frame. The crew removed the damaged material in a 7-by-7-foot area of the galley floor, leaving only the 5-millimeter moisture barrier.

At approximately noon, as the victim replaced the wood floor joists while standing on the 5-millimeter moisture barrier material, a welder, the injured person (IP), exited the kitchen area, walked around the outside of the living quarters, then into the galley. The IP continued across the galley floor, then stepped into the unbarricaded work area and onto the 5-millimeter moisture barrier. The weight of the IP stepping onto the moisture barrier caused it to collapse. Both the IP and victim fell through the floor and approximately 80 feet into the Pacific Ocean. The IP swam back to the platform where he was assisted out of the water by platform personnel. Realizing the victim could not swim, a few of the platform personnel jumped in the water, against the orders of the Person-in-Charge (PIC), in an attempt to rescue him..

The victim was manually lifted onto the plus 14-foot deck. Platform personnel initiated CPR, then transferred the victim to a motor vessel. CPR and medical care continued until the crew boat arrived at Ventura Harbor, at which time the victim was transported, by ambulance, to Ventura County Medical Center, where he was pronounced dead. An autopsy report summarized the cause of the victim's death as an accidental drowning

The IP was transported by a medical helicopter to St. John's hospital in Oxnard, CA.



Figure 1. Galley flooring inside the living quarters.

The Bureau of Safety and Environmental Enforcement (BSEE) conducted a panel investigation (Panel) into the incident and the causal factors that led to the incident. A member of the Panel traveled to Platform Gilda and conducted interviews, reviewed pertinent documents, and took photographs of the scene. Additionally, the Panel conducted witness interviews, via the Microsoft Teams communication platform, due to the COVID-19 pandemic. The Panel also collected and reviewed additional documents, statements, records, photographs, diagrams, and videos.

Based on findings of the investigation, the Panel concluded the cause of the fatality and serious injury was the failure of the construction crew and authorizing personnel to recognize that the 5- millimeter moisture barrier was not a walking/working surface, and that it could not support their weight. The victim and IP's combined weight caused the barrier to break, which resulted in them falling approximately 80 feet into the Pacific Ocean.

Considering the totality of circumstances, the Panel concluded the death of the victim was the result of:

- The work crews' or appropriate personnel's negligence to place a barrier around the area to prevent unsafe access into the work area by unauthorized/other workers.
- Failure of the construction crew, the supervisor, and/or qualified designee to inspect the work area, or to review relevant engineering drawings to verify structural integrity of the flooring materials prior to starting the task.
- The crew's lack of situational awareness that the 5-millimeter moisture barrier was not a walking surface. The IP stepped into the work area causing it to collapse, resulting in the IP and victim falling into the Pacific Ocean.

In addition, the Panel identified the following contributing causes:

- The victim's incorrect identification of the composite flooring material as metal created, in other personnel, a false sense of security that the surface was load bearing.
- Failure of the site supervisor to ensure that an adequate Job Safety Analysis (JSA) was conducted to help identify, understand, and communicate all hazards associated with the job to personnel before repair of the galley floor.
- The construction crew did not recognize the changes in work scope to utilize Stop Work Authority (SWA) and to verify an unfamiliar part of the floor.
- The victim could not swim.

Introduction

Pursuant to 43 U.S.C. §1348(d)(1), (2), and (f) [Outer Continental Shelf Lands Act, as amended] and Department of the Interior regulations at 30 CFR Part 250, BSEE is required to investigate and prepare a public report of this incident.

BSEE convened a panel to conduct the investigation. Panel members were:

- Quintin Hansen, Inspector, BSEE Pacific Region
- Bethram Ofolete, Petroleum Engineer, BSEE Pacific Region
- Jason Shi, Structural Engineer, BSEE Pacific Region
- James Holmes, Special Investigator, BSEE Safety and Incident Investigations Division

The purpose of this investigation report is to identify the probable cause(s), the contributing cause(s), and the contributing factor(s) that led to the incident, resulting in a fatality and a serious injury on Platform Gilda. The report includes recommendations to promote continuous improvement of existing safety and environmental management systems and serves to aid in the prevention of a similar incident.

Lease Location and Information

Platform Gilda is located on Lease OCS-P-0216, approximately 8.8 miles west of Ventura, CA. It covers approximately 5,760 acres and encompasses all of Los Angeles Block 6862 ("LA 6862") in the Pacific Ocean, Santa Clara North Participating Unit Area. The water depth at this location is 205 feet.

Union Oil Company of California purchased LA 6862 on Feb. 6, 1968. First production occurred on Dec. 7, 1981. Nuevo Energy Company held 100 percent of the title interest from Oct. 10, 1995, until Aug. 12, 2004. Plains Exploration & Production Company held 100 percent of the title interest from Aug. 12, 2004, until Dec. 1, 2004. Dos Cuadras Offshore Resources, LLC, held 100 percent title interest from Dec. 1, 2004, until Aug. 11, 2005, when the holdings changed to Dos Cuadras Offshore Resources, LLC, 98.75 percent, and Santa Barbara Acquisitions, LLLP, 1.25 percent. On Dec. 15, 2010, DCOR, LLC, acquired 100 percent title holdings. Presently, the title holdings are DCOR, LLC, 2.09 percent, and Channel Islands Capital, LLC, 97.91 percent.

Los Angeles Block 6862 OCS-P 0216

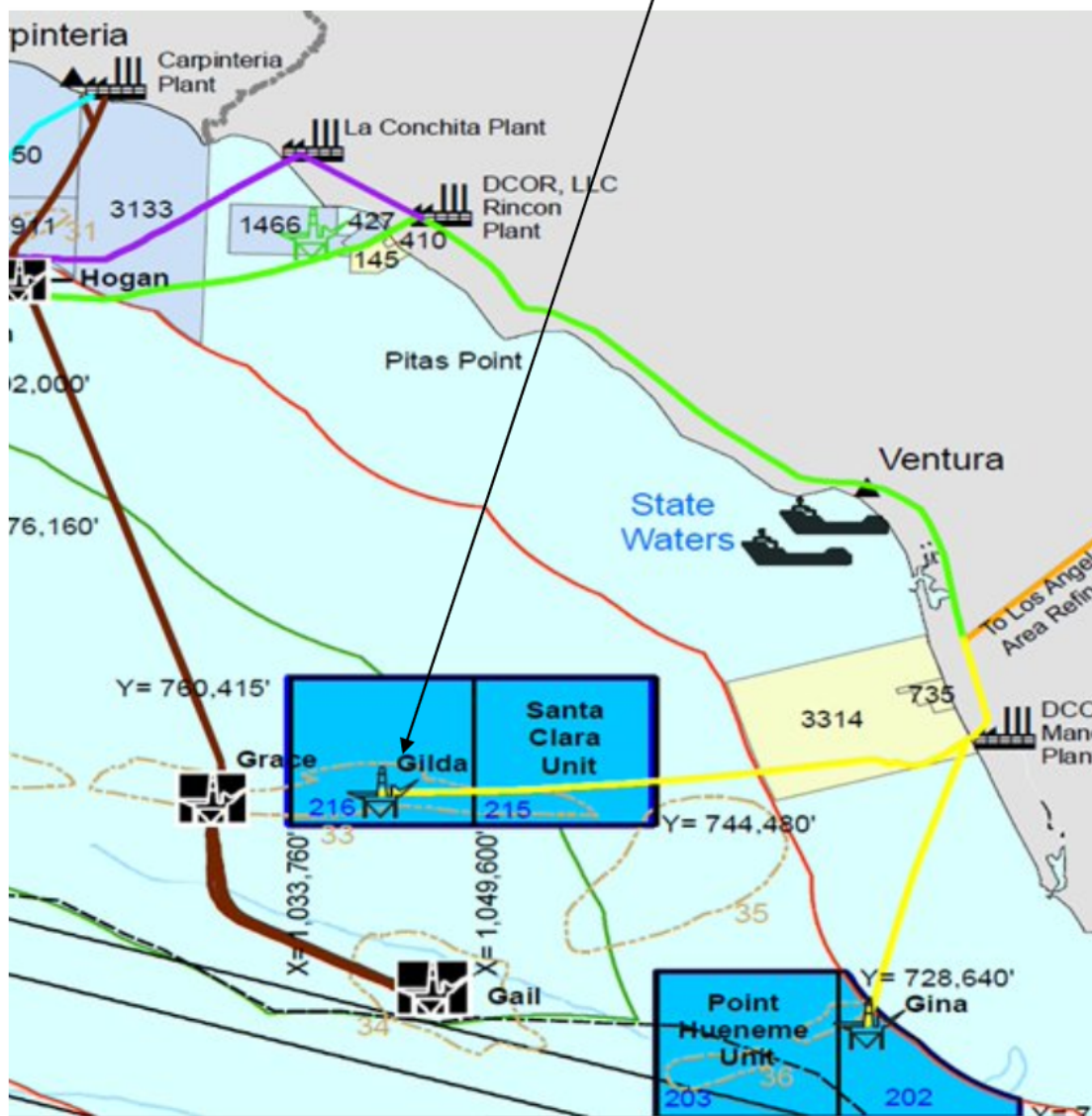


Figure 2. Platform location

Platform Gilda

Platform Gilda is a 12-pile structure in 205 feet of water in the Santa Clara North Participating Unit Area, approximately 8.8 miles west of Ventura, CA, at coordinates 34° 10' 56" N, 119° 25' 07" W. The 96-slot platform installation began at the end of 1980, with first production in October 1981.

Santa Fe Engineering Services Company was responsible for the design, fabrication, transportation, and installation of the multi-well structure for the original owners, Union Oil Company of California. DCOR, LLC, is the current operator of record.

Incident Timeline

On Dec. 2, 2020, at approximately 7:00 a.m., personnel onboard Platform Gilda held the morning safety meeting and completed their work permits for the flooring repair and JSA for multiple tasks that were taking place that day.

After the initial safety meeting, personnel waited for the crew boat transporting additional employees and contractors from shore to the platform. When the crew boat arrived, a second safety meeting was held to review simultaneous operations and to sign all permits. This second meeting did not include workers from the first safety meeting.

The crew utilized an incorrect JSA, originally created for “Needle gunning, buffing, and painting.” A member of the construction crew modified it so that the original job task was crossed out and “repairs to galley flooring” were handwritten in its place.

Two of the four steps were modified. Step two, which originally stated “needle gunning and buffing,” was changed to read, “measure and lay out.” Step three, which originally stated “mix and prepare paint,” was changed to “install plywood and wood studs.” Hazards and mitigations were not addressed for the different steps of the task. The PIC on the platform signed the JSA without recognizing and discussing the risks associated with the task. The PIC also failed to inspect the work area prior to the construction crew beginning the work.

At approximately 7:15 a.m., three DCOR employees began their task to repair water damage to a section of the galley floor. The galley is located on the first floor, inside the main living quarters building. The 36-by-45-foot building is set on a cantilever support located 80 feet above the ocean on the southwest side of the platform at the drill deck level. The flooring consisted of a layer of linoleum; 1-inch plywood, a 1.5-by-3-inch wooden floor joist set at a 2-foot center; and a 5-millimeter composite sheeting material. The composite material was utilized as a moisture barrier, all supported by a steel frame fabricated on a 4-by-8-foot grid.

At approximately 7:30 a.m., the construction crew moved the refrigerated salad bar from the damaged floor area, about 10 feet, to a nearby space where the flooring was not damaged and against the west wall. Then two sheets of plastic Visqueen¹ were suspended from the ceiling, making a vertical plane from the ceiling, perpendicular to the floor, and spanning approximately 12-feet-wide. One sheet was placed across the cooking side of the work area, intersecting the floor approximately 14 inches in from the kitchen. The second was hung approximately 6 feet away from and parallel to the first sheet. The Visqueen was a dust control measure. No engineered barrier was placed around the work area.

According to witness statements, the crew removed a 1-by-1-foot top layer of linoleum flooring to assess the damage and identify any needed repairs. After examining the flooring, the crew discovered the water damage was more extensive than expected. The crew did not stop to reassess the hazards when they discovered the scope of the job was

¹ Visqueen is a durable polyethylene sheeting used in various building applications and in the manufacture of waterproof household articles.

more than expected. The crew continued to cut a larger hole in the flooring, until they came to an area where the floor joists were not water damaged.

At 8:20 a.m., the victim tapped on the 5-millimeter composite sheeting material with a Leatherman hand tool and stated to the crew, "It's metal." With that, the crew decided to proceed with their task, without referring to the structural drawings of the platform flooring to better understand the scope and risk of their undertaking. An interview revealed that the structural drawings were not available to the construction crew prior to performing the task. Additionally, no one in the company consulted the structural drawings during the planning phase of the task.

After analyzing the opening, the crew decided to enlarge the hole. They continued to expand the opening until they came to an area where the wooden floor joists were not water damaged and retained structural integrity. By this time, the opening in the floor was approximately 7-by-7-feet. The crew saved the insulation that was between the floor joists so it could be reused. Additionally, the crew discovered a small hole the size of a dime in the composite flooring material (moisture barrier), but thought it was for drainage. At one point, all three men were standing on the 5-millimeter barrier.

At approximately 11:54 a.m., two welders who had spent the morning preparing lunch and were not involved in the flooring task, notified the construction crew that lunch was ready to be served. The two welders placed the food in the steam table, adjacent to the work area, which was blocked by the Visqueen. The IP, one of the two welders, and who had previously observed the construction crew standing inside the opening during the floor repair, decided the best way to serve lunch would be to pull the Visqueen away from the steam table to provide access to the galley/food through the work area.

. At approximately 11:55 a.m., the IP walked into the work area of the flooring repair to pull back the Visqueen. The weight of the IP stepping into the opening and onto the moisture barrier caused the 5-millimeter composite material to collapse, resulting in the victim and IP falling into the Pacific Ocean.

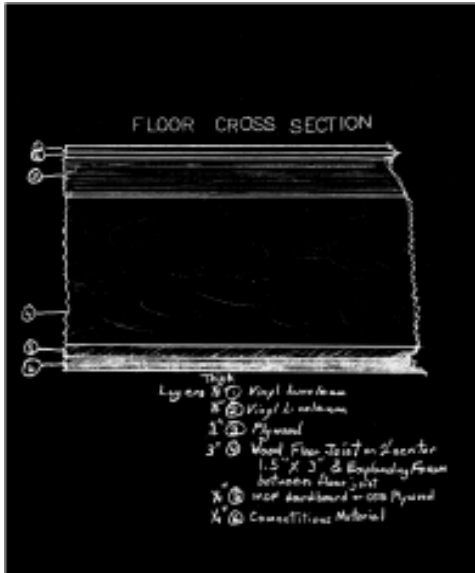
At 11:56 a.m., "man-overboard" was announced over the platform public address system. Personnel on the platform started a rescue effort by throwing life jackets and life rings into the water toward the victim and IP. The IP took a life jacket and placed it under his back and was able to swim to the boat landing ladder to exit the water. Realizing the victim could not swim, platform personnel (swimmers) decided to rescue him by jumping in the water against the advice of the PIC. Attempts were made by the swimmers to place the victim into a floating Stokes basket, but when they could not get the victim into the basket, the swimmers decided to use a polyester round sling. The swimmers placed the victim inside the round sling and pulled it up under his arms. This allowed personnel on the 14-foot deck to manually lift the victim from the water.

After placing the victim in the Stokes basket and transferring him to a motor vessel at 12:16 p.m., CPR was initiated, and continued until the crew boat arrived at the Ventura Harbor dock at 1:00 p.m. The victim was then transported by ambulance to Ventura County Medical Center, where he was pronounced dead at 3:00 p.m. An autopsy report

summarized the cause of death as an accidental drowning.

The IP was transported by helicopter to Oxnard Airport then transported to St. John's Hospital in Oxnard, CA. The IP suffered a shoulder injury.

Flooring Materials



Vinyl Linoleum - Linoleum is a standard heavy grade with two layers.

Plywood - Construction grade 1-in plywood 4-by-8-foot sheets.

Floor Joist - 1.5-by-3-inches wooden floor joists on a 2-foot center and spanning a length of 7 feet. The crew fabricated replacement joists by removing a half-inch piece from 2-by-4-inch framing lumber.

Figure 3. Cross-section of flooring (Source: BSEE)



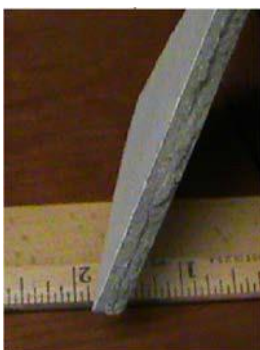
Insulation

Insulation in floor cavities have identification hallmarks of urea-formaldehyde foam insulation (UFFI), which easily crushes to a fine powder.

Figure 4. Insulation

Buffer

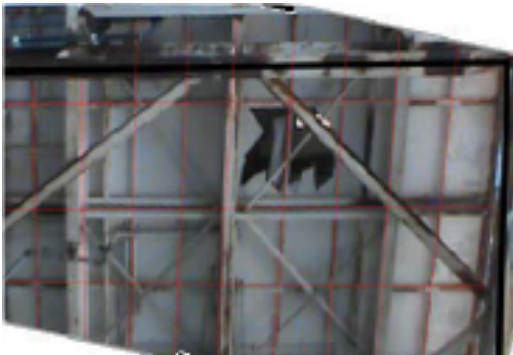
A buffer layer exists between the floor joists and the outer moisture barrier. Measuring approximately one quarter-inch thick, the buffer is a wood product material –most likely a medium-density fiberboard.



Fire/Moisture Barrier - According to DCOR's analysis, "the material showed the 5-millimeter barrier is primarily cement, concrete, and asbestos." Characteristics of this layer include being hard and brittle, as one would expect of a 5-millimeter piece of cement strengthened with fibers of asbestos and spanning a

rectangular area measuring approximately 4-by-8-feet. When the IP stepped on the barrier, it broke into many pieces, ranging in size from one square inch to hundreds of square inches. Most pieces were triangular.

Figure 5. Moisture barrier



Steel Frame - The floor is supported by a steel frame fabricated on a 4-by-8-foot grid.

Figure 6. Steel frame

Visqueen (Plastic Sheet) Dust Control

Visqueen is a brand of polyethylene plastic sheeting (typically low-density polyethylene) produced by British Polythene Industries Limited. It is the registered trademark of British Polythene Limited in numerous countries throughout the world. The opaque sheets used in this task measured 12-by-16-feet; folded once widthwise, they measured 6-millimeters to 10-millimeters thick.

BSEE Investigation and Findings

At approximately 1:14 p.m. on Dec. 2, 2020, a representative of DCOR notified the BSEE Pacific Region, Office of Field Operations, that a man-overboard fatality had occurred during operations onboard Platform Gilda. The following day, a BSEE inspector traveled to Platform Gilda to begin the investigation into the incident. The BSEE inspector collected pertinent records, conducted preliminary interviews of personnel, and documented the incident area with photographs.

A BSEE Panel was convened to conduct a full investigation into the facts and circumstances that resulted in a fatality and a serious injury. The Panel reviewed electronic and written material, including, but not limited to, data, emails, video, and other records related to operations on Platform Gilda. The Panel also conducted interviews of personnel, via Microsoft Teams, due to the COVID-19 pandemic.

The Victim

The victim, a 44-year-old male from Santa Paula, CA, had been employed by DCOR, as part of the construction crew, since April 1, 2009. He performed numerous tasks on DCOR platforms, including carpentry and painting.

The Crew

The crew is normally transported, daily, by a crew boat to the platform. However, on this occasion, for logistical purposes, the construction crew had stayed on the platform overnight to get an early start working on the galley floor before their return to shore .

Conclusions

The Panel defines the incident as one which resulted in a fatality and a serious injury. The Panel reached its conclusions based on observations made during the investigation, through interviews, as well as its review of documentation collected from DCOR.

The BSEE investigation team followed the BSEE National Investigations Handbook definition of “probable causes” as “those actions, events, or conditions that: a) would have prevented the incident event from occurring, if corrected; b) contributed significantly to the incident; and c) have the most compelling supporting evidence as to both existence of the cause and the degree of its contribution to the incident.”

Probable Causes

Based on the investigation, the Panel concluded the cause of the fatality and serious injury was the failure of the construction crew and authorizing personnel to recognize that the 5-millimeter moisture barrier was not a walking/working surface and that it could not support their weight. The victim and IP’s combined weight caused the barrier to break, which resulted in them falling approximately 80 feet into the Pacific Ocean.

Considering the totality of circumstances, the Panel concluded the death of the victim was the result of:

- The work crews’ or appropriate personnel’s negligence to place a barrier around the area to prevent unsafe access into the work area by unauthorized/other workers
- Failure of the construction crew, the supervisor and/or qualified designee to inspect the work area, or to review relevant engineering drawings to verify structural integrity of the flooring materials prior to starting the task.
- The crew’s lack of situational awareness that the 5-millimeter moisture barrier was not a walking surface. The IP stepped into the work area, causing it to collapse, resulting in the IP and victim falling approximately 80 feet into the Pacific Ocean.

Contributing Causes are those actions, events, or conditions that:

- a. May have prevented the incident event from occurring, if corrected,
- b. Contributed somewhat to the incident, and
- c. Have less compelling evidence than the probable causes

Contributing Causes

The Panel identified the following as contributing causes of the incident:

- The Panel finds that the victim incorrectly identified the composite flooring material as metal, creating in other personnel a false sense of security that the material was load-bearing. According to a witness statement, the victim tapped on the outer layer with a metal tool, and stated, “It’s metal.” In addition, witnesses confirmed the noise from tapping the material was a ringing sound, leading the crew to feel confident in

the load-bearing ability of this material. Combining this fact with other personnel witnessing the crew working directly on the material, resulted in complacency by the IP and others in and around the work area.

- Failure to conduct an adequate JSA to help personnel identify, understand, and communicate all hazards associated with the job before the repair. The investigation revealed the JSA was originally created for the task of “needle gunning, buffing, and painting,” and found the JSA was modified by crossing out this description and by adding “repairs to galley flooring” handwritten in its place. The JSA listed four steps. Step one included “job set up and safety meeting.” Step two, originally “needle gunning and buffing,” was changed to “measure and lay out.” Step three, originally “mix and prepare paint,” was changed to “install plywood and wood studs.” Neither the hazards nor the mitigations were changed to reflect the flooring task.
- Failure to implement “stop work” procedures. The construction crew did not recognize the appropriate changes in work scope to use SWA and to verify an unfamiliar part of the floor. The crew did not initiate SWA to develop a new plan to proceed when encountering an unfamiliar layer of the floor.
- The victim could not swim.

Therefore, BSEE Recommends:

- Operators develop task-specific JSAs for every task and ensure they are implemented in each stage of the task.
- The Ultimate Work Authority, or qualified designee, review and approve the effectiveness of any barriers prior to the task(s) and communicate all associated hazards to all personnel.
- Operators evaluate the effectiveness of facilities permitting system including the human factors elements.
- Operators train employees on water emergency rescue and associated risk to avoid further injuries to personnel.
- Rescues should be strictly based on the operator's emergency rescue policy and procedures including fall and water emergencies.
- Operators consult relevant drawings during the planning phase of any task to help understand any risk associated with the intended task or project.