

Investigation of February 17, 2018, Fatality West Cameron Block 215 Platform “A”

Lease No. G-04087
Gulf of Mexico Region,
Lake Charles District
Off Louisiana Coast

June 2020





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Abbreviations and Acronyms

ERT – Energy Resource Technology GOM LLC
WC – West Cameron
Talos – Talos Energy Inc.
BSEE – Bureau of Safety and Environmental Enforcement
OCS – Outer Continental Shelf
OCSLA – Outer Continental Shelf Lands Act
HSE – Health Safety and Environmental
HWP – Hot Work Permit
DLS – DLS, LLC
DSS – Diverse Safety and Scaffolding
SIMOPS – Simultaneous Operations
OOS – Out of Service
JSA – Job Safety Analysis
SWP – Safe Work Practices
UWA- Ultimate Work Authority
SWA – Stop Work Authority
PIC – Person in Charge
PPE – Personal Protection Equipment
AFE – Authorization for Expenditures
SSV – Surface Safety Valve
INC – Incident(s) of Noncompliance
CFR – Code of Federal Regulations
SEMS – Safety and Environmental Management System
P&A – Plug and Abandonment
MOC – Management of Change
OJT – On the Job Training
AED – Automated External Defibrillator
CPR – Cardiopulmonary Resuscitation
FWL – From Water Line

Executive Summary

On February 17, 2018, a fatal incident occurred on the Energy Resource Technology GOM LLC (ERT) “A” facility, located in West Cameron (WC) Block 215. This location is approximately 34 miles south of Lake Charles, Louisiana in the Gulf of Mexico. ERT is a subsidiary of Talos Energy LLC (Talos).

A four-member DLS, LLC (DLS) construction crew was removing the out-of-service (OOS) firewater piping system from below the cellar deck of the WC 215 “A” facility.¹ A welder and rigger were located on scaffolding erected just under the cellar deck. They were tasked with cutting the fire water pipe into pieces and lowering each piece, over 30-feet down to the +10 deck. A second rigger and a fitter were on the +10 deck, tasked with unlatching the pipe and maneuvering each piece to a staging area.

At approximately 10:00 am, the rigger on the scaffolding prepared to lower a 6-inch diameter pipe cut 4 feet long to the +10 deck. He connected a nylon strap and screw pin shackle to the pipe through a hole the welder cut out with a torch. He tied approximately 50 feet of ½” manila rope to the nylon strap and positioned the rope through a 3.2-ton snatch block pulley, which was attached to a 3-ton beam clamp anchored to an I-beam below the cellar deck. He then wrapped the rope around the top scaffolding rail and yelled down to the rigger and fitter as he kicked the pipe off the scaffolding. The manila rope parted without warning causing the rigger to fall back onto the scaffolding deck and allowing the pipe to free fall over 30-feet to the area below. At this exact time, and for reasons unknown, the rigger on the +10 deck was directly in the landing/drop zone. The pipe struck the rigger on the head, hit the +10 deck then went overboard into the Gulf of Mexico. Despite wearing a hard hat, the blow from the pipe resulted in a fatal injury to the rigger.

The Bureau of Safety and Environmental Enforcement (BSEE) convened a panel to conduct an investigation into the cause(s) of the incident and issue a report of its findings, conclusions, and recommendations. The Panel Investigation Team, with assistance from U.S. Coast Guard Investigations Division, MSU Port Arthur² identified a probable cause for the incident and several factors that may have contributed to the probable cause.

¹ The WC 215 “A” facility has four levels: main deck, cellar deck, sub-cellar deck, and a boat landing / +10 deck.

² Additional investigative assistance was provided by U.S. Coast Guard (USCG) Mr. Aaron Heniger, Chief, Investigations Division, Marine Safety Unit, Port Arthur, TX.

Introduction

Pursuant to 43 U.S.C. § 1348(d)(1), (2) and (f) [Outer Continental Shelf Lands Act, as amended] (OCSLA) and 30 CFR 250, the Bureau of Safety and Environmental Enforcement (BSEE) is required to investigate and prepare a public report of this incident. The purpose of this investigation was to identify the cause or cause(s) of the fatality at WC 215 and issue recommendations in order to reduce the likelihood of a recurrence or similar incident in the future. BSEE convened a panel investigation team that included:

- Charles Arnold³, Chief, Office of Incident Investigations, Gulf of Mexico Region
- Darron Miller, Inspector/Accident Investigator, Lake Charles District
- Mitchell Klump, Inspector/Accident Investigator, Lake Charles District
- Michael Idziorek, Special Investigator, Safety and Incident Investigation Division, Washington DC

Companies Involved

Energy Resource Technology, GOM / Talos Energy LLC (Talos)

Energy Resource Technology became an entity of Talos Energy LLC in 2013 after Talos completed its acquisition of Energy Resource Technology, GOM, Inc.

DLS, LLC (DLS)

According to their website, “DLS is a leader in inland water oilfield construction, pipeline construction, and facility removals. DLS mainly provides services to oil and gas industry in the Gulf Region but has an expanding group of services which are focused not only on inland facilities and pipeline but on oil and gas exploration and production as well.”

Diverse Safety and Scaffolding (DSS)

DSS is a business unit of Dupre’ Energy Services. According to their website, “DSS prides itself on 30 years of combined experience in the scaffold erection industry. DSS' mission: To consistently service the needs of the oil and gas industry, one customer at a time; with innovative, high-quality products and service.”

³ Designated Panel Chair

Background

Lease OCS-G 04087 covers approximately 5000 acres, and encompasses all of West Cameron (WC) Block 215, off the coast of Louisiana. (Figure 1) The lease complex consists of a double structure facility installed in January 1981. At the time, it was owned by Transco Exploration Company, which was bought out by Amerada Hess Corporation in 1990. Energy Resource Technology GOM LLC (ERT) acquired the lease and facility in September 2002 and remains the sole owner/operator. ERT is a subsidiary of Talos Energy LLC. The WC 215 complex sits in 60 feet of water, approximately 34 statute miles from shore.

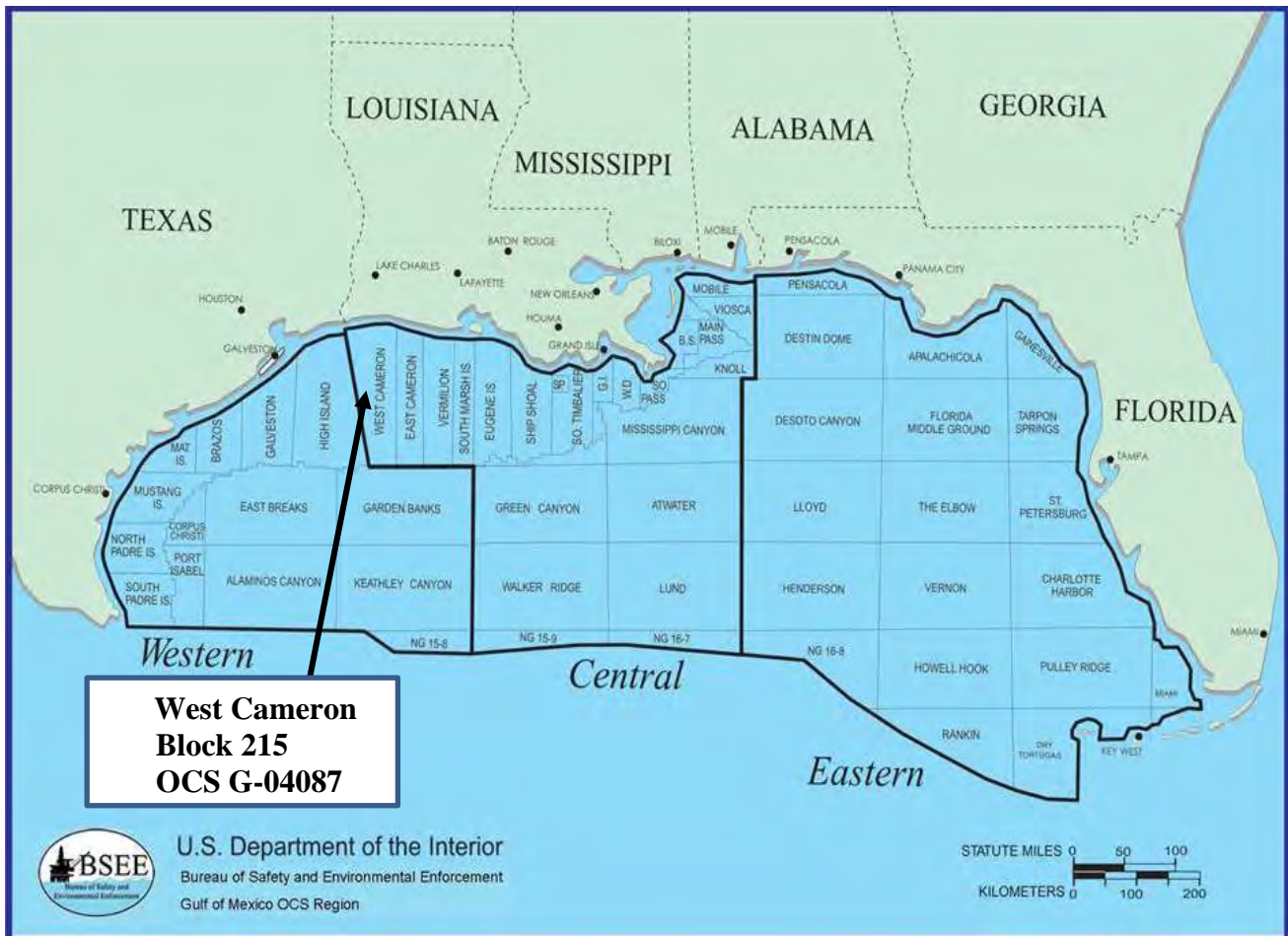


Figure 1: Location of WC 215 Facility

The BSEE Investigation

The BSEE Panel Investigation Team collected and reviewed electronic and written material, including but not limited to bridging documents, daily activity reports, Job Safety Analysis (JSA), emails and other records related to management systems, supervision of employees and contractors, communications, performance and training of personnel, relevant company policies and practices, and work environment. The BSEE Panel members also conducted multiple interviews of offshore and office personnel associated with the WC 215 operations on or before February 17, 2018. After completing the above investigation, the BSEE Panel Team reports the following:

Talos Corrosion Mitigation Plan for WC 215

In December 2017, the WC 215 Talos production operators were tasked to identify and photograph items/equipment on both the A&B facilities that they thought were in poor condition and needed repair. A list and accompanying photos were shared with a Talos senior facility engineer, followed by a discussion of any recommended improvement or corrective actions.

On January 30, 2018 the BSEE Lake Charles District started an annual inspection of the WC 215 A&B facilities. During this inspection, BSEE inspectors noted several areas of corrosion and documented those areas on an Incident(s) of Noncompliance (INC)⁴ form.

On February 1, 2018, BSEE inspectors discussed all areas of concern with the WC 215 lead operator / person in charge (PIC). The PIC then emailed photos of the items listed by the BSEE Inspector to the Talos senior facility engineer. Talos representatives agreed to address the items noted by the BSEE inspector, and the items previously listed by the production operators. The senior facility engineer then completed a corrosion mitigation task list (Figure 2) and called DLS, one of Talos' contractors, to have a construction superintendent travel out to WC 215 and conduct a pre-job walkthrough.

On February 4, 2018, the Talos senior facility engineer emailed the superintendent asking him to bring out two riggers and a toolbox to WC 215 and change out a surface safety valve (SSV) on the A-16 well. The DLS construction superintendent was already scheduled to arrive February 5, 2018, to lead the pre-job walkthrough. In this email chain, the senior facility engineer instructed the superintendent to add changing out the SSV before starting the pre-job walkthrough.

On February 5, 2018, the DLS construction superintendent and two riggers arrived at WC 215 and completed the assigned SSV change out. The superintendent then reviewed the Corrosion Mitigation Task List and conducted a pre job walk-through. The crew departed from the facility on February 6, 2018 after the superintendent wrote up a job plan and scaffolding design.

On February 7, 2018, the Talos senior facility engineer emailed DSS the scaffolding specifications drafted by the superintendent so they (DSS) could start gathering materials.

⁴ The INC notifies an operator to either correct the deficiencies or appeal in accordance with 30 CFR 290- Appeal Procedures.

2018 Talos Corrosion Mitigation Task List - WC 215A-B

Revision 3 (02-02-18)

Item #	Location	Requested Item	Recommended Action	Identified By	Responsibility	Completed
1	Well Mezzanine	Heavily corroded grating	Replace one section of grating.	Operations	Construction	
2	A Platform A&B Platforms	Main Deck Stairway to Production Deck: Vertical post has holes. Holes in handrails in numerous areas.	Repair vertical post. Repair holes as required. Replace handrail piping if needed.	Operations	Construction	
3	B Platform	Stairway to Boat Landing: Stairs are heavily corroded.	Repair as required.	Operations	Construction	
4	A Platform	Sump Deck: Grating support near escape ladder is missing.	Repair/replace support and affected grating.	Operations	Construction	
5	A Platform	Sump Drain is disconnected near Flotation Cell.	Repair drain line.	Operations	Construction	
6	A Platform	Out of Service firewater piping hangers are heavily corroded and could break at any time.	Remove piping and supports threatening walkways and stairs only.	Operations	Construction	
7	A Platform	Grating and supports on north end need to be replaced.	Repair as required.	Operations	Construction	
8	Boat Landings	Grating and handrail cables are corroded.	Repair as required.	Operations	Construction	
9	A Platform	Oil log piping for Separator, Sump Pump, and Skimmer Pump is in poor shape.	Repair piping.	BSEE	Construction	
10	A Platform	MBM-V108, Water Skimmer Gas Make-up line is heavily corroded.	Repair piping.	BSEE	Construction	
11	B Platform	PBA-P135, Sump Pump 2" discharge piping, nuts, and bolts are heavily corroded.	Repair piping.	BSEE	Construction	
12	A Platform	Swing Ropes: Attachment points are inaccessible and difficult to inspect.	Inspect swing rope attachments. Clean or repair if required. Provide estimated cost and time required to provide means for future inspection without scaffolding.	Operations	Construction	

Figure 2: Talos' Corrosion Mitigation Task List

Corrosion Mitigation Planning Meeting

On February 8, 2018, the Talos senior facility engineer, a contract engineer, and the DLS construction superintendent met to discuss the task list and pre-job walkthrough. In this meeting, the superintendent noted the initial Corrosion Task List included repairing the brackets that support the firewater piping around "walkways and stairs only." He recommended removing the entire OOS firewater piping system instead of just replacing the brackets, mentioning the firewater piping was in bad shape and it would make more sense to remove all of it rather than just install supports. Along with this recommendation, the superintendent provided the Talos senior facility engineer with a job scope and a crew list consisting of himself, one welder, one fitter, five riggers, and three scaffold builders. All parties agreed to removal of the entire firewater piping system but the BSEE Panel Investigation Team found no indication there was a discussion on how the piping would be removed or any hazard analysis of the entire corrosion mitigation operation.

During interviews, the superintendent said Talos would approve the work requirements, but the Talos senior facility engineer said the contractor was responsible for the work product and they (Talos) did not require an approval saying, "We rely on the experience and know-how of the construction supervisors." The SEMS Bridging Agreement between Talos and DLS says the contractor will identify all hazards. The agreement also stated the contractor "must have written operating procedures to ensure the safe operation of critical equipment that is owned, operated and/or maintained by the operator."

The facility engineer gave additional testimony that Talos would not do a separate Hazard Analysis because the work performed was not "Major Construction Work." Also, according to the Talos' SWP manual, the construction operation did not require on-site Health Safety and Environmental (HSE) support, as it did not meet the requirement under Talos' "Major Construction Work" definition.

The SWP manual identifies “Major Construction Work” occurs during the following:

- Removal or installation of skid packages
- Internal or external hot work repairs of vessels
- Heavy lifts – defined as 75 percent of the crane capacity at the operating radius
- Platform installation or removal

Firewater Pipe System

The firewater piping system runs under the west, north, and east sides of the cellar deck and was held up by support brackets.(Figure 3) According to Talos, the system had been out of service (OOS) since 1995, when approval was obtained from the BSEE Lake Charles District to switch to a dry chemical system. The BSEE inspectors noted the poor condition of the support brackets during the January 2018 annual inspection.



Figure 3: Rusted firewater piping support bracket

Arrival on WC 215

According to the WC 215 production Operator’s log and shipping manifests, a boat transporting eight DLS construction crewmembers and their construction equipment, one DSS scaffolding crewmember with four baskets containing scaffolding material, and a cook from Premier Offshore Catering arrived on February 11, 2018.⁵ Once personnel boarded and the equipment was moved from the boat to the platform, all new visitors received an orientation from the lead production operator employed by Talos.

The orientation consisted of a briefing, introduction to alarms, and review of the Talos “Employee & Non-Employee Visitor Orientation Checklist”. (Figure 4) Specific items were addressed including confirmation that all visiting crewmembers were aware of and would follow Talos’ SWP, identifying the facility production lead operator as the PIC/UWA, and discussing Stop Work Authority (SWA)⁶. Each crewmember initialed all bullets on the checklist confirming they understood each item. Once the orientation was complete, all crewmembers conducted a job walkthrough / facility familiarization then began moving scaffolding to work areas on the main and cellar decks.

⁵ 2 DSS scaffolding crew members had car trouble and missed the first boat out to WC 215

⁶ According to Talos’ SWP “Stop Work Authority empowers every individual with the authority and responsibility to stop work when an unsafe condition or act is observed that could affect the safety of personnel and/or the environment.”

Visitor Name:	_____	Date:	_____
Employed By:	_____	Phone:	_____
Platform:	_____		

(Initial)

- Report to Person in Charge (PIC) before starting any work.
- Emergency signals - Sound alarms if available. (Fire Emergency) (Abandon Platform)
- Visual H₂S Alarms (10 ppm - Amber Flashing Light) (20 ppm Red Flashing Light)
- Audible H₂S Alarm (Low Pitch Tone) H₂S in Atmosphere - Check Monitors)
- Familiar with Station Bill - Know where to report in the event of an emergency.
- Life Vest, Fire Stations - Be familiar with locations.
- Familiar with designated smoking areas.
- Familiar with location (and content) of Operating Procedures and Safety Manual.
- Discuss supervision of short service employees.
- Has all required PPE (Hard hat, safety glasses, steel toe shoes, FRCs, impact resistant gloves, padded eye glasses, etc.).
- Familiar with location of SDS book and right to know about all chemicals.
- Discuss any special or unique hazards at this facility.
- Pollution prevention - DON'T THROW ANYTHING OVERBOARD; REPORT ALL LEAKS AND DROPPED OBJECTS TO PIC.
- General Safety Rules - NO RUNNING, HORSEPLAY, ECT. (when stepping or climbing on piping to access skids or work area, the proper mitigating steps must be outlined and approved in JSA)
- Contact lenses - NOT to be worn offshore.
- Stop Work Authority - Document on JSA and IRT
- Reporting Unsafe Working Conditions
- Ultimate Work Authority = PIC
- Familiar with Cell Phone Rule
- Remove jewelry before coming onto platform (Talos Policy).

Prescription Medication: Yes No → If "YES", complete Talos-COMP-012 Prescription Drug Form

I have been briefed and understand the items checked above. I agree to abide by Talos rules and policies.

Person in Charge signature	Visitor's signature
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Revision 6 - Februray 28, 2017.
Uncontrolled when printed.

Figure 4: Talos employee & non-employee visitor orientation checklist

Scaffold Assembled below the Cellar Deck

On February 12, 2018, scaffolding personnel with help from the construction crew, started assembling the scaffolding under the west side of the cellar deck. During interviews, the DSS scaffolding supervisor or “competent person”⁷ said he went over the build requirements with the construction superintendent and discussed how he (superintendent) would like the scaffold erected. The scaffolding supervisor said that a scaffold is built by specifications from the customer, which on this job was the DLS crew lead by the superintendent. He also said the superintendent asked that toe boards be excluded from the scaffold build and noted this hazard on a yellow tag (Figure 5) and the Scaffold Inspection Check List. The scaffolding supervisor said he then attached the yellow tag to the completed west side scaffolding access area and kept the DSS Scaffold Inspection Checklist as a company record. The superintendent provided testimony saying he did not ask to remove toe boards or excluded them from the scaffold build and noted the toe boards were listed in the JSAs.

The scaffolding supervisor further stated that soon after the west side scaffold build started, members of the construction crew approached him and said the scaffolding was too close to the firewater piping. He said the crew argued the personnel would have to either bend, kneel, or lay down to cut the pipe and they would eventually hurt their backs. The scaffolding supervisor, citing to “satisfy the customer” said he called his office to discuss the change after which he lowered the rest of the scaffolding. (Figure 6)

The Panel Investigation Team reviewed the pre-job JSAs, yellow scaffolding tag, scaffolding inspection checklist, and the DSS Scaffolding Policy and Procedures. The Panel also noted the testimony provided by the scaffolding supervisor and construction superintendent. The results of this review was neither the construction crew nor the scaffold supervisor noted the change to lower the scaffolding deck, which added a hazard by increasing the distance where the pipe could fall to the scaffold deck after being cut.

The Panel noted deviations from the DSS policy and procedures in the construction of the scaffolding, specifically:

- “Where there is a danger of tools, materials or equipment falling from a height and striking employees below the following applies: A toe board shall be erected along the edge of platforms more than 10 feet (3.1 m; 6 feet in California) above lower levels for a distance to protect employees below.”
- “Scaffolds must be designed and used in accordance with the manufacturer’s specifications and recommendations. Do not use materials in any manner other than the manufacturer intended their design to accommodate.”
- “Two or more access ladders or an additional means of egress must be provided when: Platforms are longer than 30 feet.” The west side scaffolding (as built) was approximately 140 feet long and had only one access and exit point located at the southwest corner of the cellar deck.

⁷ DSS Scaffolding Policy and Procedures says, “Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a “competent person” qualified in scaffolding erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.”

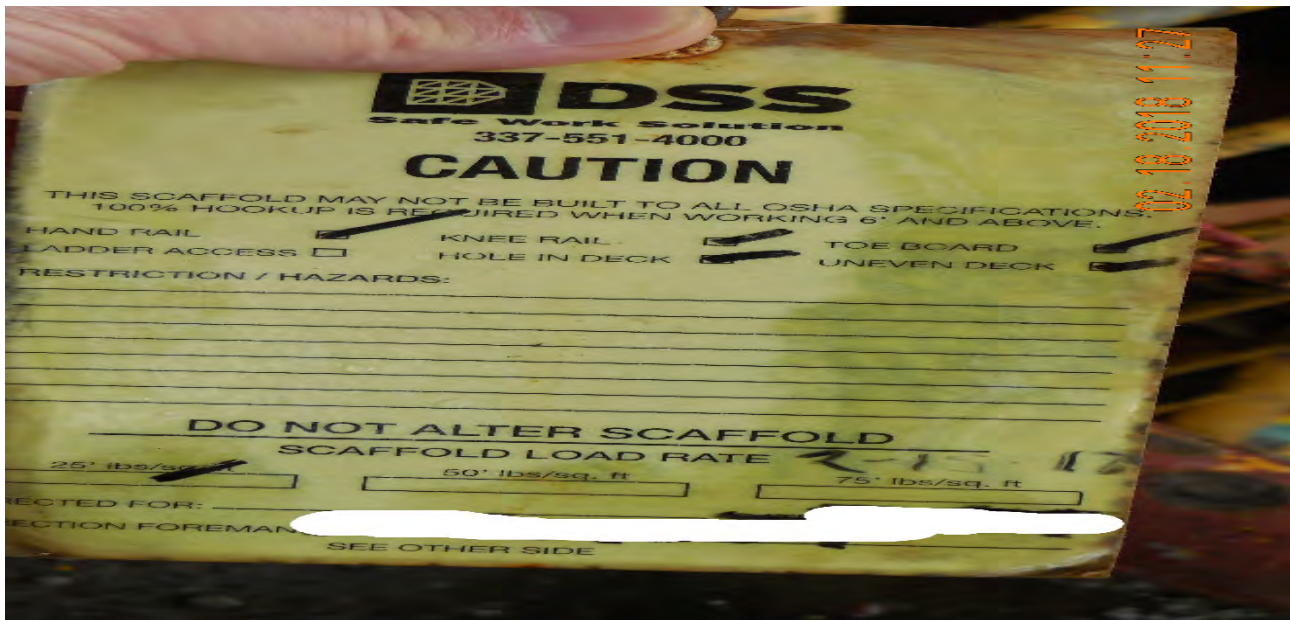


Figure 5: Yellow scaffolding tag attached at access point on the southwest side of cellar deck.



Figure 6: West side scaffolding without toe boards and visual of accommodation to lower scaffolding.

Conference Call to discuss current and upcoming operations

On February 14, 2018, a conference call was held between the Talos facility engineer, the WC 215 production person in charge (PIC)/ultimate work authority (UWA), and the construction superintendent. The purpose was to discuss current operations and a scheduled Plug and Abandonment (P&A) project. During this call, the Talos facility engineer explained a P&A crew was scheduled to begin on February 19-20, 2018, which would give the construction crew a little more than a week to complete the corrosion mitigation tasks. He said it was discussed that if the tasks could not be completed, either the P&A job would be delayed or the DLS construction crew would be sent back on shore until the P&A project was completed. Talos leadership on shore later determined if the corrosion tasks were not completed by February 18, 2018, the construction crew would demobilize and return after the P&A project. There was still no indication job-specific discussions occurred related the firewater piping removal. Interviews with the construction crew revealed they were aware of the deadline to either complete the corrosion mitigation task or be demobilized and placed in a non-pay status. Some of the employees said worker safety was minimized after these meetings.

Operations on February 16, 2018

At approximately 6:00 am, the PIC/UWA, construction crew, and scaffold builders had breakfast and held a safety meeting to go over the duties for the day and reviewed/signed JSAs and hot work permits (HWP). According to daily reports, the objectives were to work on grating and grating supports on the “A” platform, start the removal of the west side firewater piping and supports, and then begin assembling the scaffolding on the north side of the platform below the cellar deck. Four personnel: 2 riggers, 1 fitter and 1 welder were identified to remove the firewater piping⁸. Duty assignments were: two personnel on the scaffolding, one cutting the firewater piping into sections, and then using a torch to burn a hole in the pipe so the shackle could be attached. The other person was tasked with lowering each loose piece of cut pipe to the +10 deck where two personnel would be ready to receive the pipe and disconnect the shackle. The equipment selected for this task was a torch, chain fall, a spool of ½-inch manila rope, a 4-foot by 1-inch nylon strap, a screw pin shackle, and a 3.2-ton snatch block pulley, and a 3-ton beam clamp. There was no evidence there was any discussion about hazards related to missing toe boards or the lowering of the scaffolding deck.

A JSA was drafted but failed to identify specific task steps, potential hazards, and hazard related to the firewater pipe removal task. Both the PIC/UWA and the superintendent said they did not do a pre-job walk through the morning of February 16, 2018. The superintendent said he did a walkthrough the day before. However, the construction superintendent signed saying a “Work Site Verification” was conducted and the Talos production PIC/UWA signed under JSA review. The JSA review section says, “The PIC of the facility will approve the JSA only after physically visiting the job location to review the JSA with all involved prior to the commencement of the work.”

During Investigation interviews, two crewmembers said no direct assignments were issued for the firewater piping removal because the four-person crew decided to change positions throughout the day. One reason mentioned was so employees could get training on using a torch. The other reason mentioned was it was uncomfortable for personnel to cut and caused fatigue.

The PIC/UWA provided testimony that the superintendent assigned the fire-watch because he was in charge of construction operations. A HWP for firewater piping removal was completed and signed by the PIC/UWA. The rigger, who the superintendent assigned as fire-watch, was also assigned other duties including one of the four members tasked to remove the firewater piping.

Talos’ SWP states: “any hot work that involves welding, burning or hot tapping will be conducted in accordance with the latest revision of the BSEE approved Talos Welding and Burning Plan.”

According to Talos’ Welding and Burning Plan approved by BSEE:

- “All welding and burning operations, slag, sparks, or other burning material shall not be allowed to fall to the water surface. The only exception to this requirement will be for welding and burning operations conducted less than +15 (FWL)⁹ when containment is not practical. All equipment, decking, and grating shall be covered with flameproof tarps, fire resistant guards, or otherwise shielded with metal.”

⁸ The fitter had training and certifications as a rigger and fitter. The POB listed him as a fitter, but he was used as a rigger during the firewater piping removal operation.

⁹ From Water Line

- “During all welding and burning operations the PIC shall designate one or more persons, as necessary, as a fire watch. Persons assigned as a fire watch shall have no other duties while actual welding or burning operations are in progress.”

The superintendent provided testimony that he had never read Talos’ facility Welding and Burning Plan, saying he has over 30 years of experience and knows the Regulations and requirements on where and how to conduct hot work. The BSEE onsite investigation confirmed the +10 deck and grating were not covered and no tarps or drapes were put out to prevent slag, sparks, or other burning material from falling into the Gulf of Mexico.

According to the Bridging Agreement between DLS and Talos: “The operator will provide the contractor information of any known hazards at the operator’s facility the contractor is working on and that it may reasonably be exposed to while performing its assigned duties.” A Talos’ facility drawing showed the firewater piping above an area on the WC 215 +10 deck listed as “Platform Area Out of Service Barricaded and Blocked Off.” (Figure 7) According to Talos, the area was designated OOS in January 2017 due to the risers of the cable handrail being severely corroded. Talos policy requires that any initial entry or re-entry into a barricaded area will have to be formally approved by an authorized Talos PIC via Approval to Cross Barricade Permit. The OOS area is recognizable while on location because of physical barricades blocking off both access points. (Figure 8) There was no indication that the PIC/UWA discussed this hazard during the facility orientation. There was also no indication PIC/UWA or construction superintendent identified this hazard during the pre-job safety meetings, even though the area as the initial landing zone and storage area. There also is no evidence to show a Talos Approval to Cross Barricade Permit was completed even though personnel had to maneuver through a barricade to access this area to unhook the firewater piping and maneuver each piece to a storage area. (Also in OOS area)

The Approval to Cross Barricade Permit says:

- “It has always been the standing safety procedure of Talos to wear fall protection safety harness and have it properly secured before entering any are barricaded for ongoing work. Additionally, Talos requires that any initial entry or re-entry into a barricaded area will have to be formally approved by an authorized Talos PIC. This form satisfies that requirement and must be completed, signed and dated before entry across the barricade will be allowed. Failure to obtain this approval will meet with disciplinary action including possible employment suspension or termination.”

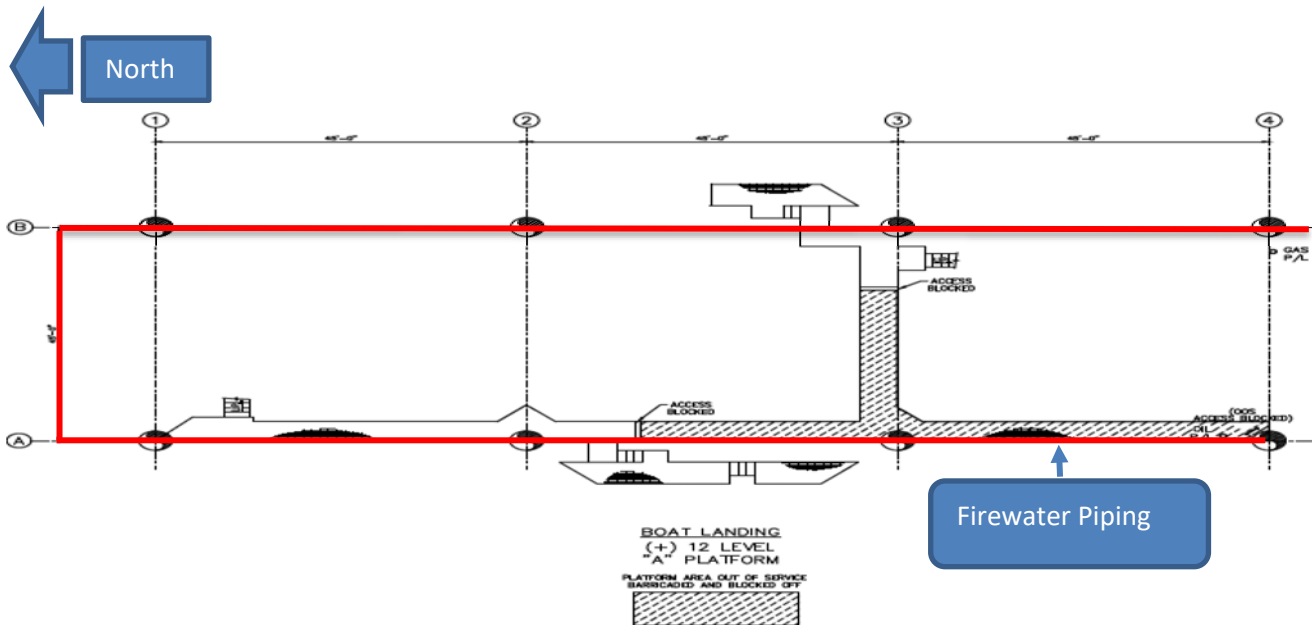


Figure 7: Facility drawing showing Out of Service area on +10

The Panel asked the PIC/UWA if he knew about the requirement of Talos' Approval to Cross Barricade Permit. He confirmed that he did, but mentioned he did not know firewater piping was being lowered to the +10 deck. He said he walked around the job areas throughout the day but did not walk below the cellar deck.

Start of Fire Water Piping Removal

The four-person construction crew started cutting the southwest side firewater piping and supports with a band saw while moving each piece up through the scaffolding access point and on-to the cellar deck. After a few pieces were cut, the crew started using a torch to cut a hole for an anchor point and started lowering pieces down to the +10 deck using the equipment previously mentioned. According to Talos, construction personnel were originally lowering pipe sections with the ½-inch manila rope tied directly to the torch cut hole in the pipe. For reasons unknown to the BSEE Panel, the crew changed the rigging at some point during the day, and then started using the nylon strap.

During BSEE Panel Investigation Interviews, the rigger and welder said, while on the scaffolding, they observed and allowed section(s) of cut piping to fall into the Gulf of Mexico. The welder said "gravity" caused the pipe(s) to fall. The rigger said the pipe(s) would fall to the scaffolding after being cut, (Figure 9) and sometimes they could not catch a piece before it rolled off. Neither the welder nor the rigger used their SWA or mentioned the hazard to reevaluate the situation

The fitter said he and the rigger (victim) were on the +10 deck unhooking the pipe after it was lowered. He mentioned he and the rigger had to move through a hard barricade and access the OOS area because it was being used as the landing zone / storage area. He said he did not observe anything fall into the Gulf of Mexico.

The pipe removal operation continued throughout the day without construction personnel using SWA or notifying the construction superintendent or production PIC/UWA of the dropped pieces of pipe.



Figure 8: Barricade blocking access to out of service area where the landing zone / storage area were established. (Arrows show area designated as out of service)



Figure 9: Distance where construction workers allowed pipe to fall to scaffolding deck.

Operations on February 17, 2018

At approximately 6:00 am, PIC/UWA, construction crew, and scaffold builders had breakfast and held a safety meeting to go over the duties for the day and complete JSAs. The objectives were to continue the removal of the west side firewater piping, complete the scaffolding on the north side below the cellar deck, start removing firewater piping and supports on north side, and continue working on east side scaffolding below the cellar deck. There was no evidence to show a discussion of hazards related to missing toe boards, accessing OOS Areas, or sections of piping falling off the scaffolding/going overboard the day before. There was no risk assessment or Management of Change (MOC) conducted or requested by crewmembers.

All construction personnel proceeded out to their respective work locations, again without a pre-job walkthrough with either the construction superintendent or the production PIC/UWA. The fire water piping crew was even allowed to proceed without a HWP or by selecting one person specifically assigned as fire watch, which as previously mentioned is a requirement per Talos' Policy & Procedures as well as their approved Burning and Welding Plan. The PIC/UWA said during an interview, that the superintendent would keep all the paperwork and bring it to him at the end of the day. He further stated on February 16, 2018 and February 17, 2018, he conducted several walkthroughs (not pre-job walkthroughs) of the job sites, but did not walk on any scaffolding or anywhere below the cellar deck.

The same four-person crew was assigned to the firewater piping removal. Testimony received during the BSEE Panel interviews revealed when the crew reached the southwest side scaffolding access, and just as they did the day before, all four had a discussion about switching positions throughout the day. There was conflicting testimony on the results of this discussion, but the final position locations were, a rigger and welder on the scaffolding and a fitter and rigger (victim) on the +10 deck. The welder and rigger on the scaffolding said they did switch up on using the torch and lowering the sections of pipe. They considered this helpful, but also On the Job Training (OJT) for the rigger as he was not skilled in using a torch. This practice was also omitted from the morning safety discussion and JSA.

At approximately 08:00 am, the welder and rigger said they started the process of cutting a hole or anchor point in the firewater piping (Figure 10) and then cutting the pipe into sections. The pipe would fall onto the scaffolding where the rigger or welder would tie the ½-inch manila rope to the sling and then attach the shackle to the loose sections. They would reposition the snatch block and beam clamp as they moved down the scaffolding in a northerly direction. The rigger said he and the welder again observed and allowed some section(s) of cut piping to fall from the scaffolding and into the Gulf of Mexico.

The fitter said he and the rigger (victim) were positioned on or near the +10 deck and was tasked to stay away from the landing zone. He said as each section of firewater piping was lowered, he or the victim would move through the barricade into the OOS area where they would unhook the shackle and move each section to a nearby location designated as a temporary storage area. He said just before the incident occurred, he and the victim were sitting at the bottom of the north stairwell. He describes wind was blowing causing slag, which he termed as "fire", and sparks from the cutting above to fall on them. He started moving up the stairwell to get away from the falling objects as the victim walked towards the landing area out of his line of sight. (Possibly behind a well caisson)

At approximately 10:00am, the rigger said he was on the scaffolding preparing to lower a 6-inch diameter pipe cut 4-feet long to the +10 deck. He connected the screw pin shackle and nylon strap to the pipe. He then positioned the ½-inch manila rope, which had the rope already tied to the strap, through the snatch block pulley. He wrapped the rope around the top scaffolding rail for leverage and yelled down to the victim and fitter as he "kicked" the pipe off the scaffolding. The manila rope then parted without warning causing the rigger to fall back onto the scaffolding deck and allowing the pipe to free fall to the area below. The welder, positioned on the scaffolding, said he did not hear or see anything because he was cutting piping and was not paying attention to how the cut section were being lowered.

At this exact time, and for reasons unknown, the victim was on the +10 maneuvering through the barricade directly in the landing zone. The pipe struck the victim on the back of the head, hit the +10 deck and then went overboard into the Gulf of Mexico. The fitter, who was on the north stairwell, said he heard something but did not see where the victim was located. He moved to an area where he saw the

victim laying on the deck and immediately yelled for help. (Figure 11) A call for help was sent over the facility loudspeaker and multiple personnel responded. Members of the crew administered Cardiopulmonary Resuscitation (CPR) for several minutes along with more than one activation of the facility Automated External Defibrillator (AED). These efforts were unsuccessful as the victim succumbed to his injury.



Figure 10: Example of hole torched into the cut sections of pipe



Figure 11: Crew locations when incident occurred.

Initial Onsite Investigation

On February 17, 2018, two BSEE inspectors boarded a motor vessel at 7:30 pm and arrived on the WC 215 facility on February 18, 2018 at 12:00 am to perform an Incident Follow-up. During the follow-up, the BSEE inspectors gathered statements from all personnel, with the exception of the rigger and the welder on the scaffolding at the time of the incident, and conducted initial interviews. Although still on the facility at the time, the rigger and welder were too shaken up to provide statements and requested to be brought back to the shore. Following their request, they boarded the motor vessel, which soon after departed the facility and headed back to shore. The BSEE inspectors reviewed paperwork for the work activities conducted on February 17, 2018 and noted there was not a HWP or a Gas Monitoring Log sheet for that day. Inspectors were not able to locate a gas detector used during the operation. The workers on location mentioned the gas detector may have been on the victim when he was transported to shore. A Talos representative provided verbal information that, a couple of days after the incident, a gas detector was found under an I-beam below the cellar deck.

The BSEE inspectors conducted a thorough walk down and photographed areas of the facility where construction activities took place. The inspectors identified a hand held fire extinguisher near the southwest scaffolding access area that was most likely for the Firewatch; however inspectors noted it was not in a suitable location related to where burning activities were taking place. Prior to the BSEE inspectors walking onto the scaffolding, they identified missing toe boards along with two sections of unsecured previously cut pipe. BSEE utilized SWA and requested the pipes be secured prior to accessing the scaffolding as well as going below to the +10 area. Once the pipes were secured, a BSEE inspector accessed the scaffolding and identified a ½-inch rope (approximately 53 ½-feet long), a burn mark on a scaffolding top rail, and a snatch block attached to a beam clamp secured to an i-beam. This indicated the construction crew possibly were utilizing the snatch block along with the scaffolding top rail as part of the pipe lowering activities.

Upon accessing the +10 deck, the BSEE inspectors recognized a hard barricade in place restricting entry to an unidentified area that was most likely OOS (although not discussed during the initial on-site orientation) for reasons unknown at the time. The BSEE inspectors acknowledged this as the landing zone for lowering activities as well as the storage area for the previously lowered cut pieces of pipe (7 pieces in the area at the time of BSEE incident follow-up). Furthermore, this area is where the rigger was said to be found post incident. Additionally, the BSEE inspectors viewed grating just inside the hard barricade where a Talos representative said the fallen pipe made impact (adjacent to where the rigger was said to be found).

The on-site BSEE inspectors concluded that the maximum potential distance the cut pipe could have fallen was approximately 39-feet.

Dive operation

Talos hired a diving contractor to search the sea floor in proximity to the WC 215 “A” facility. Divers recovered eight pieces of firewater piping, approximately 44-feet, and a section of scaffolding rail. All items appear related to the DLS lead firewater piping removal operation. One of the sections recovered was 6-inch diameter pipe cut 4-feet long with attached shackle, nylon sling and piece of ½-inch manila rope. The evidence supports the testimony provided by rigger positioned on the scaffolding that a rope parted while lowering a section of pipe. This discovery also supports the testimony by the rigger and welder who said they observed several pieces of firewater piping fall off the scaffolding and into the Gulf of Mexico. There was no evidence or testimony to suggest there was more than one rope break.

Talos 3rd Party Analysis

Talos, with no objection from the BSEE Panel Investigation Team, had a 3rd party conduct an analysis of the ½-inch manila rope that used to lower the firewater piping during the removal operation. (Figure 12) The rope was purchased by DLS for a previous job and was stored in one of the tool boxes. According to this analysis, the ½-inch manila rope was well used and exhibited evidence of deterioration consisting of worn, torn, and pulled fibers, deposits of debris and particulate in the fibers and between the strands, and dark brown and black spots that appear to be heat damage. Also, the analysis suggests by selecting and using manila rope with no manufacturer provided working load, DLS could not determine whether the use of the manila rope in this application was within the rope’s safe working load. The analysis conclusion was the rope “failed by a tensile overload fracture mechanism.”



Figure 12: ½-inch manila rope that parted during firewater piping removal.

Conclusions

Probable cause

- The BSEE Panel Investigation Team determined the probable cause was the 1/2-inch manila rope parted while a rigger was lowering a section of firewater piping to the facility's +10 deck.

Contributing Cause(s)

The Panel Investigation Team identified several causes that contributed to this incident, including the Safety Culture:

- The BSEE Investigation determined that, over a two day period, construction personnel failed to use SWA or change tasks after witnessing sections of firewater piping fall from the scaffolding and into the Gulf of Mexico. The task of cutting the fire water system was being done in an unsafe manner because the construction crew allowed the cut pipe to free fall onto the scaffolding.
- The BSEE Investigation determined the scaffolding under the cellar deck was not built according to specifications per company Policy & Procedures. (no toe boards or two access areas) The construction crew and scaffolding crew were aware the hazards and did nothing to correct the issue.
- The BSEE Investigation determined Talos, DSS and DLS personnel failed to follow Talos' SWP, conduct a proper hazard analysis, or mitigate known hazards.
- The BSEE Investigation determined personnel were walking in areas designated as a landing zone and personnel lowering pipe did not have constant visual of area designated as a landing zone.
- The BSEE Investigation determined a lack of supervision from both construction superintendent and Talos PIC/UWA.
- The BSEE Investigation determined the construction superintendent and Talos PIC/UWA did not ensure the specific duties, potential hazards, and hazard controls associated with the firewater piping removal operation were listed on JSA.
- The BSEE Investigation determined, on February 17, 2018, workers were allowed to operate without a HWP and did not assign a person with the sole duty of fire watch as required per Talos' Welding and Burning Plan.
- The BSEE Investigation determined the construction crew was aware the operation required work in a designated out of service (OOS) area with all means of access barricaded. No "Approval to Cross Barricade Permit" was completed, per Talos Energy LLC policy, and the hazard was not addressed in the morning safety meetings or on JSA.

Safety Culture

The BSEE Panel Investigation Team identified Safety Culture as a contributing factor in this fatality. Evidence and testimony provided to the Panel Investigation Team showed inadequate supervision from both Talos and DLS supervision that led to an almost complete disregard for Talos' Safe Work Practices, SEMS Plan and some Federal Regulations. The Investigation Team did not request or review documents related to operations on other Talos facilities. Therefore, the deficiencies mentioned below are specific to the WC 215 facility. Some examples of an ineffective Safety Culture are:

Talos did not appoint facility leadership that established/maintained an effective SEMS oversight. The PIC/UWA nor the construction superintendent conducted pre-job walkthroughs after the morning safety meetings and before the jobs started. This allowed specific hazards (missing toe boards) to go undetected or unidentified.

DLS and DSS personnel said they observed obvious safety hazards during the scaffolding build and firewater piping removal operation, but NO ONE used SWA. Construction personnel did not mention specific hazards like missing toe boards and pipes falling overboard.

DSS personnel did not mention missing toe boards as a hazard in pre-job Safety meetings. Per DSS Policy and Procedure, the scaffolding should not have been built without toe boards or two access areas. Toe boards were listed on the JSAs but construction personnel did not mention missing toe boards in any pre-job safety meeting.

Construction personnel working on the scaffold should have used Stop Work Authority when they witnessed the first piece of firewater piping fall off.

Talos did not have a procedure in place for crewmembers who could not read English. During interviews, some personnel could not read copies of Talos' SWP manual, employee & non-employee orientation checklist or job specific JSAs showed to them by the Panel Investigation Team. The Investigation Team is not insinuating these personnel did not understand Safety, but agreed it would be difficult for anyone to understand the documents they are required to initial/sign when they cannot read because the documents are in English.

Talos PIC/UWA did not notify the BSEE inspectors conducting the onsite investigation of out of service area during the initial orientation. Inspectors had to utilize SWA to ensure personnel secured two sections of piping on the scaffolding before anyone moved around the scaffolding or below onto the +10 deck.

Without requiring a procedure review for firewater piping removal plan or enforcement oversight from the facility PIC/UWA, Talos allowed DLS to freelance on its facility that eventually led to a disregard for Talos' Policy and Procedures.

Recommendations

The results of the BSEE panel investigation yielded a number of recommendations aimed at improving safety and preventing a recurrence or similar event sequence. The BSEE Panel recommends Talos and other companies operating on the Outer Continental Shelf (OCS) consider the following recommendations to further promote and protect the health and safety of personnel, the environment and its resources:

- The Panel recommends Talos reevaluate its HSE support functions, as there was no hazard analysis review or HSE representative onboard WC 215. The operation did not meet the Talos “Major Construction Work” requirement as defined in the SWP Manual.
- The Panel recommends personnel working on the OCS use SWA when a hazardous situation appears imminent or unsafe condition or act is observed that could affect the safety of personnel and the environment.
- The Panel recommends Talos and companies operating on the OCS add fire watch responsibilities per 30 CFR 250.113 (2) to the Hot Work Permits.
- The Panel recommends Talos and companies operating on the OCS ensure personnel are familiar with their job descriptions and have the knowledge and training to accomplish the duties assigned per 30 CFR 250.1913 (d).
- The Panel recommends Talos and companies operating on the OCS ensure identifiable markings are on barricades blocking OOS areas and ensure safety requirements are enforced before allowing access those areas.
- The Panel recommends Talos and companies operating on the OCS have policies for scaffolding operations on their facilities.
- The Panel recommends Talos and companies operating on the OCS implement lifting plans that are not limited to cranes and “other lifting devices”
- The Panel recommends Talos and companies operating on the OCS identify language barriers and inability to effectively communicate as a hazard and establish policies to mitigate.
- The Panel recommends Talos and companies operating on the OCS engineer out hazards when at all possible; when impossible ensure adequate procedures along with personal protective equipment (PPE) are in place
- The Panel recommends Talos and companies operating on the OCS share the conclusions of this report with personnel while reemphasizing each person’s obligation to use SWA when a hazardous situation is appears imminent/or an unsafe condition or act is observed that could affect the safety of personnel and/or the environment.

- The Panel recommends Talos and companies operating on the OCS review the marine trash and debris video re-emphasizing employees' obligation to report items that fall into the Gulf of Mexico.