

INVESTIGATION OF MAY 16, 2020 FATALITY

LEASE OCS-G05800, EWING BANK
BLOCK 826 PLATFORM "A"

GULF OF MEXICO REGION, HOUMA DISTRICT

Off Louisiana Coast

January 10, 2022

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ABBREVIATIONS AND ACRONYMS

BSEE - Bureau of Safety and Environmental Enforcement

EW - Ewing Bank

Fieldwood - Fieldwood Energy LLC

FCC - Fluid Crane and Construction

GOM - Gulf of Mexico

JSA - Job Safety Analysis

OCS - Outer Continental Shelf

PIC - Person in Charge

SAR - Search and Rescue

SEMS - Safety and Environmental Management

SWA - Stop Work Authority

SWP - Safe Work Practice

UWA - Ultimate Work Authority

EXECUTIVE SUMMARY

On May 16, 2020, an incident, resulting in a single fatality, occurred while a Fluid Crane and Construction (FCC) crew was in the process of replacing grating on the casing deck of Ewing Bank (EW), Block 826, Platform A, operated by Fieldwood Energy LLC (Fieldwood).

Fieldwood contracted FCC to replace the grating on the casing deck after April 2018 and November 2019 Level I Surveys of the platform revealed a grade of “C-Poor” on approximately 30 and 60 percent of the grating on the casing deck, respectively. Fieldwood conducted its own audit of the platform in December 2019. To address the findings, the casing deck was placed out of service until all of the grating could be replaced. Hard barricades placed at both stairways were used to access the deck.

On the day of the incident, personnel on the platform gathered for the morning safety meeting at approximately 6:00 a.m. to discuss the day’s jobs. The construction crew planned to complete the previous day’s job of repairing grating on the casing deck, which had been delayed due to weather issues. The Job Safety Analysis (JSA) that the construction crew discussed during this meeting copied the job steps used from the previous day’s grating repair JSA. At approximately 6:30 a.m., the safety meeting concluded, and the construction crew proceeded to the casing deck to begin the process of changing the grating. The construction crew for this task consisted of a fitter, a welder, two riggers (one of whom was the victim), and a scaffolding builder who acted as a fire watch.

When the fitter, the welder, and two riggers entered the barricaded casing deck, they began staging the tools needed to prepare the old grating for removal: a torch, chipping gun, hammers, metal saw, etc. Crew members said during interviews that they had previously staged their fall protection equipment, but did not put it on, even though they discussed utilizing fall arrest systems during the morning safety meeting.

The fitter directed the welder to begin “ripping” the old grating (the process of cutting the grating along its length) while he set up hoses for the torch. The Person-in-Charge (PIC) and construction manager then summoned the rigger and victim to the fuel gas scrubber on the production deck to tighten a hammer union. During their absence, the welder continued ripping the area where the victim was previously working.

At approximately 7:30 a.m., after the rigger and victim returned to the casing deck, again without donning their fall protection, the section of grating on which the victim stood parted. The fire watch witnessed the victim partially fall through the grating, and attempted to alert personnel on the casing deck, to no avail. The fire watch then left his post to alert all personnel on the platform about the incident via the GAI-Tronics intercom. By the time the fire watch made the announcement, the victim had fallen approximately 50 feet to the +10 deck.

Following the announcement, personnel initiated the fall response plan. A medic from another platform arrived at EW 826 A, where he found the victim without a pulse, unresponsive, and with no detectable signs consistent with life. An Era Search and Rescue flight then transported the victim to Houma, Louisiana.

The Bureau of Safety and Environmental Enforcement (BSEE) convened a panel team (Panel) to investigate the incident that resulted in a fatality. The Panel, comprised of BSEE professionals, identified causes that may have contributed to the incident. The Panel also identified recommendations to further promote safety, protect the environment, and conserve resources on the U.S. Outer Continental Shelf (OCS).

Probable Causes

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

- Fieldwood failed to maintain all walking surfaces on the facility in a safe condition.
- Fieldwood failed to ensure that FCC's Safe Work Practices (SWPs) met or exceeded their own SWPs.
- Supervisors failed to fulfill their intended responsibilities within the relevant, established SWPs.
- Personnel performing the job failed to adhere to the requirements of the JSA.

Contributing Causes

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

- The JSA process was not controlled.
- Construction crew members followed the instructions of personnel who were not in a position of authority.
- Complacency at the jobsite allowed for unnecessary risk exposure.
- The fire watch either did not have or did not use a personal communication radio to convey to the construction crew and other platform personnel that the victim was in danger in a timely manner.

Recommendations

The following list contains some of the key recommendations identified as a result of the investigative findings detailed within this report:

- All facility walking and working surfaces should be regularly inspected and maintained to ensure they are in a safe condition.
- Operators must perform an internal review of their contractors' Safety and Environmental Management System (SEMS) programs to suitably and adequately identify gaps in a bridging agreement. Responsibilities must be clearly assigned. These bridging agreements should be periodically reviewed to ensure continued effectiveness.

- Supervisors should be trained, skilled, and knowledgeable in their assigned duties and responsibilities. They should take an active role in task planning, hazard analysis, and supervision of work.
- JSA training should be refreshed on a periodic basis.
- A clear delegation of authority should be communicated to all personnel.
- Construction crews should be trained on the dangers of compromised grating and the hazards associated with ripped grating.
- Clear signage conveying fall protection requirements should be posted on or near barricades, where necessary.
- Consider entry logs, maintained by a fire (or hole) watch or job site supervisor, that document when specific personnel enter and/or exit barricaded areas.
- Fire (and hole) watches should have personal communication radios for contact with their assigned crew. Also, consider in-ear hearing protection, with radio hookup capability, so that construction personnel in loud environments can be alerted to dynamic situations.
- Personnel should exercise Stop Work Authority (SWA) immediately upon notice that proper Personal Protective Equipment (PPE) is not in use and the job is unsafe.

INTRODUCTION

AUTHORITY

Pursuant to 43 U.S.C. § 1348(d)(1), (2) and (f) [Outer Continental Shelf Lands Act, as amended] and 30 CFR Part 250 [Department of the Interior regulations BSEE is required to investigate and prepare a public report of this incident. BSEE's Regional Director for the Gulf of Mexico (GOM) OCS Region convened a panel by memorandum, dated May 18, 2020, to investigate the incident that occurred at Ewing Bank (EW), Block 826, Platform A, on May 16, 2020. The panel members were:

- Bruce Crabtree – Accident Investigator, Houma District, GOM Region
- Quoc Dang – Petroleum Engineer, Office of Incident Investigation, GOM Region
- Stephen Harris¹ – Petroleum Engineer, Office of Incident Investigation, GOM Region
- Amber Nelson – Petroleum Engineer, Office of Safety Management, GOM Region

LEASE & PLATFORM

The incident occurred at EW 826 A, OCS Lease G05800. The lease is approximately 61 miles from the coast of Louisiana and covers approximately 5,760 acres. Fieldwood became the designated lessee in 2018, with 100 percent working interest ownership.



Figure 1 – Location of Ewing Bank 826 A

¹ Panel chair

EW 826 A is an eight-pile fixed-structure platform, located in a water depth of 483 feet. BP Exploration Inc. installed the platform in 1988, and Fieldwood became the designated operator in 2014. The platform has three main decks: drilling, production, and sub-cellar. On the northeast side of the sub-cellar deck is a mezzanine level, described in platform documents as the wellhead, well, or deck. As this is where the casings are accessed to perform diagnostics, personnel commonly referred to this area as “the casing deck”,. The wellheads are accessed on the production deck.



Figure 2 – Ewing Bank Block 826 Platform A

COMPANIES

Fieldwood is an oil and gas operator in the GOM and the designated lessee of EW 826 A. At the time of the incident, Fieldwood had one employee on the platform– the PIC.

FCC provides crane and construction services for offshore projects. FCC’s construction crew on the on the platform consisted of a construction superintendent, a fitter, a welder, and two riggers, one of whom was the victim.

GIR Solutions offers construction project management services. At the time of the incident, a construction manager from GIR Solutions was on the platform coordinating the construction crew.

Danos is an energy service company that employed a production operator on the platform at the time of the incident.

Dynamic Industries Inc. (Dynamic) provides construction and maintenance services to energy producers. At the time of the incident, a scaffolding builder for Dynamic was on the platform.

BSEE INVESTIGATION

Upon receiving notification of the incident, BSEE ordered Fieldwood to take all steps necessary to immediately identify, retain, and preserve all potentially relevant information related to the incident. Following issuance of the preservation order, BSEE sent document requests to both Fieldwood and FCC in relation to the incident as part of the investigation.

On May 17 and May 23, 2020, BSEE investigators visited the platform to collect documents, conduct initial interviews, take photographs of the incident scene, and witness evidence recovery.

In the following months, the Panel conducted second interviews with witnesses and reviewed the produced documents.

BACKGROUND

An April 2018 Level I Survey of the platform revealed a grade of “C-Poor” on approximately 30 percent of the grating on the casing deck (Figure 3). When an item in a Level I Survey deems a platform to be in poor condition, BSEE NTL² No. 2009-G32, “In-Service Inspection Intervals for Fixed Platforms,” prescribes that maintenance is “needed within twelve months.” Figure 3 also shows that during the November 2019 Level I Survey, the casing deck again received a grade of “C-Poor”—but on 60 percent of the area this time, indicating that the area did not undergo the recommended maintenance.

Well Deck	C-Poor	The coating on the wellhead deck and its components is in bad condition with heavy surface corrosion, active pitting and scale covering approximate 30% of the surface.
Well Deck	C-Poor	East wellhead deck grating is in poor condition with moderate to heavy surface corrosion and scale covering approximately 60 % of the surface.

Figure 3 – From April 2018 Level I Survey (top) and November 2019 Level I Survey (bottom)

Following the November 2019 Level I Survey, Fieldwood sent their own personnel to conduct an audit of the platform in December 2019. The inspector of this audit recommended placing the casing deck out of service. According to the audit action items, operators put a hard barricade at both stairways used to access the deck until all the grating could be replaced (Figure 4).

² BSEE issues Notices to Lessees and Operators of Federal Oil and Gas Leases (NTLs) as guidance documents in accordance with 30 CFR 250.103 to clarify, supplement, and provide more detail about certain BSEE regulatory requirements.

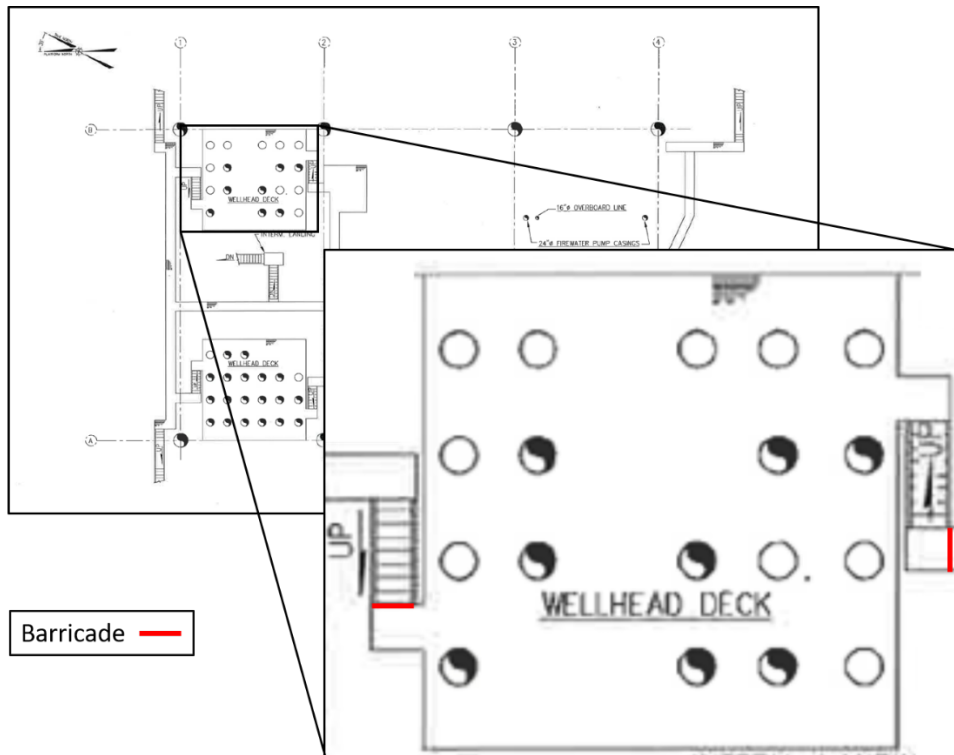


Figure 4 – Barricade locations preventing access to wellhead deck (more commonly referred to as the casing deck)

Operators use the casing deck to access pressure gauges on well casings during monthly casing pressure checks. Since Fieldwood is obligated to collect monthly casing pressure data, they created a plan to safely access the casing deck. According to documents and interviews, personnel on the platform were always to wear a safety harness and were to be 100 percent tied off when entering the casing deck. Being 100 percent tied off means the individual must be continuously attached to a fall arrest system, e.g., a self-retracting lanyard. To facilitate these measures, operators installed beam clamps to provide tie-off points for access to the central area of the casing deck.

Fieldwood contracted FCC to replace the grating on the casing deck.

TIMELINE OF EVENTS

The FCC construction crew arrived at the platform on May 11, 2020. The PIC orientated the construction crew to the platform. Following the orientation, the personnel offloaded the materials needed to complete the construction work.

On May 12, 2020, the welder and fitter from the construction crew conducted a survey of the casing deck to take measurements and calculate the amount of grating needed. For this job, the welder and fitter had to enter the barricaded casing deck. In an interview, the welder stated that he and the fitter were the only individuals to enter the casing deck and that they wore fall protection the entire time they were on the deck. During their interviews after the incident, both the welder and the fitter conveyed that after walking around the casing deck for the survey, they did not think the grating posed

an immediate threat. The fitter stated that he did not know why Fieldwood was replacing all of the grating on the casing deck.

On May 15, 2020, the construction crew planned to complete the task of replacing the grating, but due to a weather delay, they could not complete all the steps described in JSA. The job started with lowering new grating from the top deck to the casing deck. To accomplish this, the grating had to be guided through a hatch on the drilling deck and then through a section of removed grating on the production deck, before being placed in position on the casing deck (Figure 5).



Figure 5 – Lowering the grating

Personnel were stationed on the drilling deck, production deck, and casing deck for this part of the job. According to interviews, the welder and the victim were on the casing deck to receive and position the grating, but neither wore fall protection during the job. While briefly in the well bay on the production deck, the construction superintendent failed to notice that the welder and victim were not wearing fall protection. Additionally, no one in the construction crew invoked SWA to call attention to the lack of fall protection.

On May 16, 2020, personnel on the facility gathered at approximately 6:00 a.m. for the morning safety meeting to discuss jobs for the day. The construction crew planned to complete the previous day's job of repairing grating on the casing deck, while the operator and PIC removed corrosion from and painting the fuel gas scrubber on the production deck. The May 16 grating repair JSA copied the job steps from the May 15 grating repair JSA. Though wearing fall protection to enter the casing deck is not clearly documented in the JSA, multiple witnesses stated that the PIC, construction manager, and construction superintendent said many times during the morning safety meeting to wear fall protection on the casing deck. Again, no one on the construction crew invoked SWA to call attention to the lack of fall protection.

At approximately 6:30 a.m., the safety meeting concluded. All personnel dispersed to begin their respective tasks. The construction crew proceeded to the casing deck to begin the process of changing the grating. The construction crew, for this particular task, consisted of a fitter, a welder, two riggers (one of whom was the victim), and a scaffolding builder acting as the fire watch. On the production deck, the PIC and operator went to a fuel gas scrubber to remove corrosion and paint, while the construction superintendent and construction manager went to the motor control center room to prepare for future tasks.

When the fitter, welder, and two riggers entered the barricaded casing deck, they began staging the tools needed to prepare the old grating for removal: a torch, chipping gun, hammers, metal saw, etc. They had previously staged their fall protection equipment but did not put it on. The fitter directed the welder to begin “ripping” the old grating, the process of cutting the grating along its length, with a metal saw while he set up hoses for the torch. Prior to the incident, the PIC requested that the construction manager send a construction crew member to the fuel gas scrubber to tighten a hammer union. According to the rigger, he and the victim went to the fuel gas scrubber to tighten the hammer union before returning to the casing deck to proceed with rust removal. During their absence, the welder continued ripping the area where the victim was previously working.

At approximately 7:30 a.m., after the rigger and victim returned to the casing deck, again without donning their fall protection, the section of grating on which the victim stood parted (Figure 6). The locations of the construction crew members on the casing deck are shown in Figure 7.



Figure 6 – Hole through which victim fell

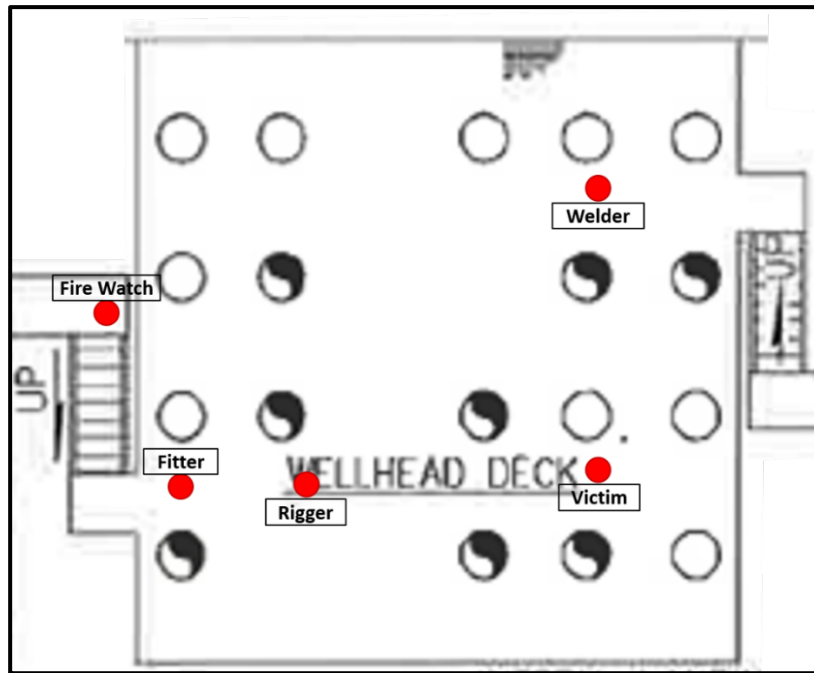


Figure 7 – Locations of construction crew members

The fire watch saw the victim partially fall through the grating and began to yell to personnel on the casing deck. Due to the combination of the loud noise of the metal saw and the personnel wearing hearing protection, they did not hear the fire watch. The fire watch stated that he ran up the stairs from his location on the sub-cellar deck to the GAI-Tronics intercom at the northeast corner of the production deck to alert all personnel on the platform about the incident. By the time the fire watch made the announcement, the victim had fallen approximately 50 feet to the +10 deck. The fire watch could not recall whether he had a personal radio to use for communications.

Personnel initiated the fall response plan.

At approximately 7:35 a.m., a medic at another platform was called to assist with the incident.

At approximately 7:53 a.m., the Fieldwood Area Foreman requested an Era Search and Rescue (SAR) flight.

At approximately 8:00 a.m., the medic arrived at EW 826 A. The medic found the victim without a pulse, unresponsive, and with no detectable signs consistent with life.

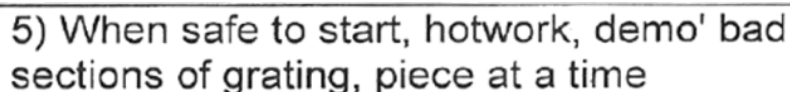
At approximately 9:22 a.m., the Era SAR flight arrived on location.

At approximately 11:30 a.m., the Era SAR flight departed the platform with the victim. They arrived in Houma, LA, at approximately 11:42 a.m., completing their mission.

On May 17, 2020, BSEE investigators arrived at EW 826 A to begin their investigation into the fatality incident.

GRATING REMOVAL

This job of removing the grating required multiple steps. As explained by construction personnel during interviews, the first step was to rip the grating using a metal saw to create more manageable sections for removal. The next step was to remove rust around the welds that secure the grating to the platform structure using a hammer or chipping gun. Once the rust was removed from the welds, a torch was to be used to “wash” the welds, or to melt the tack welds holding the grating. Finally, the old section of grating was to be removed, a new section of grating placed in position, and then the grating welded to the platform structure.



5) When safe to start, hotwork, demo' bad sections of grating, piece at a time

Figure 8 – Step 5 of the May 16 JSA

Figure 8 shows step five of the May 16 grating repair JSA. This step explains that the sections of grating should be demolished one piece at a time; however, that did not occur. After arriving at the casing deck, the fitter instructed the welder to begin ripping

the grating on the deck. Ripping grating is the process of cutting along the crossbars to make two sections of grating the same length but narrower in width. During the time that the rigger and victim were on the production deck to tighten the hammer union, the welder was able to rip the grating down two of the three straight-line corridors between the well casings, as seen in Figure 9.

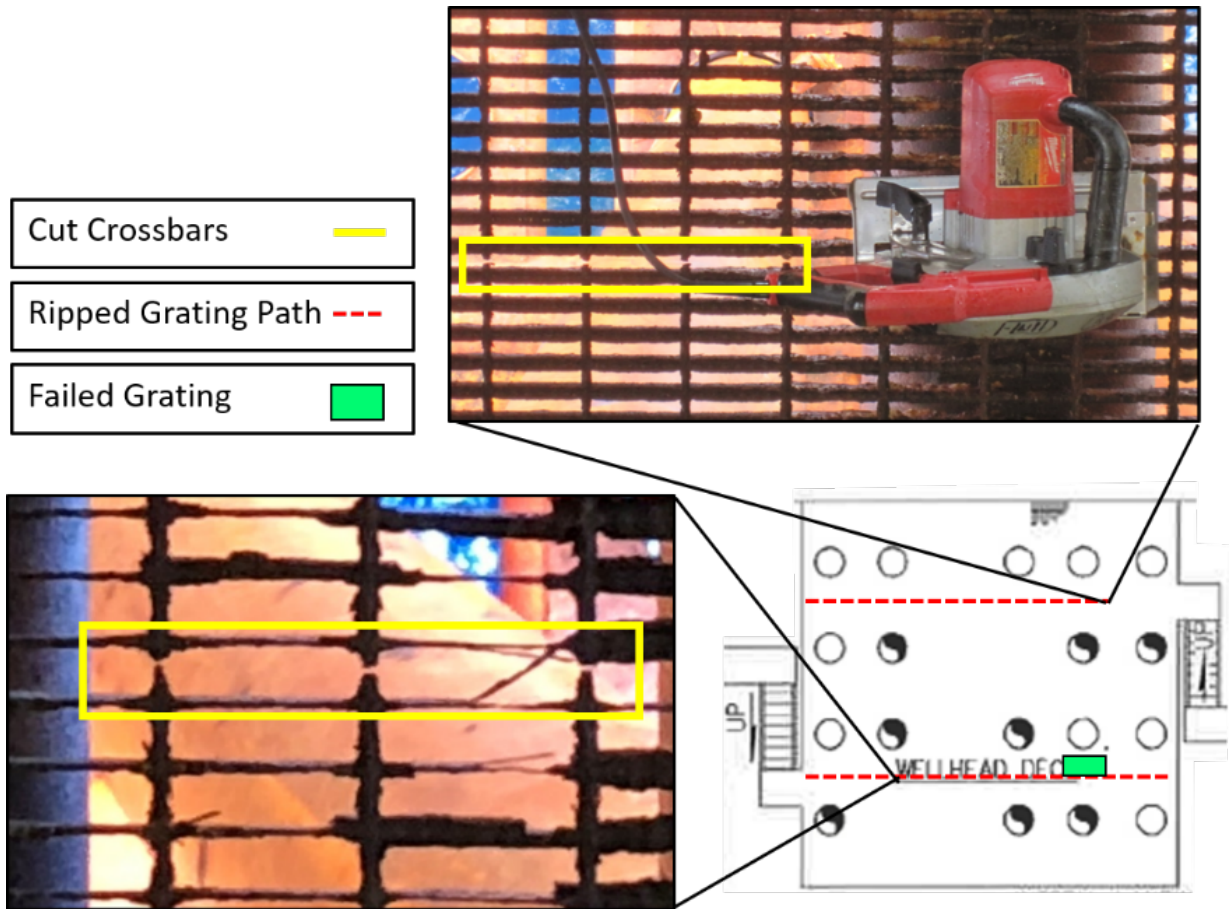


Figure 9 – Ripping the grating on the casing deck

Grating is made of crossbars (round bars) and bearing bars (flat bars). The width of a given piece of grating is integral to the amount of load it can handle. This is because the load is distributed to the bearing bars via the crossbars. Most of the grating on the casing deck was in a severely corroded condition and considered hazardous to walk on. With the crossbars cut and some rust removed, the grating no longer had adequate structural integrity. Statements made by construction crew personnel indicate that they did not consider that ripping the grating affected its structural integrity.

SAFETY AND ENVIRONMENTAL MANAGEMENT SYSTEM

The bridging agreement between Fieldwood and FCC states:

“The Contractor agrees to the following:

Contractor will review Fieldwood Energy’s Safety and Environmental Management System (SEMS), related SEMS requirements, Safe Work Practices and agrees to perform all contractual obligations in accordance with such Fieldwood Energy Programs;

The Contractor will have written safe work practices that help minimize the risk to personnel and the environment for all work conducted for Fieldwood Energy, and all activities performed by the Contractor will be conducted in accordance with those safe work practices.”

The bridging agreement cites that the Contractor will follow its own SWPs. Based on the language of the bridging agreement and the SEMS documents provided by FCC, Fieldwood did not ensure that FCC’s SWPs met their requirements. A review of these SWPs revealed that they do not meet or exceed Fieldwood’s own requirements for when and how fall protection should be worn. For example, FCC’s SWPs simply state that “[f]all protection is required whenever employees are potentially exposed to falls from six feet or greater to lower levels.” Fieldwood’s SWPs, however, require personnel to maintain “100% continuous attachment fall arrest systems” when “exposure to an open hole exists” and when “working over water or at the bottom level (+10 deck) while performing tasks such that creating an open hole is part of the work (e.g., changing grating).” Multiple members of the construction crew stated that they believed that working on the casing deck met the criteria for working over water.

It should be noted, however, that the construction crew stated during interviews that they were to follow Fieldwood’s SWPs, which is contrary to the bridging agreement. Still, they chose not to wear fall protection as required.

Job Safety Analysis

The panel compared JSAs created for tasks that took place on the casing deck. This review revealed differences in how clearly hazards and hazard controls were communicated in JSAs associated with work on the casing deck. Many of the personnel interviewed could not recall the last time they received JSA training, where clearly identifying hazards and hazard controls would have been covered.

Figure 10 shows excerpts of a May 8, 2020, JSA used by the operators when conducting a casing diagnostic. This JSA, created by the operator, explicitly calls for 100 percent tie-off when entering the barricaded casing deck. The PIC that approved this JSA was on location at the time of the incident.

***** Survey WORK SURFACES at work locations *****

Survey work site grating, plates and hatches for missing/broken clips, welds and/or supports.

Survey work site grating and deck plating for areas that may not be capable of supporting personnel or equipment.

***** Take Corrective Action BEFORE work proceeds *****

SEQUENCE OF JOB STEPS	POTENTIAL SAFETY OR ENVIRONMENTAL HAZARDS FOR EACH STEP	SAFETY OR ENVIRONMENTAL HAZARD CONTROLS FOR EACH STEP
Enter barricade area	Falls, bodily harm	100 % tie –off to enter barricade area, Use team work

Figure 10 – Casing diagnostic JSA

According to Fieldwood’s policy for JSAs, “the immediate supervisor of the crew performing the job onsite must conduct the JSA and ensure all personnel involved in the job activity are included and sign the JSA.” The immediate supervisor, or “supervisor of the job/task/activity/work,” must also monitor the course of the specific “job/task/activity/work.” The construction supervisor is the immediate supervisor of the construction crew, and, as such, he created the JSAs for tasks completed by the construction crew and should have been present for these jobs. Fieldwood also requires that the PIC “approv[es] all JSAs for supervised work on the facility/location before personnel start the work.”

Similar to language found in the casing diagnostic JSA (Figure 10), when operators created any JSA to enter the casing deck, those JSAs also stated personnel were to be 100 percent tied off to enter the casing deck (or used similar language such as “wear safety harness to cross barricade”).

SEQUENCE OF JOB STEPS	POTENTIAL SAFETY OR ENVIRONMENTAL HAZARDS FOR EACH STEP	SAFETY OR ENVIRONMENTAL HAZARD CONTROLS FOR EACH STEP
3) Setup fall protection, for access to area. Use fall protection: Yo-yo's, safety belts.	Weak grating Holes in deck Falling through hole Not hooked 100% Damaged, faulty fall protection	Use caution where you are stepping Walk over/on beams when possible Make sure fall protection is used, inside barricaded area. Inspect fall protection, before using Stay hooked 100%, during job

Figure 11 – May 12 grating survey JSA

The May 12 grating survey JSA created by the construction superintendent and approved by the PIC states that personnel were to be 100 percent tied off when inside the barricaded area (Figure 11). This JSA also concisely lists hazards and hazard controls that can easily be matched.

SEQUENCE OF JOB STEPS	POTENTIAL SAFETY OR ENVIRONMENTAL HAZARDS FOR EACH STEP	SAFETY OR ENVIRONMENTAL HAZARD CONTROLS FOR EACH STEP
3) Barricade planned holes needed, for access to casing deck, from top deck. Setup fall protection, to work around open hole. Inspect and prep' casing deck for hotwork. Post fire watch when starting any hotwork	No barricade setup. Opening hole, before barricades are up. Faulty fall protection. Safety belts not properly fitted. Working heights. Working near/over open hole. Working over water. Falling through hole. No rescue plan. No rescue equipment available. Hand injuries. Pinch points. Strains to back, muscles.	Before starting work on grating, setup barricades, around planned holes. Inspect and use fall protection, when working heights/over water. Use PFD's if working over water. Stay 100% hooked, while working. Have a rescue plan in place, before starting. Inspect and have rescue equipment ready to use, should a fall occur. Wear proper gloves to do your job. Stay clear of possible pinch points.
	Slips, trips, and falls. Slippery surfaces. Wet conditions. Gas presence. Faulty gas detector. Flammable matl, products in hotwork area. Exposed production equipment, tubing, wiring. Use safety glasses and face shields, to protect eyes No firefighting equipment available, and ready. High winds.	Use caution in wet conditions, to prevent slips and trips. Test and inspect area for any gas presence. Remove all flammable matl/products, from area. Cover/shield any production equipment/components, that could be affected by hotwork Keep your safety glasses on, to protect from eye injuries. Fire watches must check for gas presence, before starting any hotwork. Fill and sign off on permits. Test gas detector before using. Maintain good communication Monitor where sparks are traveling, if high winds are present
4) Rig down grating to casing deck, though access holes made, and stage on casing deck level	Crane operations: Overheads, standing under lifts Rigging failure Out of control lift Hand injuries: Cuts, scrapes, pinch points Communication failure Working near open hole Falling through hole Not hooked up 100% Strains to back/muscles Not using stop work, when needed	Don't stand under lift, while coming down through hole with grating Make sure rigging is in good condition, and rated to hole lift Use proper gloves for job task Maintain good communication between crane operator/signal person, during jog. Use fall protection, when working inside of barricade. Stay 100% hooked up If working over hole, pfd's must be worn Have enough help when moving heavy items around Use stop work authority, if job becomes unsafe

Figure 12 – May 15 grating repair JSA

The May 15 grating repair JSA (Figure 12) does not list hazards and hazard controls in as clear of a manner as in previous examples. In step three, the hazard control of being 100 percent tied off was seemingly in response to the hazard of creating an open hole to lower new grating to the casing deck, rather than for what should have been a job step of entering the unsafe casing deck (as seen in Figure 10). It should be noted here that hatches on both the drilling deck and the production deck had to be opened for this step. Step three also combines the tasks of preparing to lower the new grating to the casing deck and preparing the casing deck for hot work, obfuscating which hazards and hazard controls pertain to which task.

Step four of the May 15 grating repair JSA involved personnel on the drilling deck and the production deck guiding the new grating through open holes to personnel on the casing deck. It does identify hazard controls as staying “100 percent hooked” and using fall protection when inside of a barricade, but it is still unclear whether this applies to those personnel only near barricaded open holes, on the entire casing deck, or both.

As previously mentioned, the construction crew was not able to complete the job described in the May 15 grating repair JSA. For the completion of this job, the construction superintendent created the May 16 grating repair JSA by copying the steps from the May 15 grating repair JSA instead of generating a new JSA that removed those steps that were already finished. This JSA was also approved by the PIC.

<p>5) When safe to start, hotwork, demo' bad sections of grating, piece at a time</p>	<p>Working heights, to setup rigging, or hooking up harness. Slips, trips, and falls.</p>	<p>Use safety harnesses and yo-yo's when opening a hole.</p>
	<p>Wet conditions. Hotwork. Sparks. Fire watch not ready. Communication failure. Hand injuries, cuts, lacerations. Falling objects. Overheads. Hot metal surfaces. Dropped tools. Area not secured around work Leaking torch hoses Accidental arcs. Welding machine not grounded. Hand injuries. Cuts, scrapes, lacerations, sharp objects. Eye injuries. Not using face shield, when chipping, burning, or grinding. Open holes. Working over water. Not using PFD's. Not staying 100% hooked up, when working near/over hole. Placing your back to hole. Not paying attention next to hole. Distractions.</p>	<p>Inspect rigging, yo-yo's, prior to using. Make sure rigging is rated for job. Use fall protection, if working heights. Use three point contact, when working from ladder. Tie off ladders, when working on. Use caution when working from ladder, especially in wet conditions. Use correct gloves, for job task. Inspect and use fall protection, working heights. Stay 100% hooked up Have a rescue plan, should a fall occur. Wear work vest if working over water. Tie off tools, when working heights. Caution off area, around where work is being done, in rack. Check torches for leaks, before using Check leads for cuts, breaks Make sure welding machine is grounded properly. Wear gloves, when working, Use heavy gloves, to protect from burns. Maintain eye protection at all times. Use double eye protection, when chipping, burning, grinding, etc. Stay alert, while working near or around hole. Never place your back to an open hole. Don't allow others to distract you from hazard of open hole, while working.</p>

Figure 13 – May 16 grating repair JSA

Since the construction crew completed some of the steps from the May 16 grating repair JSA on the previous day, they began work with step five of the JSA (Figure 13). Though personnel on the casing deck are to be 100 percent tied off when on the casing deck, the first hazard control for this step says to “use safety harnesses and yo-yo’s [sic] when opening a hole.” Though staying 100 percent tied off is later stated as another hazard control, the JSA is again unclear if this is in relation to when on the casing deck, when near open holes, or both.

Construction crew members indicated in interviews that they planned to don their fall protection when they began to remove grating on May 16, showing they believed fall protection was needed only in the event they created an open hole. However, they also

stated that wearing fall protection to enter the casing deck was mentioned many times in the safety meeting.

Supervision

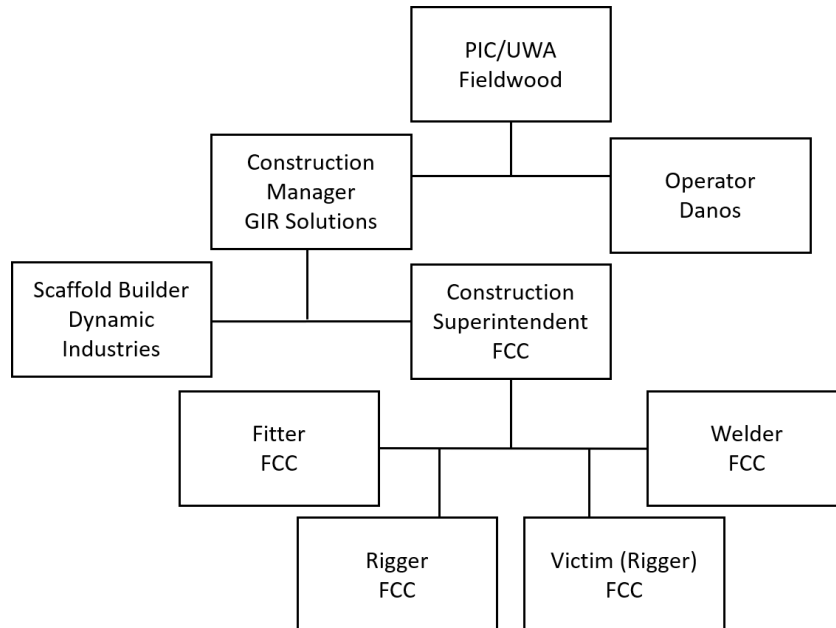


Figure 14 – Delegation of authority

The delegation of authority for personnel relevant to the incident on the facility at the time of the incident is shown in Figure 14. Upon arrival at the facility, the construction manager and construction superintendent signed an Ultimate Work Authority (UWA) agreement form for simultaneous operations with the PIC, confirming the PIC as the UWA. Fieldwood defines simultaneous operations as “when multiple operations or activities such as production [and] construction [...] occur simultaneously at offshore facilities.” Fieldwood’s policy also states that the “overall safety of the operations on the facility when simultaneous operations are being conducted” is the UWA’s responsibility. The PIC is also the final approval for JSAs.

According to the GIR Solutions construction manager/inspector guidelines, the construction manager “shall not directly supervise or instruct contractor work crew on performing job tasks.” The construction manager’s purpose is to liaise between the construction superintendent and the PIC to “ensure that projects are executed safely.”

The construction superintendent is to “manage[,] oversee[,] and monitor all activities at the jobsite,” according to FCC’s job descriptions. According to Fieldwood’s JSA policy, the construction superintendent is responsible for creating JSAs for the construction crew.

These three levels of supervision are responsible for clearly conveying safety expectations to personnel conducting tasks. This should not only be communicated

verbally in meetings but also captured in documents such as JSAs. The May 15 and May 16 grating repair JSAs were created, reviewed, and approved, even though they did not effectively communicate the hazards and required hazard controls.

The construction superintendent, construction manager, and PIC are all responsible for some level of visual supervision to confirm that personnel are conducting operations safely. While the construction crew was lowering the new grating to the casing deck on May 15, the personnel on the casing deck were not wearing fall protection, according to one of the crew members. The construction superintendent stated he went to the production deck when the job started but left to finish other tasks. He also said that he did not go down to the casing deck, which means he did not visually confirm personnel were wearing fall protection as required. The PIC and the construction manager also did not visually confirm that operations were conducted safely.

On May 16, the PIC, construction manager, and construction superintendent did not go to the casing deck before the start of, or during, the grating repair operations. As such, they were not able to ensure that personnel were wearing fall protection, nor could they stop work after witnessing the unsafe actions of the construction crew. They were also not present to give permission to start work. Although none of Fieldwood's written policies reviewed by the panel require a safety technician to be on location, statements provided by supervisors indicated that one is generally assigned to a construction crew to help with monitoring the various construction activities. A safety technician was not on location for this job.

CONCLUSIONS

The following conclusions were based upon the totality of the information provided to, and received by, the BSEE panel during its investigation into the May 16, 2020, fatal incident:

PROBABLE CAUSES

BSEE defines 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 incident.” The Panel identified the following as probable causes of the incident:

- Fieldwood failed to maintain all walking surfaces on the facility in a safe condition.
 - An April 2018 Level I Survey of the platform revealed a grade of “C-Poor” on approximately 30 percent of the grating on the casing deck.
 - The condition of the casing deck continued to worsen, as documented by a November 2019 Level I Survey, which identified approximately 60

percent of the grating on the casing deck as having “moderate to heavy surface corrosion and scale.”

- As it was not until May 2020 that construction began, grating deficiencies were not addressed in a timely manner per industry standards (e.g., API RP 2A-WSD) and BSEE recommendations (e.g., NTL No. 2009-G32).
- Fieldwood failed to ensure that FCC’s SWPs met or exceeded their own SWPs.
 - Fieldwood did not provide evidence to show that they performed an internal review of FCC’s performance and documented SEMS Program.
- Supervisors failed to fulfill their intended responsibilities within the relevant, established SWPs.
 - Supervisors did not go to the casing deck before the start of, or during, the grating repair operations. As such, they were not able to ensure that personnel were wearing fall protection, nor could they stop work after witnessing the unsafe actions of the construction crew.
 - Supervisors periodically monitored the work from a different deck throughout the course of the job, instead of continuously monitoring the job from an eye-level vantage point.
 - Although personnel believe that the closing of a safety meeting is tacit approval to start the job, supervisors did not give explicit permission to start work.
- Personnel performing the job failed to adhere to the requirements of the JSA.
 - Although the JSA explicitly stated to rip the grating “a piece at a time,” personnel proceeded to rip the entirety of the work area, thereby weakening the structural integrity of the grating.
 - The construction crew did not seem to be properly trained to understand how ripping grating greatly weakens its integrity.
 - The victim stood on the grating that had just been ripped.
 - Personnel performed work in the compromised area without wearing fall protection.
 - Though the JSA was somewhat unclear about when and where to wear fall protection, interviews of the construction crew revealed that safety meetings and reviews of the JSA involved discussions of being 100 percent tied off.
 - Personnel did not invoke SWA to facilitate a safer working environment.

CONTRIBUTING CAUSES

BSEE defines contributing causes as “those actions, events, or conditions that: a) [m]ay 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. The Panel identified the following as contributing causes of the incident:

- The JSA process was not controlled.

- Ambiguity of safety protocols and precautions from the JSA were not commensurate with verbal instructions in the morning safety meeting.
- The May 16 grating repair JSA was created by copying the steps from the May 15 grating repair JSA instead of generating a new JSA that removed those steps that were already finished.
- The repair grating JSA combined several tasks into one step and did not clearly and concisely identify known, paired hazards and hazard controls.
- Multiple personnel interviewed could not remember the last time they attended JSA training.
 - The May 15 and May 16 JSAs are insufficient in that they are unclear when personnel were to be 100 percent tied off.
- Construction crew members followed the instructions of personnel not in a position of authority.
 - The fitter indicated that fall protection was not necessary and instructed the welder to rip a larger area of grating than called for in the JSA. Crew members followed the assumed authority of a perceived superior instead of following the direction of those in supervisory positions with actual authority.
- Complacency at the job site allowed for unnecessary risk exposure.
 - Experienced workers made false assumptions about the grating's integrity because of routine exposure to hazardous grating conditions.
- The fire watch either did not have or did not use a personal communication radio to convey to the construction crew and other platform personnel that the victim was in danger in a timely manner.
 - Having a radio could have alerted the crew sooner, and potentially enabled retrieval of the victim prior to the fall.

RECOMMENDATIONS

The results of the BSEE panel investigation yielded recommendations aimed at improving safety performance and preventing a recurrence of a similar event sequence. The BSEE panel recommends companies operating on the United States OCS consider the following to further promote and protect the health and safety of personnel, the environment, and its resources:

- All facility walking (and working) surfaces should be regularly inspected and maintained in a safe condition.
 - Grating should be replaced in a timely manner in accordance with the recommendations of NTL No. 2009-G32.
- Operators must perform an internal review of their contractors' SEMS Programs to suitably and adequately identify the gaps in a bridging agreement clearly assigning responsibility. These bridging agreements should be periodically reviewed to ensure continued effectiveness.

- Supervisors should be trained, skilled, and knowledgeable in their assigned duties and responsibilities, and they should take an active role in task planning, hazard analysis, and supervision of work.
 - Jobs should not begin until a supervisor is at the site of the job and gives permission for the crew to start.
 - Supervisors should remain at the job site to view ongoing operations and ensure proper safety precautions are followed.
- Training on JSAs should be refreshed on a periodic basis.
 - Hazard controls should be clearly matched to a hazard, and shortcuts should be avoided both on paper and during the job.
 - Multiple job scopes within the same JSA should be avoided.
 - If a job is stopped for considerable time, the JSA should be reassessed. Should the job continue into the next day, a new JSA should be completed.
 - Special emphasis should be given to SWA with no fear of reprisal.
- A clear delegation of authority should be communicated to all personnel.
- Construction crews should be trained in the dangers of compromised grating and the hazards associated with ripped grating.
- Clear signage conveying fall protection requirements should be posted on or near barricades where necessary.
- Consider entry logs, maintained by a fire (or hole) watch or job site supervisor, that document when specific personnel enter and/or exit barricaded areas.
- Fire (and hole) watches should have personal communication radios for contact with their assigned crew. Also consider in-ear hearing protection with radio hookup capability so that construction personnel in loud environments can be alerted to dynamic situations.
- Personnel should exercise SWA immediately upon notice that proper PPE is not in use and the job is unsafe.