

UNITED STATES DEPARTMENT OF THE INTERIOR -  
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT -  
GULF OF MEXICO REGION -

# ACCIDENT INVESTIGATION REPORT

**For Public Release**

1. OCCURRED

DATE: **09-MAY-2015** TIME: **1730** HOURS

2. OPERATOR: **Fieldwood SD Offshore LLC**

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR: -

REPRESENTATIVE: -

TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING DEVICE
- DAMAGED/DISABLED SAFETY SYS.
- INCIDENT >\$25K **Fire \$750,000**
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER

3. OPERATOR/CONTRACTOR REPRESENTATIVE/SUPERVISOR  
ON SITE AT TIME OF INCIDENT:

6. OPERATION:

4. LEASE: **G06280**

AREA: **EB** LATITUDE:

BLOCK: **165** LONGITUDE: -

- PRODUCTION
- DRILLING
- WORKOVER
- COMPLETION
- HELICOPTER
- MOTOR VESSEL
- PIPELINE SEGMENT NO.
- OTHER

5. PLATFORM: - **A**

RIG NAME:

6. ACTIVITY:  EXPLORATION (POE)  
 DEVELOPMENT/PRODUCTION  
(DOCD/POD)

8. CAUSE:

7. TYPE:

- HISTORIC INJURY -
  - REQUIRED EVACUATION
  - LTA (1-3 days)
  - LTA (>3 days)
  - RW/JT (1-3 days)
  - RW/JT (>3 days)
  - Other Injury -

- EQUIPMENT FAILURE
- HUMAN ERROR
- EXTERNAL DAMAGE -
- SLIP/TRIP/FALL
- WEATHER RELATED
- LEAK
- UPSET H2O TREATING
- OVERBOARD DRILLING FLUID
- OTHER \_\_\_\_\_

- FATALITY
- POLLUTION
- FIRE
- EXPLOSION

- LWC -  HISTORIC BLOWOUT
- UNDERGROUND
  - SURFACE
  - DEVERTER
  - SURFACE EQUIPMENT FAILURE OR PROCEDURES

9. WATER DEPTH: **863** FT.

10. DISTANCE FROM SHORE: **96** MI.

11. WIND DIRECTION: -  
SPEED: M.P.H.

12. CURRENT DIRECTION:  
SPEED: M.P.H.

13. SEA STATE: FT.

COLLISION  HISTORIC  >\$25K  <=\$25K

On 9 May 2015 Fieldwood Energy LLC notified the Lake Jackson District a fire incident had occurred at EB 165A, OCS-G-06280, Complex ID 10297. According to the time line provided by the Person In Charge (PIC) and Witness statements provided on May 9, 2015, at approximately 1720 hours, facility had an upset which resulted in a shut-in due to a Pressure Safety High (PSH) on the Low Pressure Separator (LP sep). Operators checked LP Sep and cleared the upset, then began to bring the facility back on line. At approximately 1728 hours after re-establishing the fuel gas system, Operators started the gas compressor. Within a couple of minutes a loud boom was heard, Operators activated the Emergency Shut Down. There was a short burst of over pressurization of the Fuel Gas Filter, the top of vessel was blown off. The striking of the top against nearby hand rail caused sparks, igniting the streaming gas from the vessel. Operators immediately found the MAK-F960 Fuel Gas Filter skid was on fire and abandon platform alarm was sounded. PIC selected Operators to fight fire, directed everyone else to stay ready in muster area. Operators manned one (1) 150 lb. wheeled fire extinguisher and four (4) 30 lb. hand held fire extinguishers. Operators fought fire for three (3) minutes until extinguished, then monitored area of fire for additional thirty (30) minutes.

## 18. LIST THE PROBABLE CAUSE(S) OF ACCIDENT:

1. The MAK-F960A was found severely corroded on the tabs that anchor the T-bolts for the top to be secured to the body of vessel. The lack of mitigation of the corrosion, derated the vessels pressure capability.
2. The Pressure Safety Valve (PSV) on the MBF-V940 Fuel Gas Scrubber was set for 270 PSI, it did not relieve until 390 PSI. MBF-V940 is up-stream of the MAK-F960A if PSV would operated properly it would have helped to relieve the over pressurization.
3. The Pressure Safety Valve (PSV) on the MAK-F960B Fuel Gas Filter was set for 270 PSI, it did not relieve until 290 PSI. The MAK-F960B supply and discharge is common with supply and discharge of the A vessel. The lessee was flowing thru both A/B Fuel Gas Filters, the PSV would have helped relieve the pressure if operating properly.
4. Lessee had modified both MAK-F960 A and B Fuel Gas Filter vessels from original design, Lessee removed differential gauges from the system, therefore Operators had no indication of when filters needed to be replaced. The change of location of Level Safety High (LSH) and Sight Glasses gave the Operators a false fluid reading, causing the filters to become soaked with fluids and clogged.
5. The Daniel Senior Meter orifice plates were found to be dished (deformed); this is a sign of fuel gas system over pressurization. The fuel gas system had only one cut in the pressure, system was reducing gas pressure from a operating high of 1290 PSI to a high of 170 PSI.

## 19. LIST THE CONTRIBUTING CAUSE(S) OF ACCIDENT:

Investigation revealed the gas flows from the MBF-V620 Gas Scrubber and MAF-V500 Glycol Contactor at a normal operating range from 945 PSI to a high of 1290 PSI. The gas pressure is then reduced a single cut, to 170 PSI before it is sent to the MBF-V940 Fuel Gas Scrubber, which is first component up-stream of MAK-F960A. During testing of safety devices the PSV on MBF-V940 was set to relieve at 270 PSI; it did not relieve until 390 PSI, thus allowing 390 PSI or greater pressure to the MAK-F960A Fuel Gas Filter.

The MAK-F960A was found severely corroded on the tabs that anchor the T-bolts for

the top to be secured to the body of vessel. The corroded tabs weakened the vessels capability of handling any over pressurization above the Maxium Working Pressure. Lessee was flowing thru both MAK-F960 A and B at the time of the incident. The PSV on the MAK-F960B was set to relieve at 270 PSI; it did not relieve until 290 PSI.

Lessee had modified both MAK-F960 A and B vessels from the original design. The Lessee had removed the differential gauges from system, therefore Operators had no indication of when filter elements needed to be changed. The location of the Level Safety High (LSH) and Sight Glasses were modified at the same time; thus giving the Operators false fluid readings. All modifications were completed according to Operators in August 2014. Lessee did not have any record of the filters being changed on the two filter units, as well operators stated they had never changed filters.

Nearly every month in the year prior to the incident, the Daniel Senior Meter orifice plates were found to be dished (deformed) upon inspection by measurement personnel. The over pressurization most likely occurred when facility was being brought back on line after a shut-in, and appears to have been occurring monthly. The combination of failed PSV's both up and down-stream of MAK-F960A; severely corroded tabs and modification of MAK-F960 A/B vessels lead to the incident.

20. LIST THE ADDITIONAL INFORMATION:

Further investigation revealed Lessee has been flowing hydrocarbon fluids through the HBG-E560A Glycol Exchanger and MBD-V520 Glycol Hydrocarbon Separator. Both components have been Out Of Service (OOS) since January 28, 2015 according to the Approved Flow Diagrams and SAFE Charts. Operators had been draining hydrocarbon fluids from the MAF-V500 Glycol Contactor using a manually operated bypass valve. This was done by "bumping" the manually operated valve located on the bypass line around the automatic liquid dump valve, which was Out Of Service (OOS). Normal operating range high for the Glycol Contactor is 1290 PSI. Flow path went through the HBG-E560A Glycol Exchanger to the MBD-V520 Hydrocarbon Separator. Both components have a Maximum Working Pressure (MWP) of 150 PSI. The hydrocarbon fluids was then pushed to the ABJ-T200 Wet Oil Tank. Operators on the facility all stated they have been flowing hydrocarbon fluids thru the Glycol Exchanger and Hydrocarbon Separator since they took facility over from previous lessee in March of 2014.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

MAK-F960A Fuel Gas Filter.

Vessel top mounting tabs broken.

Two (2) Electrical wiring chases containing High and Low voltage wiring, Control tubing.  
ECOD: \$750,000.00

Electrical wiring chases, High and Low voltage wiring and Control tubing severely burned.

ESTIMATED AMOUNT (TOTAL): \$750,000

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

The Lake Jackson District has no recomendations to the regional office.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: YES

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

- 1. P-451 (c) PSV on the MBF-V940 failure.
- 2. P-451 (c) PSV on the MAK-F960B failure.

- 3. G-110 (c) Modification of the MAK-F960A incorrectly.  
Modification of the MAK-F960B incorrectly.
- 4. G-111 (c) MAK-F960A Severely corroded.

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25. DATE OF ONSITE INVESTIGATION:

**10-MAY-2015**

26. ONSITE TEAM MEMBERS:

**Marco DeLeon / Michael Hankamer /  
Jimmy Karstedt / Edward Keown /**

29. ACCIDENT INVESTIGATION  
PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

**John McCarroll**

APPROVED

DATE: **01-SEP-2015**

# FIRE/EXPLOSION ATTACHMENT

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1. SOURCE OF IGNITION: **Spark from vessel lid striking handrail -**

2. TYPE OF FUEL:
- GAS
  - OIL
  - DIESEL
  - CONDENSATE
  - HYDRAULIC
  - OTHER

3. FUEL SOURCE: **MAK-F960A**

4. WERE PRECAUTIONS OR ACTIONS TAKEN TO ISOLATE  
KNOWN SOURCES OF IGNITION PRIOR TO THE ACCIDENT ? **NO**

5. TYPE OF FIREFIGHTING EQUIPMENT UTILIZED:
- HANDHELD
  - WHEELED UNIT
  - FIXED CHEMICAL
  - FIXED WATER
  - NONE
  - OTHER **Firewater Hose reel**