

Commission of Inquiry
Montara Uncontrolled Hydrocarbon Release
Submission of Elmer P. Danenberger

As a petroleum engineer, former regulator, and proponent of responsible offshore energy production, I have reviewed the Montara submissions with interest. Because I am troubled by some of the explanations provided in these documents and the absence of certain details, I am submitting comments for the Commission's consideration. These comments pertain to Terms of Reference 1, 2, 5, and 10. Please be advised that I am acting independently. No one has asked me to comment, funded this work, or reviewed my submission.

Term of Reference 1: Circumstances and Likely Causes

A. General comments:

1. This incident appears to have been entirely preventable if internationally accepted practices were followed. The principal issues are the integrity of the 9 5/8" casing cement job and the questionable well suspension procedures.
2. As titleholder/operator of Montara, PTTEP bears primary responsibility for operational safety and protection of the environment. Approval of activities by a regulator does not transfer that accountability to the regulator.
3. The internal processes that PTTEP followed in making operational decisions and amending plans are not described in their submission. The Commission needs to understand how these decisions were made and whether the decision makers had the necessary qualifications and expertise.
4. Any information that would help the Commission, industry, regulators, and the public better understand the causes of this incident and prevent a recurrence should be made available. In my view, PTTEP forfeited confidentiality rights when the Montara well blew out and a major incident ensued. Public resources were damaged or threatened; and the blowout has important energy policy implications, not only in Australia, but elsewhere. The need to fully understand all contributing factors should supersede the confidentiality rights of the operator.
5. The following information is needed to fully assess the factors contributing to this incident:
 - a. a description of the reservoir geology,
 - b. porosity, permeability, and bottom hole pressure data
 - c. maximum anticipated surface pressure (calculated)
6. While the operator is the responsible party, the conduct of the drilling contractor should also be considered. I am aware of contractors who have refused work at offshore facilities because they were not satisfied with the specifications or operating practices. Atlas Drilling personnel and equipment were exposed to unacceptable and unnecessary risks because of questionable practices at Montara. Atlas has identified some of these

practices in its submission. Did Atlas question these practices prior to the loss of well control? If not, why not? Many drilling contractors are now providing safety leadership training for their personnel. Safety leaders would have strongly objected to decisions or actions that compromised well integrity. Perhaps operators, contractors, and regulators should gather to discuss this aspect of the incident, and encourage open communication when concerns are first identified.

- B. Cementing of the 9 5/8” casing:** Based on the information that has been submitted to the Commission, well bore integrity was compromised by deficiencies in the cementing of the 9 5/8” casing. Cementing problems are a leading cause of well control incidents and have been given much attention by industry and government. (see data on the causes of well control incidents at http://drillingcontractor.org/dcpi/dc-julyaug07/DC_July07_MMSBlowouts.pdf and safety alerts at <http://www.mms.gov/safetyalerts/2.htm>). For the Commission to make a full assessment of Montara cementing issues, additional information is needed:
1. As noted above, bottom-hole pressure and reservoir geology data should have been provided. The Commission needs a complete understanding of the operating environment.
 2. What was the minimum internal yield of the 9 5/8” casing string? This information is needed to assess the casing design and the casing pressure test specifications.
 3. The following additional cementing questions should be answered:
 - a. How long was 4000 psi held on the casing during the pressure test? What was the maximum pressure observed or recorded? Minimum? Were any anomalies noted during the test? Were there any instrumentation or recording issues?
 - b. After the influx was observed and PTTEP re-applied pressure to the casing/cement, how much pressure was applied? How long was the pressure applied?
 - c. What was the total amount of time that the cement was held under pressure?
 - d. Were there any anomalies on the test charts? Have these charts been provided to the Commission?
 - e. When did PTTEP or their contractors discover that the volume of cement was 1/3 less than specified? What actions were taken at that time? If none, why not? Was the regulator notified?
 - f. Was a cement bond log or another cementing assessment tool run to evaluate the cement job?
 - g. Has the cementing contractor submitted comments on these matters? If not, those comments should be requested.

C. Well suspension procedures were not consistent with “best industry practices”:

1. I am not aware of any regulations, industry standards, or company manuals that allow the use of a corrosion cap as a substitute for a downhole barrier. According to the Atlas submission, PTTEP’s own manual did not permit this.
2. Suspended wells are always filled with mud or Inhibited seawater between barriers. These fluids are not considered to be barriers, and PTTEP’s manual does not appear to count well fluids as a barrier in a suspended well.
3. Batching and operational efficiency measures appear to have increased risks and compromised well integrity. From a well integrity standpoint, certain post-suspension operations should have been conducted in series rather than in parallel. After tying-back the 20” casing, PTTEP should have installed the wellhead, tied back the 13 3/8” casing, installed the BOPE, and completed operations on the well. Alternatively, PTTEP could have installed a retrievable packer (RTTS) in the 9 5/8” casing until they resumed operations on the well. Instead, the well was left totally open with only the cement at the base of the 9 5/8” casing preventing an influx. This is particularly disconcerting given the cementing issues and the potential for gas migration after the corrosion cap was removed. They ultimately attempted to install the RTTS, but not until flow was observed and they had moved to another well. Obviously, it was too late at that time.
4. The 9 5/8” by 13 3/8” annulus was left unprotected without even a corrosion cap, even though PTTEP knew about the fluid influx during cementing, knew that they had not pumped the required amount of cement, and knew about the significant loss of mud while drilling the 12 1/4” hole (suggesting the potential for cementing problems).
5. Why remove the 9 5/8” casing corrosion cap to clean the 13 3/8” casing threads (leaving the well exposed) when they didn't even intend to tie-back the 13 3/8” at that time? Both Atlas and PTTEP indicate that the well was tested for pressure before removing the corrosion cap and that no pressure was observed. How was this test accomplished? What were the actual pressure readings? Were the readings recorded?

Terms of Reference 2 and 10 – Regulatory Issues and Prevention of Recurrence

Wells, platforms, and pipelines are integrated production systems. They should not be designed, operated, or regulated as distinct units. Safety and pollution prevention programs are more effective if a single agency is responsible and accountable for the regulation of operations. Unfortunately, legislative bodies do not always comprehend the safety and environmental risks associated with fragmented or compartmentalized regulatory regimes. These risks include regulatory gaps, overlap, confusion, inconsistencies, and conflicting standards. Also, a sufficient number of competent regulatory personnel may not be available to staff multiple agencies. The resulting inefficiencies increase costs for operators and contractors. In such regimes, experienced company personnel may spend too much time coordinating and resolving regulatory issues and not enough time managing safety and environmental risks.

Ideally, one agency would be responsible for all regulatory aspects of drilling and production operations. Safety and pollution prevention are inextricably linked and both should be regulated by this agency. The agency should be held accountable for performance and efficiency. While other agencies could oversee environmental studies, licensing, and spill response, the fundamental safety and pollution prevention risks associated with wells, structures, processing, and pipelines should be managed by a single authority.

Term of Reference 5: Adequacy of the Response

I believe the Commission needs to review the process leading to the decision not to pursue a surface capping operation. According to PTTEP's submission, well control specialists (ALERT) "recommended in addition to the use of deluge, the implementation of simultaneous well control activities comprising surface capping and relief well operations." This is the approach that is typically followed in responding to a blowout. The operator employs a well control specialist company to plan and (if prudent) attempt a surface capping operation while the relief well is planned and drilled. In many cases, the surface capping operation is successful and the relief well operation is terminated. Relying solely on a relief well ensures a long delay in killing the well. The result is a high potential for environmental damage. Going back to at least 1971, all drilling blowouts on the US OCS that required intervention were controlled with surface procedures. Two relief wells were initiated but not needed. (http://drillingcontractor.org/dcpi/dc-julyaug07/DC_July07_MMSBlowouts.pdf).

Well control specialist companies employ highly trained professionals and have an excellent safety record. These companies respond to emergencies and have established procedures for protecting personnel. While participation by others should have been restricted, the ALERT team should have been authorized to initiate surface capping operations if they (1) thought they could do so without exposing their personnel to significant risks and (2) had a reasonable chance of being successful.

The process leading to the selection of the relief well rig also warrants further review. PTTEP's comment that the Ocean Star "was on a tight program to enable them to produce first gas and meet its contractual arrangements" is stunning. Did PTTEP and the other parties understand the significance of this incident? The PTTEP submission also mentions contractual and indemnity issues. These issues should be explained. The situation with the Ensco 104 and rationale for not using the Songa Mecur also should be further examined.

Offshore operators and contractors have a long history of doing everything possible to assist during well control emergencies. I do not believe this "Good Samaritan" attitude has been superseded by indemnity, cost, and contract concerns. If it has, legislation and regulations need to be reviewed to make sure that nearby operators and contractors respond promptly to emergencies.