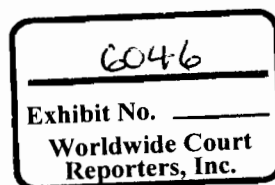



CONFIDENTIAL



BP-HZN-BLY00102884


Content


24 May, 2010

- Investigation Overview
- Macondo Well Key Components & Critical Factors
- Critical Factors & Ongoing Work

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Investigation Overview



24 May, 2010

- The Terms of Reference is focused on determining facts and causation
- Investigation team comprises ~ 70 internal and external personnel (inclusive of technical staff supported by legal, documentation and other support disciplines)
- Investigation based on:
 - Reports
 - Engineering drawings
 - Real-time data transmitted from the rig
 - Witness accounts (personnel both on the rig and others involved in operations and planning of Macondo Well)
 - Modeling & analysis
 - Aim to test equipment (cement sample, float collar, BOP)
- Investigation & analysis has access to limited physical evidence only
- Some key third party interviews and data have not yet been available

Team Composition

Several bp & Industry SME' s (SETA' s) engaged,
 Good team in place, still building on the BOP side of inquiry
 External consultants engaged - Arnold & Porter, Add Energy, Baker Risk, Boots & Conts, CSI, Ex-PRO Soft, HOSE, Stress Engineering, Subsea Ventures Marine, Well Control Systems, Academic Support (MIT and/or Manchester

•Full-Time: 46

•BP Part Time: 8

•Consultants: 17

Important to understand the context in which the investigation is happening

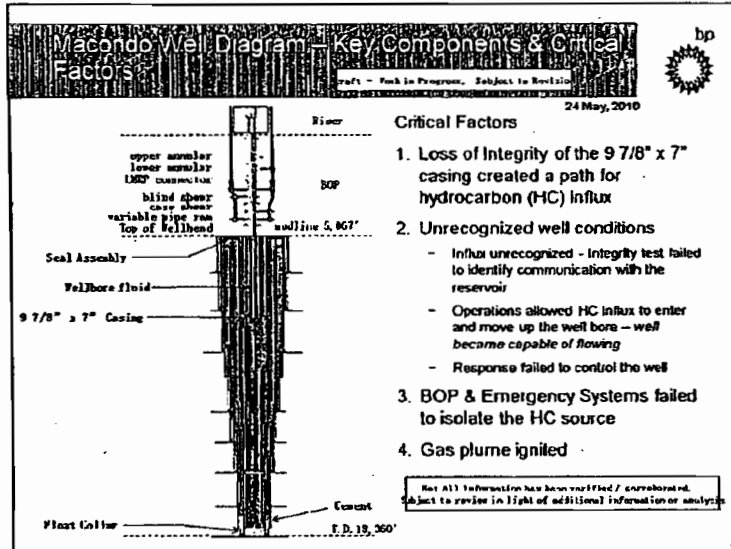
Access to 3rd parties has been challenging - Transocean (no interviews to date - 12 requested)

No access to Cameron

Lack of physical evidence - yet to secure from Halliburton cement sample used in cement job

Yet to secure cement samples (of boat) from Coast Guard

Access to BOP with ongoing Government/MBI proceedings?



Go into the structure- Fault Tree construction (basic logic of barrier breakdown)

Against these - Immediate causes

Cement - Isolate formation

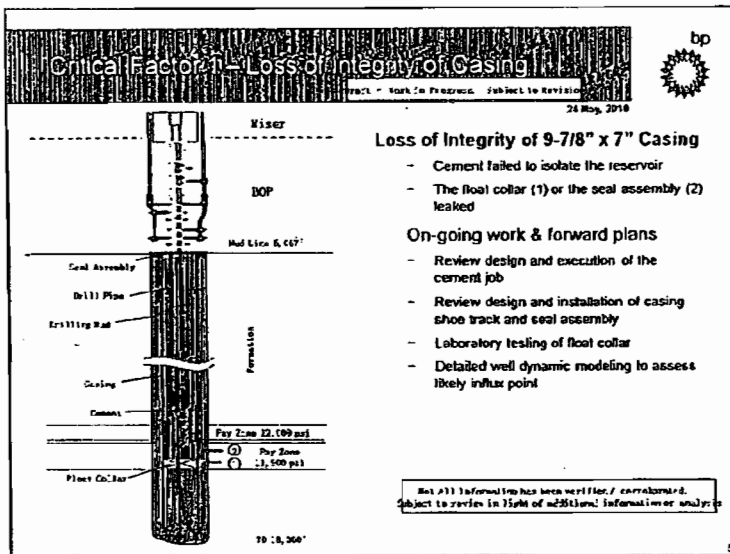
Float collar - check valve @ bottom, hold cement in place while set

Seal Assembly - casing hung in wellhead

seal assembly provide seal between outside of casing string & inside

Critical Factors

1. Failure of two physical barriers - cement & float or seal assembly
2. Unrecognized influx (opportunities missed during the integrity test to see this). Unrecognized onset of flow conditions. Response did not control
3. Ignition source.
4. BOP' s failed to control & secure the source even on subsequent attempts



Cement Job

Pump volumes and return ok. Basic view from field - good cement job.

But know cement did not isolate

Areas of interest: float shear out, centralizers, slurry mixture, shoe


Plausible failure scenario

Seal assembly appears to be text book running operation, high reliability

Areas of interest - not locked down at time of incident - possibility to lift of seat

Plausible failure scenario

Critical Factor 2 – Unrecognized Well Conditions



Draft – For Review. Subject to Revision. 24 May 2010

Unrecognized Well Conditions

- Integrity test failed to identify communication with the reservoir
- Operations allowed HC influx to enter and move up the well bore – well became capable of flowing
- Rig crew response to well flow failed to control the well

Ongoing work & forward plans

- Reconstruct timeline from available data and interviews to estimate when influx occurred and when it should have been recognized
- Try to ascertain why well flow conditions were not detected earlier
- Try to ascertain rig crew response to well flow conditions
- Review integrity testing procedure
- Transocean interviews when possible

Not All information has been verified / corroborated.
 Subject to review in light of additional information or analysis

Last integrity test - 'so called

Negative test started @ 15:00 - ended 20:02 (long time) typically 1hr

In looking back: there were anomalous pressures and several discussions regarding the test.

Witness statements about bleeding off volume.

Difficult to tie down - only bp WSL views to date. Transocean input important

20:02 End integrity test based on KI reading 0# but 1400# on DP. - Decided to move forward with sea water displacement

20:58 start staging pumps down for sheen test - DP pressure increasing (confirm SOB# gone) - Appears to be first clear indication of flow

21:08 (10 min later) pumps fully shut down

- DP pressure continued building

- outflow meter indicate flow - 1.7 bbl/min

21:31 stop pumps abruptly - appear to detect problem

DP increases from 1240# to 1750 # in 6 minutes !!

Flow going overboard- so could not meter


- 4 phone calls reported from witness statements (TP to Rig floor, AD to mud pits, Vidrine called by TP, Snr TP contacted by AD)

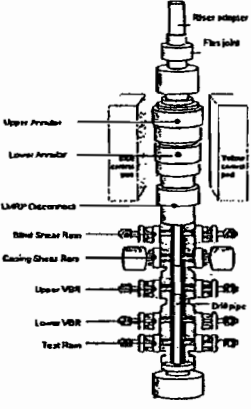
- Appear BOP activated late or not at all

21:49 Explosion

Critical Factor 3 – BOP Failed to Isolate Source

Draft – Work in Progress. Subject to Review 24 May, 2010





BOP Failed to Isolate Source

- Action to activate the BOP once well condition was recognized failed to isolate the source
- EDS failed to secure the well (when activated from bridge after explosion)
- AMF/Dead-man failed to secure well
- Subsequent ROV interventions failed to secure the well

Ongoing work & forward plans

- Understand BOP testing history and performance of emergency systems: EDS, Auto shear, AMF (Deadman), ROV hot stab
- Understanding of BOP modifications – could they have affected its functionality?
- Assess leaks identified during ROV intervention and determine significance – could they have affected its functionality?
- Evaluation of BOP maintenance history regards system completeness, OEM parts and 3rd party services
- Inspect & test BOP once retrieved from sea floor

Not all information has been verified / corroborated.
Subject to review in light of additional information or analysis

You would have heard:

Hydraulic leaks identified during the response effort

Modifications made that were not well documented

Testing?

Understand significance of leaks/mods

Concerning

Leads to further questions about testing

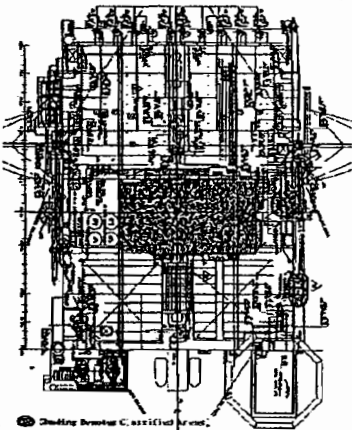
Critical Factor 4 - Ignition of Hydrocarbons

Draft - Not for Progress. Subject to Review

24 May, 2010



Hazardous Area Classification - Main Deck



Ignition of Released Hydrocarbons

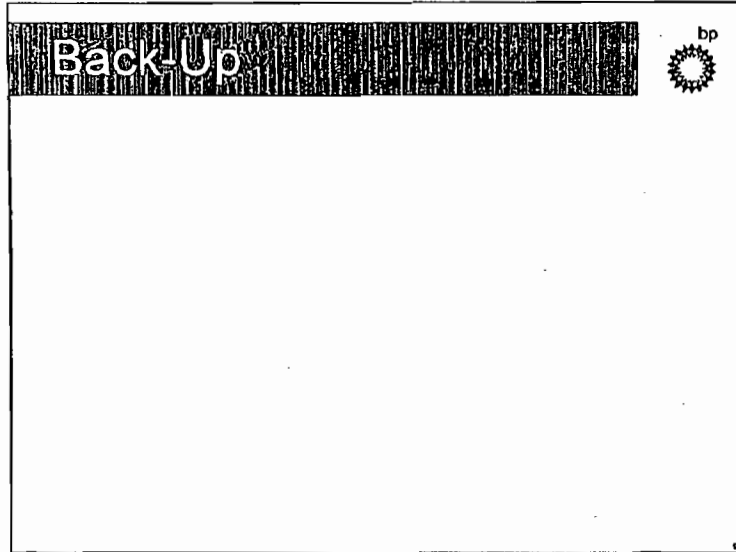
- Hydrocarbon gas detected by several gas detectors prior to explosion (two witness statements from bridge).
- Several potential scenarios of hydrocarbon release to atmosphere have been identified.
- Dynamic modeling estimates suggests that flammable gas mixtures could have reached non-electrically classified areas.

Ongoing work


- Fluid dynamic modeling being further developed in-line with most probable release scenarios.
 - Access to pit room / mud pumps
 - Access to derrick via degasser
 - Access to engine room
- Review of electrical area classification, fire and gas design and ventilation system design.

Not All Information has been verified / corroborated.
Subject to review in light of additional information or analysis

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Background to Incident



24 May 2010

- Macondo Prospect MC 252 ILX well - total depth 18,360'
 - Challenging well to drill but comfortably within experience range
 - The well was originally spud with the Marianas Rig on Oct 6th 2009 - The Marianas sustained damages during Hurricane Ica on Nov 8th and commenced tow to shipyard for repairs on Nov 26th
 - The Deep Water Horizon re-entered the well on Feb 9th 2010 at the 18" casing point
 - Both rigs are Transocean owned
 - The well encountered commercial hydrocarbons - plan was to temporarily suspend the well for future completion as a production well
- Deepwater Horizon
 - On contract to BP since 2001
 - Proven track record in deepwater exploration drilling (just came off record Tiber exploration well)
- Event
 - Incident occurred during the suspension phase of the well - 2 hrs after completing an integrity test on the well
 - At the time of the incident drilling fluid was being displaced from the well with seawater in preparation for setting the final cement plug

Event

Horizon primarily an Exploration Rig

At the time of the incident there were a few remaining steps to secure the well and depart i.e. final cement plug & lock ring