

BSEE Panel Report 2021-001

Investigation of May 29, 2019, Fatality

Lease OCS-G02116, Eugene Island
Area Block 331

Gulf of Mexico Region, Lafayette District
Off Louisiana Coast

March 11, 2021





BSEE's National Investigation Program is administered by its Safety and Incident Investigations Division in Washington, D.C. Panel investigations, an integral tool for safety improvement, are chaired by division and regional staff, and conducted in coordination with region and district staff.

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Abbreviations and Acronyms

ALMS – Asset Liability Management System
BSEE – Bureau of Safety and Environmental Enforcement
CFR – Code of Federal Regulations
CSO – Contact Safety Officer
EI – Eugene Island
GOM – Gulf of Mexico
GOMR – Gulf of Mexico Region
HSE – Health, Safety and Environmental
JSA – Job Safety Analysis
OCS – Outer Continental Shelf
OCSLA – Outer Continental Shelf Lands Act
PIC – Person in Charge
PO – Production Operator
PPE – Personal Protective Equipment
PTW – Permit to Work
SAR – Search and Rescue
SEMS – Safety and Environmental Management Systems
SimOps – Simultaneous Operations
SWA – Stop Work Authority
SWP – Safe Work Practice
U.S.C. – United States Code
USCG – United States Coast Guard
UWA – Ultimate Work Authority
VP – Vice President
WD – West Delta

Definitions

Probable Causes are 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 the existence of the cause and the degree of its contribution to the incident.

Possible Causes are those actions, events, or conditions that;

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

Contributing Factors are those actions, events, or conditions that would not have prevented the incident from occurring, but contributed significantly to the occurrence and/or severity of the incident.

Day Shift is the shift worked from *0600* to *1800*

Mid Shift is the shift worked from *1200* to *2400*

Night Shift is the shift worked from *2400* to *1200*

Executive Summary

On May 29, 2019, the night shift Production Operator (PO) for Wood Group Production Services Network (“Wood Group”) went missing from the Renaissance Offshore, LLC Eugene Island (EI)-331 “B” production platform while performing assigned work as part of routine production operations. The EI-331 night shift PO (hereinafter referred to as “Victim”) was never located.

Less than 24 hours prior to the incident, a single section of severely corroded and deteriorated grating, (i.e. walking and working surface hazard) was identified on the north side of the wellbay by the Renaissance area supervisor / Ultimate Work Authority (UWA). The UWA notified other supervisory personnel on the facility of the hazardous grating section. A strand of red “DANGER” marking tape, indicating immediate or foreseeable life-threatening hazard, was then affixed directly to the hazardous grating section and another strand was affixed and suspended from a nearby metal post to a process pipe, at the north perimeter of the wellbay. A work order titled “Grating at well bay not on H-beam” was created and assigned the top priority classification of “urgent.” No additional actions were taken by supervisory personnel to warn or otherwise notify the remaining personnel on the facility of the identified and uncorrected life-threatening hazard, nor were any steps taken to isolate and prevent personnel from physically accessing the hazardous grating section in the danger area. Day shift activities continued unabated and into the night shift.

At the time of the incident, the facility was shut-in and not producing due to compressor maintenance and various construction tasks, which were assigned and initiated during the day shift. In preparation for a “pressing” construction task requiring hot-work above the wellbay, the entire wellbay perimeter was then marked with the same red “DANGER” marking tape. At the conclusion of the day shift, the red danger marking tape surrounding the wellbay perimeter and marking the walking and working surface hazard remained in place. The mid shift PO and Victim both worked inside and around the wellbay as a requisite to perform assigned monthly casing pressure checks. The Victim was performing the assigned monthly casing pressure checks when the incident occurred. Additionally, the facility had been scheduled to come back online the following day.

According to the Renaissance *Safety Check-In Procedure*, the victim was required to check-in with the offsite Contact Safety Officer (CSO), via phone or email, at specified two-hour intervals (2400, 0200, and 0400) throughout the night shift. Pursuant to the procedure, the offsite CSO was required to immediately initiate a Search and Rescue (SAR) effort in the event a required check-in did not occur within 15 minutes of a specified interval. The victim only completed the 2400 check-in, via email, at the start of the night shift.

At approximately 0600, a facility wide search was initiated after the Victim did not report or respond and after some of the Victim's personal protective equipment and task specific equipment items were discovered adjacent to an open hole, (located approximately 45' above the waters surface). The open hole was created when the uncorrected and uncontrolled hazardous grating section, identified in the urgent work order, was displaced.

At approximately 0630, Renaissance notified the United States Coast Guard (USCG) and a SAR mission was initiated.

On May 30, 2019, the Victim's employer reported the operational fatality to the United States Department of Labor.

On May 31, 2019, the USCG suspended its SAR mission.

On June 3, 2019, Renaissance concluded its search activities. Ultimately, the Victim was never located, nor recovered.

BSEE convened a panel to investigate the cause(s) of the subject operational incident. The panel, comprising BSEE and USCG professionals, identified the following direct, and indirect, incident causal factors that may have contributed to the direct causation and totality of the incident:

Probable Causes

- Renaissance failed to maintain all of its walking and working surfaces on the facility in a safe condition.
- Supervisors did not fulfill their respective responsibilities within the relevant, established Safe Work Practices (SWPs) when they failed to promptly correct or prevent employees from accessing the uncorrected and uncontrolled walking and working surface hazard area.¹
- Renaissance and its contractors failed to follow the agreed upon terms and conditions within their respective Safety and Environmental Management Systems (SEMS) bridging arrangements.
- Supervisors did not fulfill their respective responsibilities within the relevant, established SWPs when they failed to stop work and warn all personnel of the uncorrected and uncontrolled walking and working surface hazard.
- Supervisors did not fulfill their respective responsibilities within the relevant, established SWPs when authorizing task-work within and around, the uncorrected and uncontrolled, walking and working surface hazard.

¹ SWPs encompass Health, Safety and Environmental (HSE) –Policies, Procedures and Work Instructions.

Possible Causes

- Striking the hazardous grating section with a sledgehammer.
- Reduced effectiveness of hazard communication markings.
- Reduced effectiveness of hazard identification and communications to the work force
- Non-conformance with the *Safety Check-In Procedure*.

The BSEE Panel makes the following recommendations in an effort to further promote safety, protect the environment, and conserve resources on the U.S. Outer Continental Shelf (OCS). The following listing contains some of the key recommendations identified as a result of the investigative findings detailed within this report:

- Operators should ensure all identified hazards are communicated to personnel in a timely and meaningful way and that findings receive appropriate consideration and corrective actions.
- Operators and contractors should abide by the agreed upon terms of their respective SEMS bridging arrangements.
- Supervisory personnel should be trained, skilled, and knowledgeable in their assigned duties and responsibilities and take an active role in task planning, hazard analysis, and supervision.
- Training, guidance, and SWPs should be consistent and clear to reduce the risk of a misunderstanding.
- Communication of hazards should be sufficient to prevent personnel from inadvertent hazard exposure.
- Hazard analyses and work permits should be continually assessed and updated to maintain effectiveness within the dynamic working environment.
- Emergency response plans and strategies should be appropriately and effectively managed.

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], the Bureau of Safety and Environmental Enforcement (BSEE) is required to investigate and prepare a public report of this incident.

BSEE's Gulf of Mexico (GOM) OCS Region, Lafayette District Office was notified of the incident on May 29, 2019. By memorandum dated May 31, 2019, the investigation panel was formed and initiated its investigation of the operational incident. The panel included:

- Andrew Black – Chairman, Special Investigator, Safety & Incident Investigations Division, Headquarters;
- Stephen Harris – Petroleum Engineer, Office of Incident Investigations, GOM, OCS Region;
- Mark Huesmann – Civil Engineer, Office of Structural and Technical Support, Regional Field Operations, GOM, OCS Region;
- John Mouton – Supervisory Inspector, Production Operations Inspection Unit, Lafayette District, GOM, OCS Region.
- Martin Betts – Lieutenant, Marine Inspector, 8th District, OCS Division, United States Coast Guard.

BACKGROUND

At the time of the incident, the victim was assigned to perform tasks associated with production operations within the Eugene Island, Block 331 lease area, OCS-G 02116 (“the lease”) on the EI-331 “B” platform.

Lease

The lease covers approximately 5,000 acres on the OCS, within the GOM, off the Louisiana coast (*see Figure 1*). The lease was acquired through assignment in 2013 by Renaissance as the 100 percent working interest owner. Renaissance, as the lessee and designated operator, was responsible for ensuring all platform operations performed were conducted in compliance with all applicable regulations.

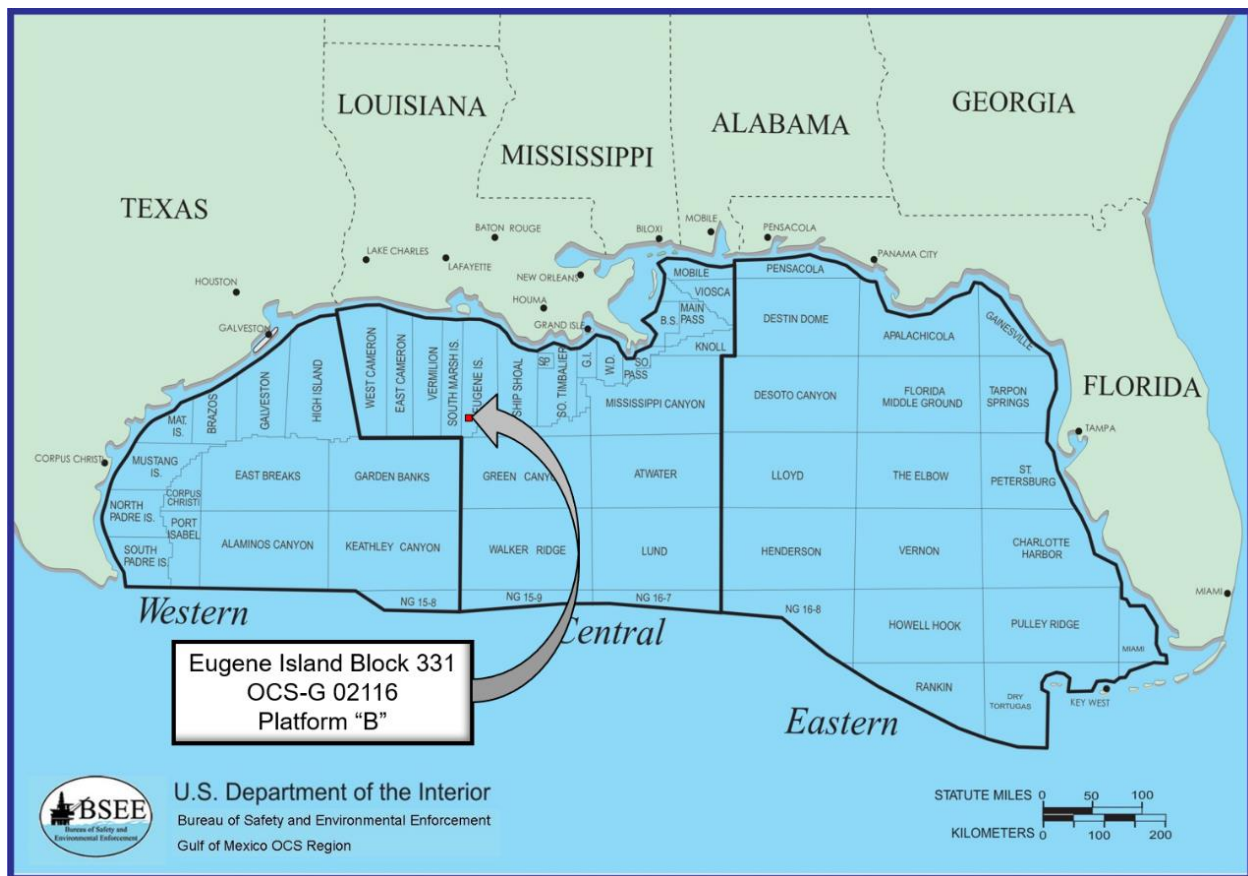


Figure 1- EI-331 Platform "B" Location

Platform

EI-331 "B" Platform is a twelve-pile (eight main pile, four skirt), fixed steel structure with 41 well slots and conductors (*see Figure 2*). Shell Offshore Inc. originally installed the platform in 1972. The water depth at the platform location is approximately 240 feet, and the distance from shore is approximately 80 miles. Forty of the 41 well slots have been drilled, with 8 wells producing but offline at the time of the incident.



Figure 2- Aerial Photograph of EI-331 Platform "B"

Companies

Renaissance, the lessee and operator of record, used contractors to perform some of its operations. A total of 18 personnel were present on the facility at the time of the incident; 1 Renaissance area supervisor; and, 17 contractor personnel (from 7 different contracted service provider companies).

The primary contracted service providers involved with relevant onsite operations were:

- Wood Group for production operations.
- Pelican Energy Consultants, LLC, for construction consulting.
- Bagwell Energy, for construction operations.

Reporting Structure

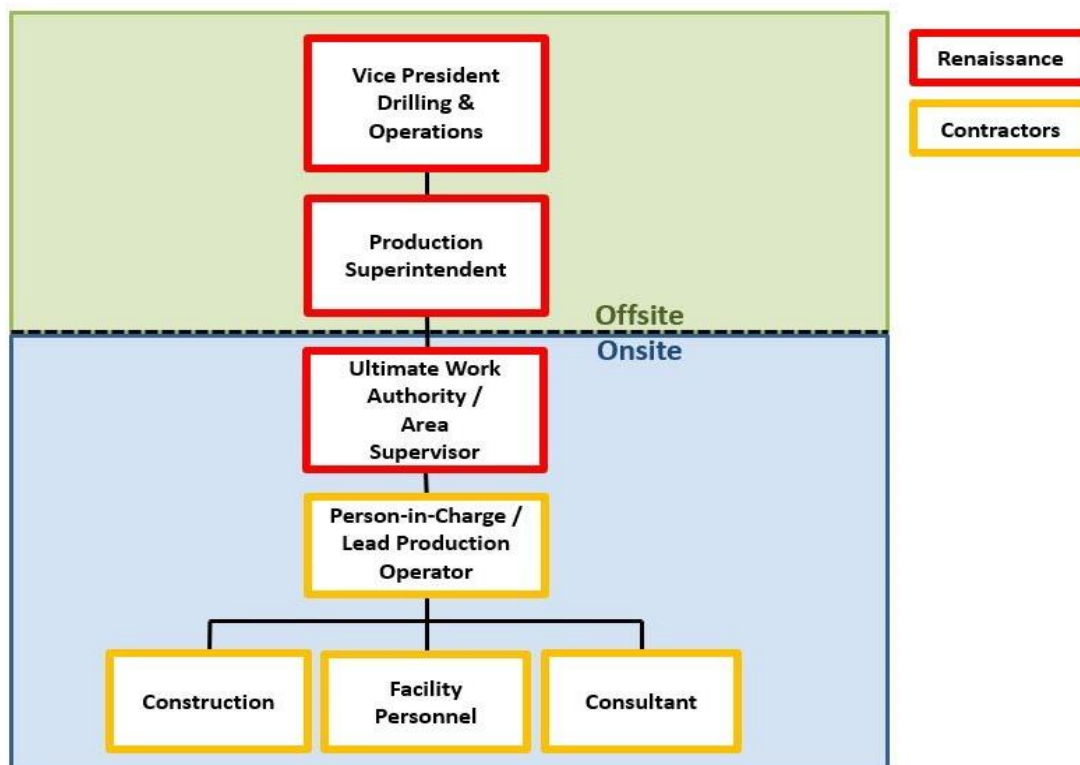


Figure 3- Representation of EI-331 Reporting Structure and Lines of Authority at the Time of Incident

Platform Operations

Renaissance production operations were conducted on a 24-hour basis using three primary 12-hour shifts, with shift changes scheduled at 0600 (day shift) 1200 (mid shift) 2400 (night shift). Renaissance construction and maintenance operations were typically conducted during the day shift, on a 12 to 14 hour basis, starting at 0600.

Asset Liability Management System

Renaissance used an electronic system to track task-work-orders called the Asset Liability Management System (ALMS). An ALMS entry would be created to document an item requiring attention which would then be submitted and tracked in the system by its identifying number prefaced with the acronym “ALM.” Facility personnel colloquially referred to an individual ALMS entry as an “alarm.” ALMS entries would typically be created by the lead PO, also known as the facility Person-in-Charge (PIC), and contain the following base information: date opened, title, description, location, status, photograph(s), and an assigned priority level. Three subjective priority levels could be assigned: “have time,” “pressing,” and “urgent.”² Once an ALMS entry was submitted, an email notification is sent out to notify Renaissance personnel,

² Renaissance did not define its three ALMS priority terms; “have time,” “pressing,” and “urgent.”

on a distribution list, that the subject work order was submitted for; approval, prioritization, and assignment for completion.

Working Alone

Renaissance created and implemented a *Safety Check-In Procedure* in 2014, in an effort to increase safety when working alone. POs working alone between the hours of 2000 and 0400 on Renaissance facilities were responsible for contacting the Contact Safety Officer (CSO) to check-in, usually by email, at the following two-hour intervals: 2000, 2200, 2400, 0200, and 0400. The PO working at Renaissance's West Delta (WD)-152 platform during the specified check-in times was designated as the CSO according to the procedure. A platform where a lone PO did not check-in within fifteen minutes of a check-in time was considered a "failed platform." The CSO was then required to immediately contact the failed platform by phone to wake its personnel to initiate "Search and Rescue" efforts.

The CSO at WD-152 worked alone and was responsible for checking-in with the "2nd in Command," the lone PO at EI-331 platform. The lone PO at the EI-331 platform was to follow the same failed platform response in the event the CSO at WD-152 failed to check-in as required.

Timeline of Events

The following proximal chronology was developed from a combination of documentation and witness accounts obtained by the panel, throughout the course of its investigation of the May 29, 2019 incident:

MAY 21, 2019

The Renaissance production superintendent directed the Renaissance area supervisor to report to the EI-331 facility due to the increased operational complexity as a result of the simultaneously scheduled production, construction and maintenance activities, also known as SimOps.³

³ **Simultaneous Operations** - When separate tasks (e.g., production and construction, or other tasked operations) occur at the same time with the potential to have an influence on the other.

MAY 22, 2019

The Renaissance area supervisor, arrived onsite and assumed the responsibilities of the UWA as the senior ranking member on the facility.⁴ The facility production was shut-in to perform compressor maintenance.

Note: The lead PO was typically both the facility UWA and PIC at all other times.

MAY 27, 2019

The Renaissance Vice President (VP) of Drilling and Operations sent an email to the Production Superintendent asking for a status update on the annual compressor maintenance and repairs. The VP of Drilling and Operations also asked, “Still looking like BOL [Back Online] the 30th?”

The production superintendent responded to the VP of Drilling and Operations indicating that the compressor maintenance and repairs, along with the scheduled ALM work, was on track for May 30.

MAY 28, 2019

At approximately 0600, day shift and night shift personnel on the facility attended a morning safety meeting where “Facility updates on Safety Compliance & Production” was discussed and JSAs and associate work permits for the days planned work activities were signed. Two of the JSAs for planned work on this particular day were titled “Daily Routine Production Operations,” and “Removing Hatch Covers”. Removing hatch covers was a planned project to replace wooden hatch well access covers (located above the wellheads on the upper deck), with metal hatch well access covers and without the use of hotwork, and had been assigned the priority level of “pressing.”

At 0733, according to the *Figure 4* time stamp, the UWA photographed a facility structural member that needed repair and noticed an approximately 13¾- by 91-inch section of grating, on the north side of the lower deck wellbay perimeter that felt, “spongy” underfoot. Upon examination, the UWA found that bearing bars at one end of the grating section had deteriorated and took a photograph of the deteriorated condition of the grating section (*see Figure 4*).

⁴ **Ultimate Work Authority** - The person with the authority to authorize a resumption of work after any individual identifies or perceives any condition, activity or practice, that could reasonably be expected to result in: death or serious physical harm; or, significant environmental harm.



Figure 4- Initial Pre-Incident Photograph of Hazardous Grating Section

The UWA then showed the section of hazardous grating to the lead PO, construction consultant and construction crew supervisor. Despite having the available resources and materials onsite, to immediately barricade and correct or repair the hazardous grating section, the UWA made the decision that the section of hazardous grating would be replaced the next morning after the “pressing” hatch cover task was completed. The UWA then directed the construction crew supervisor to retrieve red “DANGER” marking tape to mark the hazardous grating section. Together, the UWA and construction crew supervisor affixed a strand of red “DANGER” marking tape to the section of hazardous grating. A second strand of red “DANGER” marking tape was strung approximately four-foot high, between a nearby metal post and a process pipe at the north side perimeter of the wellbay, proximal to well B-14 (*see Figure 5*). The construction crew supervisor stated the following during an interview with the Panel:

“After we put the danger tape on it and I asked him [UWA] what he wanted to do, we had some grating in the - what they refer to as the safe work area on the platform - if he wanted me to get a couple guys to get that knocked out and he told me, ‘No, we’re going to get to it on the tail end of the project after the hatch is finished.’ They were wanting to get that hatch cover completed. So, that hatch cover was, I guess, project priority.”

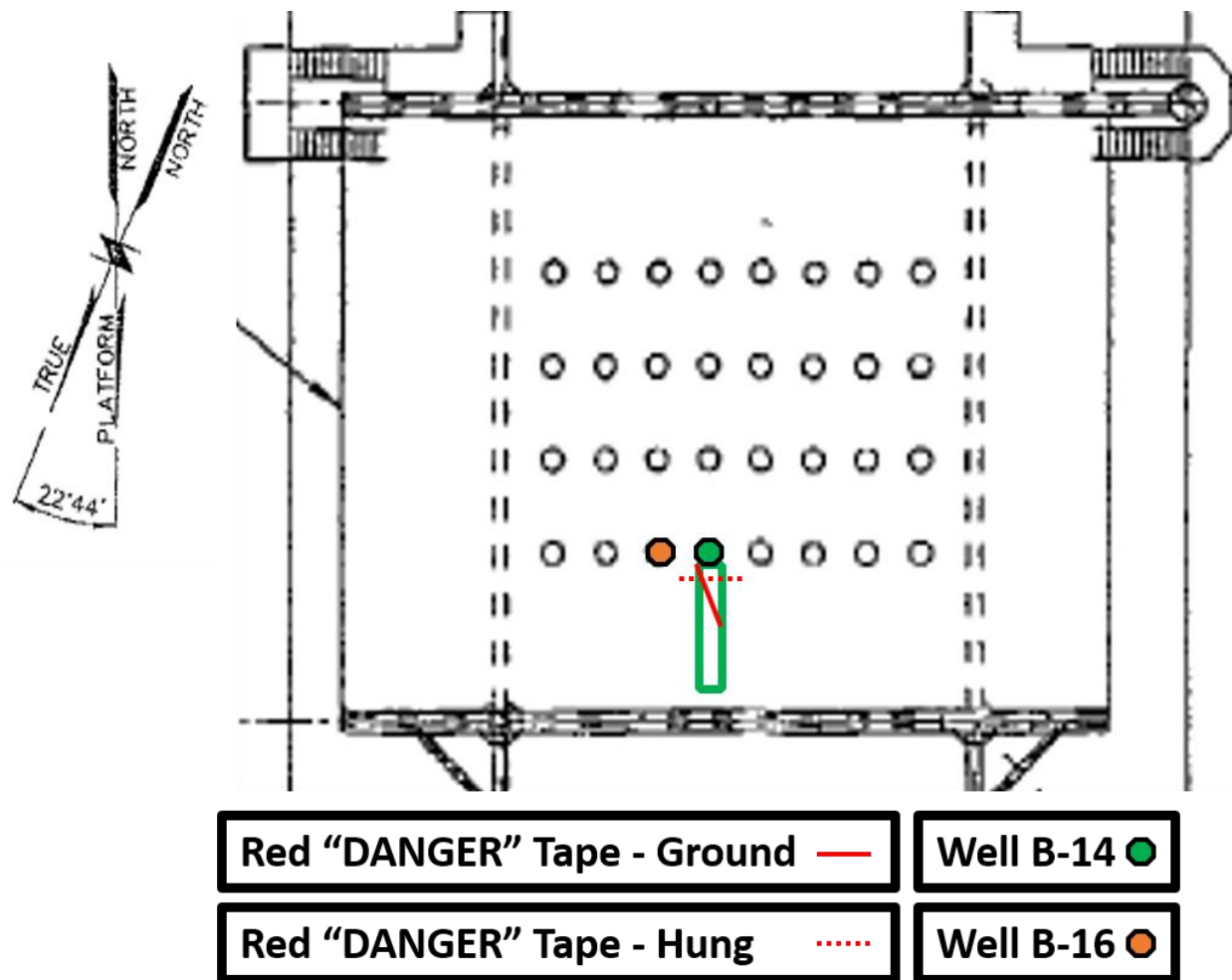


Figure 5- Representation of Lower Wellbay (Hazardous Grating and Red "DANGER" Tape Locations)

Prior to 0752, according to the *Figure 6* time stamp, the UWA returned to the section of hazardous grating to assess the severity of the corrosion by striking it with a “small sledgehammer.” After assessing the end of the section of hazardous grating with the sledgehammer, the UWA took another photograph of the condition of the grating (*see Figure 6*). The UWA gave the camera used to take the photographs to the lead PO so that an ALMS entry could be created for the hazardous grating section.



Figure 6- Pre-Incident Photograph of Hazardous Grating Section with Red Danger Marking Tape Affixed and After Impact from Sledgehammer Strikes

At 0834, according to the ALMS entry time stamp, using the photographs in figures 4 & 5, the lead PO initiated ALMS entry #3780 titled “Grating at well bay not on H-beam” adding to the description “Grating has rusted to where it is not on the H-beam any more.” The photographs in figures 4 and 5 were attached at 0838 and 0839, respectively and the “urgent” priority level was assigned. According to the lead PO, when ALMS entry #3780 was created, the victim was in the same room. The lead PO stated that he did not tell the victim the subject of the ALMS entry and continued by noting the victim did not inquire about it.

At 0921, the VP of Drilling and Operations sent another email to the production superintendent, and others, stating in part, “We need this BOL [Back Online] Thursday the 30th per [Production Superintendent’s] commitment.”

At 0939, an automated email notification for ALM# 3780 was sent to the production superintendent, and others, on the ALMS distribution list.

At 0941, an email was sent to the production superintendent, from the lead PO’s email account with the subject, “Pictures added to alarms and 2 more new alarms wrote up this morning”.

At approximately 1200, the mid shift PO began his work shift. The mid shift PO was not warned or otherwise informed about the hazardous grating section identified earlier in the day.

The task corresponding to the JSA “Removing Hatch Covers” could not be completed without the use of hot work and new JSA titled “Cutting and Removing Hatch Covers” was then created. The JSA was signed by a number of personnel including, but not limited to; the UWA, lead PO, construction consultant, and construction crew supervisor. The JSA acknowledged by the aforementioned supervisors authorized the task work without consideration of the hazardous grating section in the work area. In addition to the JSA, a hot work permit was issued for the task.

At approximately 1500, the hot work preparations were completed for the hot work on the upper deck to cut out and replace the well access covers. Tarps had been hung over the wells located below to prevent slag from falling into the lower deck wellbay area and red “DANGER” marking tape was hung around the perimeter of the entire wellbay (*see Figure 7*). When hot work commenced, firewatch personnel were exposed to the hazardous grating danger area when monitoring the lower deck wellbay area for falling slag. The mid shift PO stated the following during an interview with the panel:

“...I mean, I was in that area all day yesterday - me and then I had another construction hand who was in the area - and I asked him, I said, ‘Did you ever notice it?’ He goes, ‘I didn’t notice no red tape, either.’ And it’s just -- you know, we had red tape around the whole wellbay. You know, the same type of tape. So, we’re looking at that straight ahead because we have it all roped off because of the hot work going on. And we’re right there with a hose and I’m almost positive I stepped on this sucker at some point...”

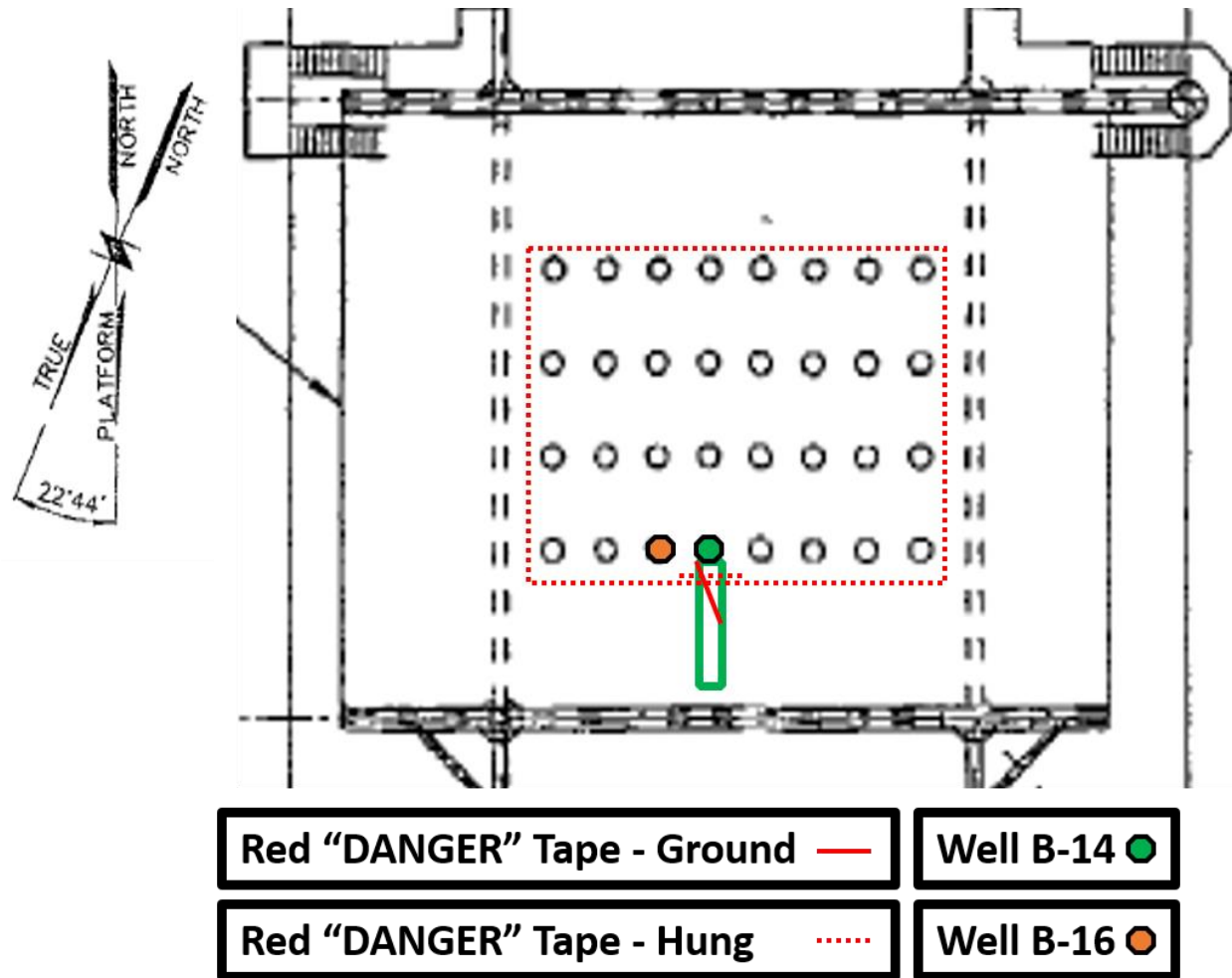


Figure 7- Representation of Lower Wellbay (Hazardous Grating and Red "DANGER" Tape Locations) After Hotwork Preparations

At approximately 2000, at the end of day shift, the task of removal of hatch covers was estimated to be 60 percent complete. As a result of the unfinished task, the red "DANGER" marking tape surrounding the wellbay perimeter was left in place.

The mid shift PO began performing assigned monthly casing pressure checks and documenting the casing pressures as directed by the lead PO. Still unaware of the hazardous grating section, and as a requirement to take readings of casing pressures for some of the wells, the mid shift PO entered into the wellbay despite the red "DANGER" marking tape. The mid shift PO checked in, via email, for the 2000 and 2200 intervals, as required. The mid shift PO did not finish all of the casing pressure checks when the mid shift ended.

At 2350, the victim started the night shift and sent a check-in email, as required.

The mid shift PO relayed what task he was doing and handed off the paperwork for documenting monthly casing pressure readings to the victim. The victim said he would finish documenting the remaining well casing-pressure-readings.

MAY 29, 2019

At approximately 0045, the mid shift PO saw the victim, for the last time, in the galley.

At approximately 0200, while the CSO waited for lone operators at other platforms to send their check-in emails, the compressor at WD-152 went down shutting off fuel gas to the generator. The CSO left the computer to get the compressor back online and the wells on the platform unloaded.

At approximately 0400, the CSO sent his required check-in email, however, he did not stay at the computer to wait for check-in emails from other platforms.

At approximately 0550, the lead PO noticed the victim had not come to his office to report his night work as usual. The lead PO called for the victim on the facility intercommunication system. The victim did not respond so the lead PO went to look for him. The lead PO discovered that the previously identified and uncorrected hazardous grating section had been displaced and was suspended in the resultant open hole. The open hole measured approximately 14½ by 40 inches and is approximately 45 feet above the water's surface (*see Figures 8 and 9*). The victim's hard hat, wrench, and clipboard were observed on the deck near the open hole (*see Figures 10 and 11*).

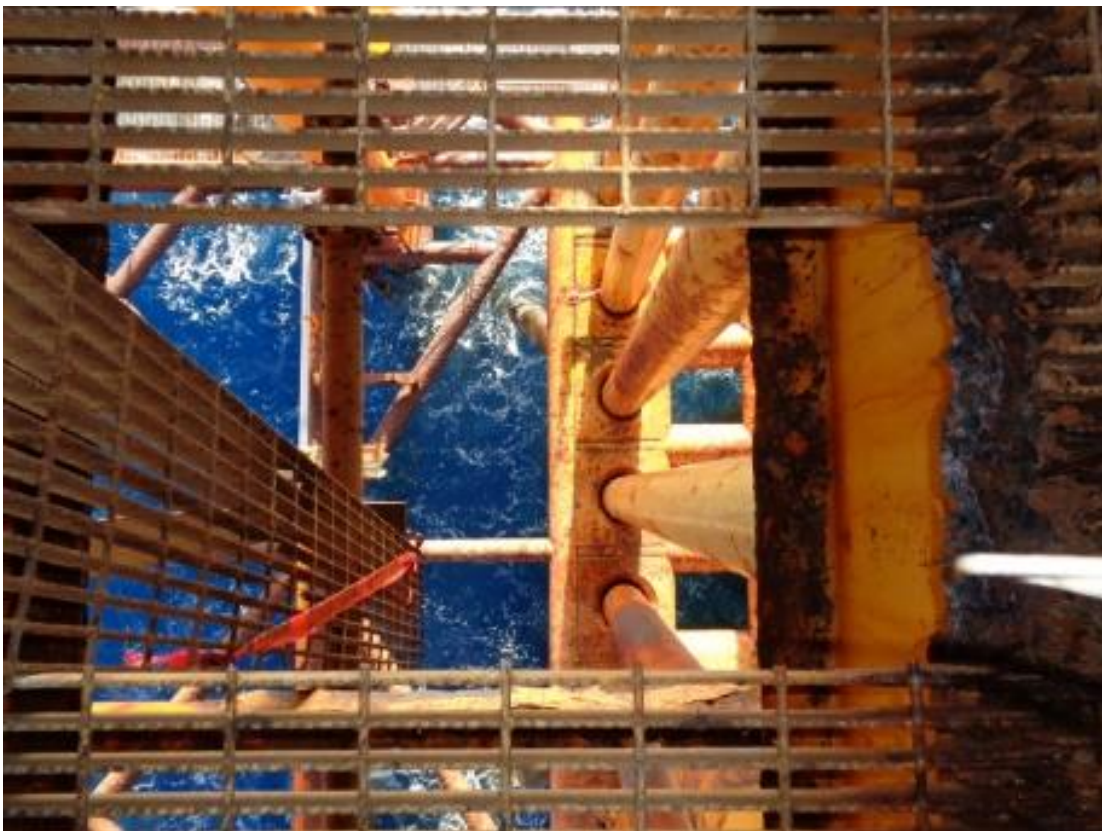


Figure 8- Post-Incident Photograph of Hazardous Grating Section Suspended in Open Hole with Red "DANGER" Marking Tape Affixed



Figure 9- Post-Incident Photograph of the Production Superintendent Wearing Fall Protection Standing in the Open Hole After the Hazardous Grating Section was Removed



Figure 10- Post-Incident Photograph of Hazardous Grating Section Suspended in Open Hole with Victims Hardhat, Wrench, and Clipboard



Figure 11- Post-Incident Photograph of Hazardous Grating Section Placed in its Approximate Pre-Incident Position

After discovering the incident scene, the lead PO used the platform intercom to initiate a facility wide search for the victim. When personnel on the platform could not locate the victim, SAR operations were initiated by contacting nearby field vessels and notifying the USCG.

At approximately 0630, the USCG received the notification of a missing person and launched a vessel along with multiple air assets to begin its SAR operations.

MAY 30, 2019

Wood Group reported to the United States Department of Labor that the victim, was performing “usual work,” at the time of the incident/injury which resulted in death.

MAY 31, 2019

At approximately 2000, the USCG, unable to locate the victim, suspended SAR operations. The SAR operations consisted of 21 searches, 60 associated personnel hours in the air, and covered over 3,500 nautical miles. Additionally, divers completed two full dive operations to a water depth of 240 feet around the EI-331 “B” facility. Renaissance conducted additional grid searches with its existing assets.

JUNE 3, 2019

At approximately 1500, Renaissance concluded its dedicated search activities.

BSEE Investigation

The BSEE investigation included ordering Renaissance and its contractors to take all steps necessary to immediately identify, retain, and preserve all potentially relevant information related to the incident. The BSEE panel conducted a site visit, interviewed witnesses who were onsite or involved with certain facility operations, and requested and reviewed documentation. The documentation provided by Renaissance and its contractors included but was not limited to: SEMS, SWPs, policies, procedures, maintenance and inspection records, and training records. The requests for documentation were focused to accomplish the following investigative goals and objectives:

- Understanding the operational chain of events leading up to the incident, the incident, and the response to the incident.
- Identifying the activities of Renaissance and its contractors' relative to the operational incident and its surrounding events.
- Comparing the actions of each relevant contractor involved to the standard of safety and performance established and agreed upon by both Renaissance and each contractor performing operations on its behalf and as documented in their Safety and Environmental Management Systems (SEMS) plans and bridging arrangements.
- Reviewing bridged SWPs and training records correlative to the work being performed and relative to the operational incident and its surrounding events.

The following represents the key focus areas and relevant findings identified during the investigation:

INCIDENT SCENE

The incident scene is located at the north side of the wellbay perimeter area. Based on the documentation used to record casing pressures, the victim had completed recording casing pressures for well B-14 and recorded one of two casing pressure readings for well B-16. The following images were selected by the panel to provide a general overview of the incident scene.

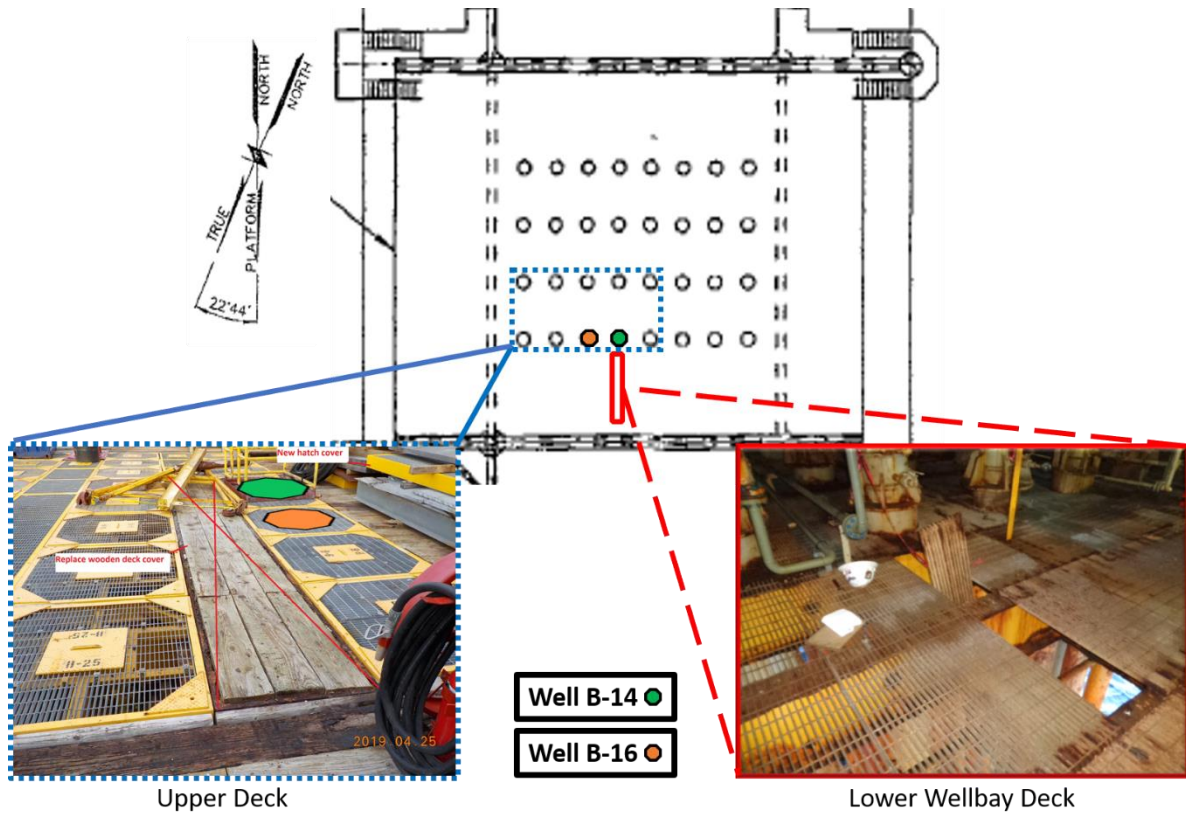


Figure 12- Representation of Upper Deck (Hot Work Location) and Lower Wellbay Deck (Wells B-14, B-16, and Hazardous Grating Locations)

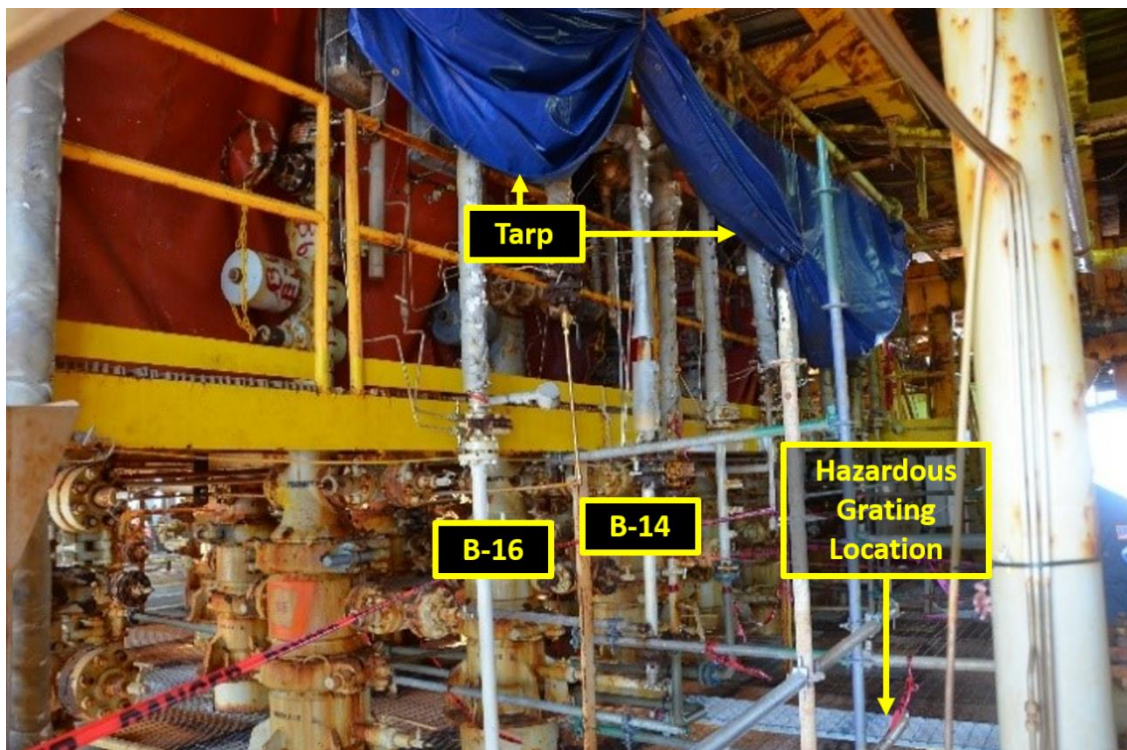


Figure 13- Post-Incident Photograph of the North Side of Wellbay Showing the Locations of Tarp Placement (for Hot Work), Hazardous Grating, and Wells B-14 and B-16

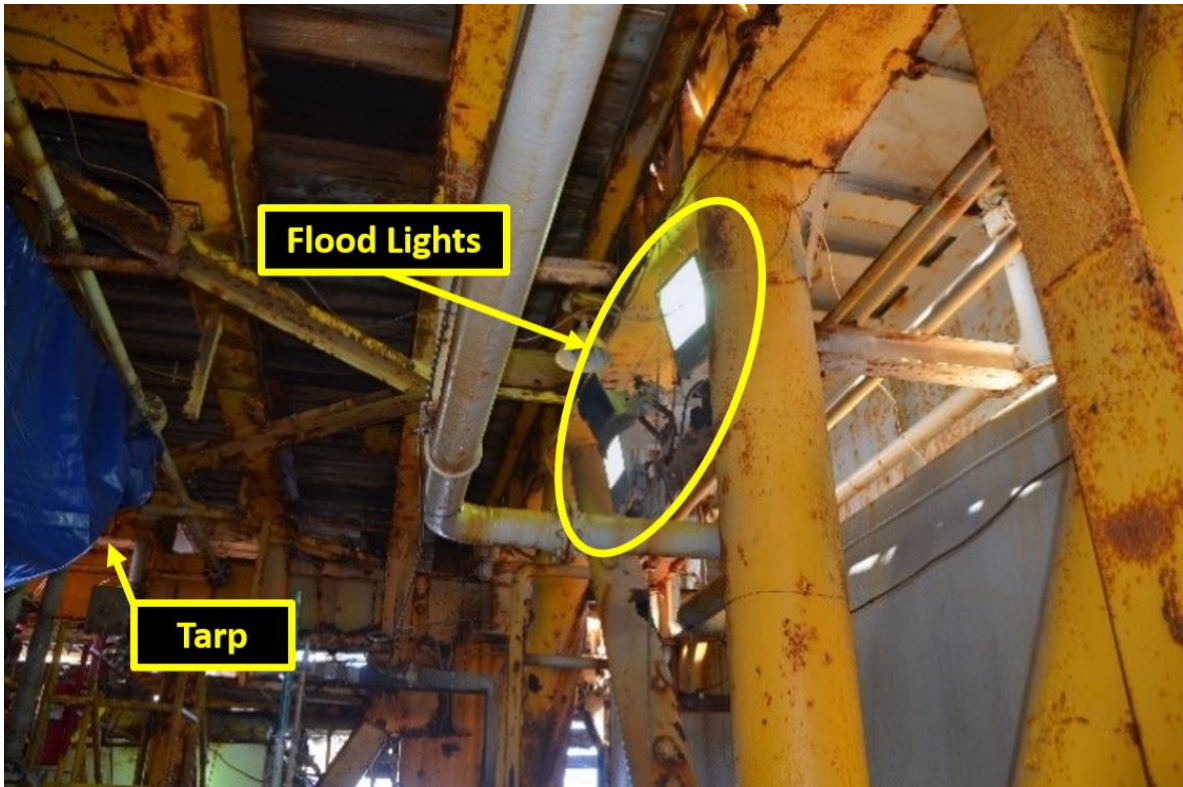


Figure 14- Post-Incident Photograph of Two Flood Lights Located at the North Side of the Wellbay

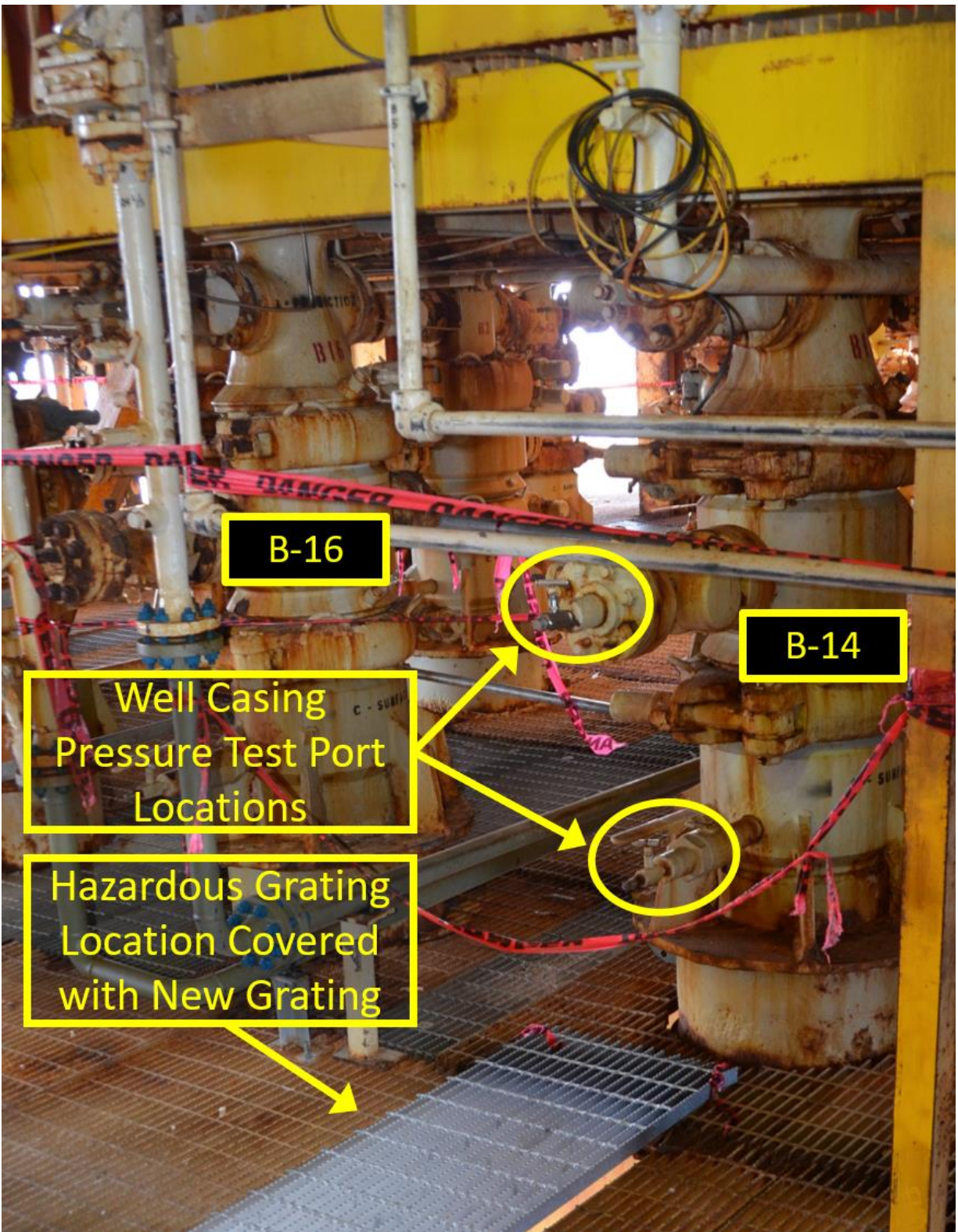


Figure 15- Post-Incident Photograph Showing Well B-14 Casing Pressure Test Port Locations in Relation to the Hazardous Grating Section and Well B-16



Figure 16- Post-Incident Photograph showing the Location of the Pressure Gauge and Testing Manifold on Well B-16

SAFETY AND ENVIRONMENTAL MANAGEMENT SYSTEMS

BSEE regulations require that each OCS operator develop, implement, and maintain a Safety and Environmental Management Systems (SEMS) Program.

According to the Renaissance SEMS Plan and SEMS bridging arrangements with each contract service company, contract personnel on Renaissance facilities were to follow the Safe Work Practices (SWPs) of their respective employers. The Renaissance SEMS program required contracted companies SWPs to meet or exceed Renaissance's SWP standards.

The Renaissance SEMS program is comprised of 17 elements and guided by four basic principles:

1. All incidents are preventable.
2. Compliance with applicable laws and governing regulations is a requirement.
3. Working safely and protecting the environment are conditions of employment.

4. Prevention of incidents, occupational illnesses and protection of the environment is good business.

Renaissance SEMS Safety Policy Memorandum states:

“People are our most valuable asset; Renaissance is committed to their protection. This plan is part of Renaissance’s commitment to make the workplace safe in keeping with SEMS Element One (Management Commitment) and Element Six (Safe Work Practices).”

The assistance of all involved personnel is needed to ensure that this Safe Work Practices plan, a key element of the SEMS, succeeds. Compliance with this plan is mandatory for all contract and company personnel. Any conflicts or confusion regarding the content of this plan versus the contractor’s safety plan will be resolved through the bridging document process. It is the responsibility of each individual to work safely and to report conditions or activities that may result in incidents.”

Renaissance SEMS Element 6: Safe Work Practices states, in pertinent part:

“... Ensure contractors have their own safe work practices written per regulations. Operator and Contractor must have bridging document...”

Renaissance used contractors to perform its work and entered into SEMS bridging arrangements with each individual contractor performing work on its behalf.

SEMS Bridging Arrangements

Renaissance SEMS bridging document template for the relevant contractors included the following statements:

The Contractor agrees to and certifies the following:

“...All activities performed by the Contractor shall be conducted in accordance with the requirements in the Renaissance SEMS Program and the Contractor’s Safe Work Practices;

The Contractor shall have Safe Work Practices (SWP) for all work, except ‘domestic services’ (janitorial, food, beverage, laundry, housekeeping), and these are consistent with Renaissance SEMS...”

The Operator [Renaissance] agrees to and certifies the following actions will be completed prior to the commencement of work with the Contractor:

“...Operator shall ensure conformance with Renaissance SEMS during all covered operations;

Renaissance shall obtain and review the Contractor's HSE Management System, and/or safe work practices, as applicable and related documentation; confirming it meets the requirements of Renaissance SEMS Plan prior to commencing work..."

Renaissance Workplace Responsibilities include the following statement:

"CONTRACTORS -Comply with your company's policies and job performance standards and with Renaissance' related expectations."

In contrast with the aforementioned SEMS bridging arrangements and workplace responsibilities the Production Superintendent, UWA, Lead PO, Construction Consultant, and Construction Crew Supervisor all stated that Renaissance SWPs were to be followed by contractors, when working for Renaissance. In fact, the Construction Consultant stated:

"...I haven't thumb through it a whole lot so I can't answer a whole lot for my company's safe work practices..."

Safe Work Practices

The Panel reviewed the SWPs of both Renaissance and those of its relevant contractors. The Panel identified the following SWPs of particular note:

Renaissance Safe Work Practices

Stop Work Authority

The purpose and scope of Renaissance Stop Work Authority (SWA) policy "...is to ensure that employees understand their Responsibility and Obligation as it relates to their own safety, as well as the safety of others. Renaissance's management supports the right of any individual to suspend a single work task or group operation when the control of any risk is not clearly understood."

The last step in the SWA procedure states that once the, "...UWA of facility has determined conditions are safe, the activity may resume."

In this instant case, SWA was not invoked as the UWA determined that the construction work on the upper deck could continue as scheduled after the red "DANGER" marking tape was placed. This determination was based upon the UWAs individual and arbitrary assessment of the grating and did not change after assessing the extent of the corrosion with a sledgehammer due to a continued belief that the grating could support his own bodyweight.

Job Safety Analysis

The purpose and scope of Renaissance JSA policy is to provide, "...the steps to be followed when completing a Job Safety Analysis (JSA) prior to working on large capital jobs, unusual jobs, and jobs involving hazardous materials or hazardous processes." and,

The JSA procedure “...applies to all personnel (and contractors, as applicable) working in support of operations for both offshore and onshore Renaissance Offshore, LLC (ROS) facilities. The JSA is a tool used to identify risks to personnel associated with their job activities. The JSAs are also used to determine the appropriate risk mitigation measures. JSAs are required for all tasks addressed in a SEMS and must include all personnel involved with the job activity being conducted.”

The panel identified two different versions of Renaissance JSA forms that were utilized on the facility during the relevant time period. The *2015-11-16 3.2 Job Safety Analysis – JSA Form Rev02* and *2018-06-07 3.2 Job Safety Analysis – JSA Form Rev04*.

The Renaissance JSA form versions, both included a category for “Barricades.” The category for Barricades included the following selection option, Red-Danger-Do-Not-Enter. (see Figure 15).

Barricades	
<input type="checkbox"/>	Red-Danger-Do Not Enter
<input type="checkbox"/>	Yellow - Caution
<input type="checkbox"/>	Updated Tags
<input type="checkbox"/>	Fixed or Hard Barricades
<input type="checkbox"/>	Other: _____

Barricades	
<input type="checkbox"/>	Red "Danger-Do-Not-Enter"
<input type="checkbox"/>	Yellow "Caution"
<input type="checkbox"/>	Updated Tags
<input type="checkbox"/>	Fixed or Hard Barricades
<input type="checkbox"/>	Other: (Type or Write Below)

Figure 17- Scanned Images of Barricade Category on JSA Forms Rev02 and Rev04, Respectively

The Renaissance JSA barricades category conflates the term barricade with barrier on both versions. Additionally, Renaissance SEMS SWPs do not provide any definitions to distinguish between a barrier or a barricade.

Contractors Safe Work Practices

Barricades & Barriers Standard

The purpose and scope of the contractor’s standard was to provide, “...the appropriate steps to be taken by all [contractor’s] personnel to ensure the safe operation through signs, signals, and barricades that must be used to protect employees from hazards...”

The contractor’s standard included the following pertinent definitions:

Barricade- “Rigid physical structure isolating a hazardous zone...”

Barrier- “Non-rigid physical structure designed to warn personnel of a hazard zone e.g. (caution: yellow caution tape) and (danger: red danger tape).”

Danger Zone- “An area with hazards that are immediately or foreseeably life-threatening and/or can cause serious injury. Danger zones that have a high probability of serious injury or death of personnel shall be barricaded and marked with red danger tape and signs or tags indicating hazard present.”

Note: Renaissance did not have a specific SWP on the topic of Barricades & Barriers, or an equivalent.

Walking & Working Surfaces Standard

The purpose and scope of the Contractor’s standard was to provide, “...criteria to assure that all walking/working surfaces are designed, constructed, and maintained free of recognized hazards that can result in trips, slips, and falls.”

The Contractor’s standard included the following responsibility.

“...Ensure that all unsafe walking/working surface conditions are promptly corrected or barricaded immediately.”

Note: Renaissance did not have a specific SWP on the topic of Walking & Working Surfaces, or an equivalent.

MORNING SAFETY MEETINGS

Daily morning safety meetings were held at the start of the day shift. Various safety and other operational topics were discussed and documented in the 0615 Daily Morning Safety Meeting Minutes Log.

To better understand Renaissance’s barricade and barrier practices the Panel reviewed Daily Morning Safety Meeting Minutes Log entries for the months prior to the incident date and noted the following:

January 12, 2019 - “...Discussed putting up temporary barriers, BSEE did not like use [sic] manila rope for handrail barriers, going forward any rope used for temporary barriers will be sent to supervisor for approval, also discussed that all personnel on platform has to be aware of any temporary barriers, this needs to be discussed in orientation.”

January 25, 2019 - “...Barricade Discussion – discuss the importance that any issues with (Handrail, Grating, Etc.) is properly barricaded. Temporary short term rope and flagging can be used, Long term barricades we need to use wire cable and come-along. Ensure an ALARM is submitted so construction repairs can be scheduled...”

March 9, 2019 - “17. Open / bad grating and handrails – barricaded off and identified for repair.”

Note: The number 17 on the March 9, 2019 meeting summary, denotes the Renaissance “OPERATIONAL TIPS (TOP 50)!” Number 39 on the list states, “BSEE is closely looking at all corrosion on platforms with focus on process piping and personnel protection i.e.: grating and handrails, heliport skirting.”

GRATING AND CORROSION INSPECTIONS

The Panel identified the following regulatory and other inspections that provided opportunities and proactive ways to identify and document, among other items, deficient walking and working surfaces hazards:

7/15/2017	<ul style="list-style-type: none"> Renaissance self-reported “0” deficiencies for all inspection items in its USCG fixed OCS facility inspection annual reporting requirements (including, but not limited to, “Workplace Safety” and “Rails/Guards/Grating”).
8/14/2017	<ul style="list-style-type: none"> BSEE inspected the facility and issued an Incident of Non-Compliance (INC) to Renaissance, in part, for “Grating located around the wellbay cassion [sic] has several areas with bad grating.” BSEE inspection findings prompted Renaissance to create alarm #2710 which described the corrective action needed as “replace all grating in casing bay.”
9/8/2017	<ul style="list-style-type: none"> Renaissance signed its certification statement to BSEE indicating that all necessary corrective actions prompted by BSEE’s 8/14/2017 inspection findings had been completed.
5/18/2018	<ul style="list-style-type: none"> BSEE inspected the facility and issued an INC to Renaissance, in part, for “Various sections of grating and grating steps on the platform that pose a risk to personnel from corrosion.” BSEE inspection findings prompted Renaissance to create alarms #3056 and #3057 which respectively described the corrective actions needed as, “Grating around B-31 well” and “Grating into the well bay around wells.”
6/13/2018	<ul style="list-style-type: none"> Renaissance signed its certification statement to BSEE indicating that all necessary corrective actions prompted by BSEE’s 5/18/2018 inspection findings had been completed.
7/6/2018	<ul style="list-style-type: none"> Renaissance self-reported “0” deficiencies for all inspection items in its USCG fixed OCS facility inspection annual reporting requirements (including, but not limited to, “Workplace Safety” and “Rails/Guards/Grating”).
8/1/2018	<ul style="list-style-type: none"> A Renaissance <i>3-month Grating Inspection</i> form documented grating located at the north side of the well bay needed to be changed out.
8/12/2018	<ul style="list-style-type: none"> Deepwater Corrosion Services Inc. performed a Topside Level 1 Inspection of the facility and identified in its report certain rails and grating needing repair due to corrosion. The inspection report did not identify grating located at the north side of the wellbay.

10/22/2018	<ul style="list-style-type: none"> • A Renaissance <i>3-month Grating Inspection</i> form documented grating located at the north side of the wellbay needed to be changed out.
1/12/2019	<ul style="list-style-type: none"> • A Renaissance <i>3-month Grating Inspection</i> form documented grating located at the north side of the wellbay needed to be changed out.
1/17/2019	<ul style="list-style-type: none"> • Renaissance self-reported “0” deficiencies for all inspection items in its USCG fixed OCS facility inspection annual reporting requirements (including, but not limited to, “Workplace Safety” and “Rails/Guards/Grating”).
4/4/2019	<ul style="list-style-type: none"> • A Renaissance <i>3-month Grating Inspection</i> form was submitted. The form was silent with respect to grating located at the north side of the wellbay.

On July 6, 2018 and January 17, 2019, the Lead PO signed the Facility Owner’s or Operator’s Acknowledgment of the USCG annual *fixed OCS facility inspection report* forms. The Lead PO described the manner in which the Rails/Guards/Grating were inspected as the following:

“Well, I tell you what. If you want me to inspect [EI] 331 at a previous time that this was done, I had to put the whole platform on there. Okay? Straight up. Because it would take me about ten of these forms to fill out each individual place. And be quite honest with you. So...because I mean there’s a lot of... when you’re taking...a platform that’s been in the water since 1975...there’s a lot of rust. Man, there’s a lot of rust.”

and,

“...But like I said you start filling out these...forms and stuff and you [have] a[n] annual inspection on grating and, you know, I mean, phew. I could write this for days actually, if you [wan to] get down to it. Because, if I’m going to be held accountable for that picture that you show[ed], one little piece of grating[] [has] a piece a rust on it, he’s just going to write you[‘re] going to change it then. You know. But when you start doing that I won’t have a job very long.”

The August 1, 2018; October 22, 2018; and, January 12, 2019, Renaissance *3-month Grating Inspection* forms were completed by the opposing hitch’s lead PO which repeatedly and consistently documented grating located at the “North Side of Well Bay NEEDS TO BE CHANGED OUT”.

The April 4, 2019, Renaissance *3-month Grating Inspection* form completed by the Lead PO made no mention of the aforementioned longstanding grating deficiency at the north side of the wellbay which had been repeatedly documented by the opposing hitch’s lead PO.

SAFETY CHECK-IN PROCEDURES

The panel interviewed the CSO who stated that he had recently moved to WD-152 from another Renaissance platform where his sole responsibility regarding the check-in procedure was to send an email to check-in. When the CSO began work at WD-152, as a night shift PO, he did not receive any formal training on the check-in procedure and CSO responsibilities. The CSO also said he was not aware that he had the title of CSO. As a result, his stated pre-incident understanding of his responsibilities were not commensurate to those outlined in Renaissance's check-in procedures. The Panel showed the *Safety Check-In Procedure* flowchart to the CSO and asked if he had seen this document prior to the incident (see Figure 16). In response, the CSO explained that he did not remember seeing the procedural flowchart, adding that if he had seen it, it was years ago. Additionally, when the panel showed the *Safety Check-In Procedure* flowchart to the EI-331 lead PO, he stated that he did not recall seeing the procedural flowchart prior to the incident either.

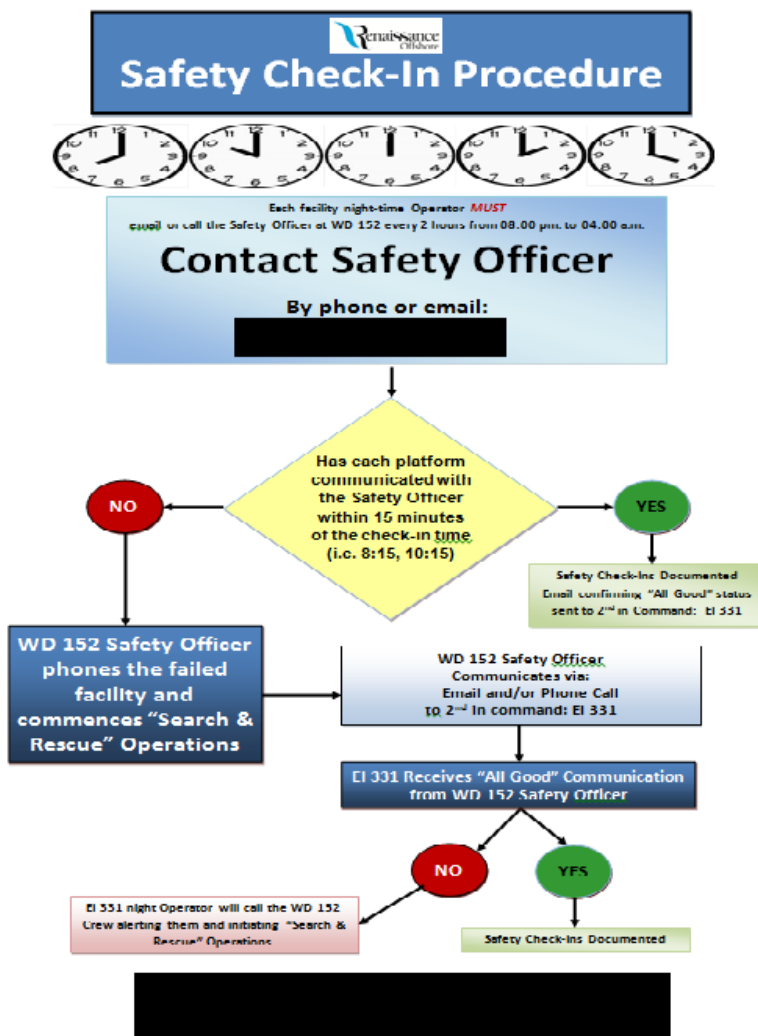


Figure 18- Redacted copy of Renaissance Safety Check-In Procedure Flow Diagram

The CSO further explained that the electronic transmission of check-in emails, would at times, be delayed. This led to instances where a check-in email was not timely received by the CSO and when the failed platform was contacted, personnel would indicate that they had already sent the check-in email. Additionally, the CSO explained that when he did call a failed platform, personnel would give the justification that they got busy, lost track of time, and/or forgot to check-in. Due to these stated reasons, the CSO would wait longer than the fifteen minutes after the hour before contacting a failed facility.⁵

When the panel asked about the creation and implementation of the *Safety Check-in Procedure*, the production superintendent explained he created the procedure and implemented via email, and that it was not written with a team, nor did it go through a formal management of change process.

When the panel asked about training for the safety check-in procedure the production superintendent stated that there was no formal training for the procedure indicating that personnel were to sign an acknowledgement indicating that they fully understood the document.⁶

Both the production superintendent and the UWA expressed that accountability measures consisted of stating the name of the individual who failed to check-in during the morning safety meetings, and then going over the procedure.

Conclusions

The following conclusions were based upon the totality of the information provided to, and reviewed by the BSEE Panel, during its investigation into the May 29, 2019, fatal incident.

PROBABLE CAUSES

- Renaissance failed to maintain all of its walking and working surfaces on the facility in a safe condition.
 - Between the date range of July 15, 2017, through and including April 4, 2019, there were numerous instances in which deficient grating had been identified for corrective action in and around the wellbay.

⁵ The panel noted that 12 out of 33 check-in emails sent from the EI-331 facility to the WD-152 facility between the date range of May 22, 2019 through and including May 28, 2019, were sent outside of 15 minutes of the respective check-in intervals.

⁶ Renaissance did not provide any employee signed acknowledgements for the *Safety Check-In Procedure*.

- Supervisors did not fulfill their respective responsibilities within the relevant, established SWPs when they failed to promptly correct or prevent employees from accessing the uncorrected and uncontrolled walking and working surface hazard area.
 - Supervisors did not promptly correct or barricade the walking and working surface hazard after it was identified and marked as a foreseeable, or immediate, life-threatening hazard.
- Renaissance and its contractors failed to follow the agreed upon terms and conditions within their respective Safety and Environmental Management Systems (SEMS) bridging arrangements.
 - Renaissance did not ensure contractor conformance with SEMS; and,
 - Contractors did not follow the SWPs of their respective employers as agreed upon; and,
 - Contractor SWPs contained relevant work practices and definitions that were not included within Renaissance SWPs (e.g., Barricades & Barriers Standards, and Walking & Working Surfaces Standards).
- Supervisors did not fulfill their respective responsibilities within the relevant, established SWPs when they failed to stop work and adequately warn all personnel of the uncorrected and uncontrolled walking and working surface hazard.
 - SWA was not invoked when the walking and working surface hazard was identified; and,
 - All potentially affected personnel were not notified about the identified walking and working surface hazard; and,
 - Supervisory personnel allowed task-work to continue unabated; and,
 - The manner in which red “DANGER” tape was applied to warn of the uncorrected and uncontrolled walking and working surface hazard was inadequate.
- Supervisors did not fulfill their respective responsibilities within the relevant, established SWPs when authorizing task-work within and around, the uncorrected and uncontrolled, walking and working surface hazard.
 - Pre-existing JSAs were not updated, nor were they inclusive of the uncorrected and uncontrolled walking and working surface hazard identified within the work environment; and,

- Supervisory personnel (knowledgeable of the uncorrected and uncontrolled walking and working surface hazard) approved a JSA for additional task-work without appropriate analysis or mitigation for the identified walking and working surface hazard present in the work environment; and,
- Supervisory personnel assigned routinework (collecting casing pressure readings) for which completion would be precluded without physical entry into a marked “DANGER” area.

POSSIBLE CAUSES

- Striking the hazardous grating section with a sledgehammer.
 - The impact from striking the grating with a sledgehammer may have weakened or broken any potential remaining support or welds and attachments designed to secure the grating in place.
- Reduced effectiveness of hazard communication markings.
 - Saturating the wellbay perimeter area with red “DANGER” marking tape, at or near eye level, after using a strand of same to mark a different hazard, at the walking-working surface level in the same proximity, may have diluted effectiveness of presentation.
- Non-conformance with the *Safety Check-In Procedure*.
 - Inadequate implementation and training for the *Safety Check-in Procedure*, coupled with a lack of accountability for noncompliance, may have contributed to a lack of understanding, procedural complacency, and untimely response.

Recommendations

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

- Operators: should ensure all inspection and safety reporting requirements are performed in a meaningful way and that resultant findings receive appropriate consideration and corrective actions.

- All facility walking and working surfaces should be regularly inspected and maintained in a safe condition.
- Hazardous conditions on walking and working surfaces affecting structural integrity, should be barricaded to prevent personnel from using the walking and working surface, until the hazard is corrected or repaired by a qualified individual.
- Operators and Contractors: should abide by the agreed-upon terms of their respective SEMS bridging arrangements.
 - SEMS bridging documents should be reevaluated at regular intervals or when substantive changes are made to either parties' SWPs.
 - Any divergence between operator and contractor SWPs (e.g., policies, procedures, forms, and guidances) should be identified, fully resolved, and documented in respective bridging arrangements.
 - Definitions of terms contained within bridged forms to be utilized (e.g., Hazard Analysis and Work Permits) should be consistent with the definitions of terms contained within bridged SWPs to be followed.
- Supervisory Personnel: should be trained, skilled, and knowledgeable in their assigned duties and responsibilities and take an active role in task planning, hazard analysis, and supervision.
 - Task-work assignments should conform to established SWPs and prevent exposure of personnel to identified and uncontrolled hazards.
- Training, Guidance, and SWPs: should be consistent and clear to reduce the risk of a misunderstanding.
 - The terms and distinctions between a "Barrier" and "Barricade" should be clearly defined and understood by all personnel.
 - The meaning of safety color codes and accident prevention signs and tags should be clearly defined and understood by all personnel.
 - Personnel with designated responsibilities within emergency response plans and strategies should have clear guidance and effective training for their respective role(s).
- Hazard Communication: should be sufficient to prevent personnel from inadvertent hazard exposure.

- Walking and working surface hazards should be promptly and effectively communicated to all personnel whom may have access to the hazard area.
- Walking and working surface hazards should be effectively communicated during facility orientations, safety meetings, and shift/crew changes until an appropriate correction or repair has been made.
- The effectiveness of color codes, signs and tag placements should be considered when different hazards in close proximity, are similarly marked.
- Hazard Analyses and Work Permits: should be continually assessed and updated to maintain effectiveness within the dynamic working environment.
 - Hazard analyses and work permits should be meaningful and promptly updated or revised to reflect all impactful changes in task conditions and/or the working environment.
- Emergency Response Plans and Strategies: should be appropriately and effectively managed.
 - Emergency response plans and strategies should take into account workflow demands and expectations of designated personnel and be sufficient in design to ensure continued effectiveness during losses of power or communication, and other contingencies.
 - Procedures for working alone should be audited for compliance and any identified deficiencies should be addressed.