Submission to

the Senate Standing Committees on Environment and Communications

Inquiry into Oil or Gas Production in the Great Australian Bight

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[1] A brief biographical statement is provided at the end of this submission.

Introduction

This submission relates to term of reference (e) – other related matters.

One of the main claims BP makes in the documents on its Great Australian Bight (GAB) website is that the company has learnt the lessons from its Gulf of Mexico (GoM) blowout.

- I shall argue in this submission that the website documents provide no evidence that BP has learnt some of the most important lessons from the GoM blowout.
- I shall also raises questions about BP's plans for responding to a blowout.
- Finally, I shall propose a set of questions that BP needs to answer satisfactorily if we are to have confidence in the precautions it proposes to take.

Learning the lessons of the GoM blowout

The lessons BP says it has learnt are drawn from the company's own report on the accident – the Bly report - which dealt primarily with technical causes, not the organisational causes. Other major reports and commentary, such as, the President's Commission report, the report by the Chief Counsel to President's Commission, the report of the US Chemical Safety Board, and also my own research, identified a range of organisational failures that lie beyond the technical failures. Unless and until these are dealt with we can have no confidence in the precautions the company proposes to take.

To give an example of this problem, one the immediate causes of the GoM blowout, identified in the Bly report and summarised in BP's Environmental Plan for the GAB, was that "the rig crew did not recognise the influx and did not control the well until hydrocarbons had (arrived at the surface)"[2]. No explanation is provided for this failure. Putting it another way, the Bly report fails to answer the all-important *why* question: why did the operators not understand what was happening? The fact is the crew failed to recognise the influx because they were not monitoring the well as they were supposed to. The crew was rushing to finish the job and was not following required procedures[3]. Moreover, it appears that this type of non-compliance was routine. The *why* question takes us into the realm of organisational and management causes, which the Bly report did not address. The Bly report was criticised at the time for this limitation.

The Environmental Plan for the Bight states that in response to the GoM blowout, "BP's well barrier practice establishes the minimum requirements for … monitoring … throughout the full life cycle of the well"[4]. The question left hanging by this response is this: if BP failed to ensure that employees complied with procedures in the GoM, how can it be sure they will comply with them in the Bight?

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[2] BP GAB Exploration Drilling Program, Environmental Plan Summary, 1 October, 2015, p14

[3] See *Disastrous Decisions* pp58-60. See also the report of the US Chemical Safety Board on the GoM blowout, volume 3, pp70-72

[4] BP GAB plan, op cit p 12

Bonuses

Principal among the organisational causes of the GoM blowout was the system of bonus payment made to employees at all levels. These provided continual pressures to minimise costs. Employee performance agreements required employees to show evidence of things they had done to reduce costs. Accordingly, many employees went to great lengths to demonstrate how they had saved the company money.

Bonuses also depended on drilling speeds. A key performance indicator in this respect was "days per 10,000 feet of well drilled". This resulted in a faster rate of drilling than was prudent. The main cost for BP in drilling the well was the cost of the rig, chartered at $533,000 per day[5]. Everyone was aware that if rig time could be saved, the total cost of drilling the well would be less.

These incentive schemes put pressure on all concerned to ignore anomalies, and warnings that things might be amiss, and to get on with the job in an almost blinkered way[6]. One official report identified ten separate occasions on which the drilling team accepted a higher risk in order to reduce drilling time and therefore cost[7].

Risk indicators

Conceivably the perverse effect of these incentives might have been tempered if bonuses had also taken account of how well major risks, such as the risk of blowout were being managed. Some risk indicators were indeed included, but BP was using the wrong indicators, which meant that it was systematically misleading itself and others about the risk of blowout. Its primary indicator was number of cases of "loss of containment", which, in the context of drilling, meant roughly the number of oil spills into the sea. Now of course an oil spill from a hydraulic hose or any other source is environmentally undesirable, but the number of such spills is not an indicator of the risk of blowout. Far more significant is the number of "kicks", meaning incidents in which operators temporarily lose control of the well and oil and gas under high pressure begin forcing their way upwards. If operators do not act quickly to control kicks, they can develop into blowouts. That was one of the contributory factors to the GoM blowout. The frequency of kicks is therefore one indicator of blowout risk; another would be the speed of response to kicks. Neither of these was an indicator that mattered to BP in the GoM.

BP subsequently recognised the importance of using well control incidents, such as kicks, as indicators of risk[8] and official industry guidance recommends that such incidents be treated

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[5] Report of the Chief Counsel for the National Commission on the DWH Oil Spill, p247
[6] For examples see *Disastrous Decisions*, p28-29.
[7] Chief Counsel's report, p246
[8] See *Disastrous Decisions*, p93.
Also, Bly recommendation 14, requires BP to establish key performance indicators for well integrity, well control, and rig safety-critical equipment
These should include but not be limited to:
• Dispensations from DWOP. • Loss of containment (e.g., activation of BOP in response to a well control incident). • Overdue scheduled critical maintenance on BOP systems.

as key performance indicators[9]. However, whether these are indicators that matter sufficiently to have been included in bonuses is a question that BP needs to answer.

Here is another relevant risk indicator. Drilling wells involves pumping cement down at various times to seal joints, and to plug the bottom of the well when drilling is completed but the well is not yet ready for production. Cementing jobs sometimes fail. In fact, the regulator in the GoM found that half of all blowouts were initiated by a cementing failure. Number of cementing failures would seem to be an important indicator of risk.

One of the most insidious processes that contributes to many major accidents is the "normalisation" of substandard or deviant practices. This happens when people start taking short cuts and find there are no negative consequences. Experience teaches them, in other words, that strict compliance is unnecessary. Eventually, however, an unusual set of circumstances may catch them out. Closely related to this is the normalisation of deviations from standard engineering practices. Companies sometimes find themselves in situations where strict compliance with a standard seems unnecessary and onerous. To deal with this situation, the company may have a formal process for authorising a deviation from the standard in a particular case. Looking at these cases in isolation, the deviation may seem to involve a negligible increase in risk, but if the number of such authorisations is not controlled, the cumulative increase in risk may be considerable. Following the Gulf of Mexico disaster, BP has acknowledged that the number of authorised deviations from approved engineering practices needs to be treated as an indicator of risk and that this number should be driven as low as possible. It would be good to know if this is an indicator that matters to BP in the Bight.

Finally, a closely related but subtly different risk indicator. Safety generally, and blowout prevention in particular, depends on the existence of a number of controls, so that if one fails others will save the day. Accidents only happen when all controls fail simultaneously. Major accidents are relatively rare because the simultaneous failure of all controls that are supposed to be in place to prevent them is relatively rare.

If one of these controls is temporarily out of action for some reason, for example it is undergoing maintenance, the risk of accident will be marginally greater. Risk assessment in any one case may deem this to be acceptable. But if the total number of safety bypasses or "defeats", as they are sometimes called, is uncontrolled, then the risk level may rise significantly. Hence an important indicator that companies need to keep track of is number of safety system bypasses or defeats that are currently in place[10]. It would be useful to know whether BP will use this indicator in its operations in the Bight and whether it will be an indicator that matters for bonus purposes.

BP needs to demonstrate that it has developed a suite of such indicators of risk for drilling operations in the Bight, and that they matter, in the in the sense that they influence bonus payouts.

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http://www.bp.com/en/global/corporate/sustainability/safety/safer-drilling/the-bly-report-recommendations.html

[9] OGP Process Safety- Recommended Practices on Key Performance Indicators, Nov, 2011, p15

[10] For examples, see Hopkins A and Maslen S, *Risky Rewards: How Company Bonuses Affect Safety*, (Ashgate, UK, 2015),p133.

Incentivising the reporting of bad news

Prior to every disaster, there are always warning signs — indications that things are amiss. Had these signs been identified earlier, the disaster could have been avoided. It is also true that people at the grass roots of an organisation are frequently aware of what is happening but do not transmit the bad news upwards, for a variety of reasons.

One of the most important reasons is an attitude on the part of senior management that discourages the reporting of bad news. BP's CEO at the time of the Texas City refinery accident of 2005 created a climate in which bad news was not welcome. Likewise, the head of BP's exploration and production division at the time of the GoM accident "was not someone people wanted to share bad news with"[11].

All of this is something that risk-aware leaders and organisations are acutely aware of. For them, bad news is good news because it means that their communication systems are working to move the bad news up the hierarchy to the point where something can be done about it before it is too late.

Risk-aware leaders are always skeptical about whether they are getting the all the relevant information. One such leader I met had embarked on a campaign to "encourage the escalation of bad news". I sat in her office one day while she was talking on the phone to a lower-level manager who had provided her with a report that presented only good news. "But where is the bad news", she said. "I want you to rewrite your report to include the bad news." The organisation in question had a policy of "challenging the green and embracing the red". The slogan referred specifically to traffic light score cards, but it also had the more metaphorical meaning of questioning the good news and welcoming the bad. She was implementing this slogan in a very effective way.

This leader had introduced an incentive system to encourage the reporting of bad news. Whenever someone demonstrated courage in transmitting bad news upwards, she provided them with an award (named after a man in her organisation who had saved someone's life by his alertness to a process safety hazard). The award had various levels, the highest being diamond which was worth $1,000. The day that I sat in her office, she made a diamond award to an operator who had recognised that some alarm levels had been changed on a rotary compressor without a proper "management of change" procedure. He had written an email about this to his manager who, in turn, had passed it on to her. She had made more than a hundred awards for courageous reporting in a period of less than 12 months.

A finding of one of the reports on the GoM accident was that employees had become complacent with respect to the risk of blowout, believing that everything was under control. One way to overcome this problem is to incentivise the reporting of bad news. This encourages risk-awareness, a state of mind that is quite the converse of complacency. BP needs to demonstrate how it will encourage people to report the bad news.

[11] *Disastrous Decisions*, p133

Centralisation

One of the organisational causes of the GoM accident was that BP did not exercise sufficient quality control over the leaders of its various business and sub business units. The result was that these leaders were subject to unrelenting commercial pressures with insufficient countervailing pressure to manage major hazard risks effectively. BP has learnt *this* lesson very well. It created a new Safety and Operational Risk (S&OR) Function whose staff work in local business units but who are not answerable to those units but rather to the head of S&OR in London. This ensures greater standardisation and better management of operational risk. BP needs to explain the role that will be played by S&OR in the GAB.

Capping the Well

In the event of a blowout, BP is relying on two strategies to stop the flow – the first is to cap the well and the second is to drill a secondary, relief well.

Capping involves lowering a “capping stack” onto the well head on the sea floor. Such a device was not in existence at the time of BP’s Gulf of Mexico blowout in 2010, and a capping strategy had to be developed on the run, which is why it took 87 days to cap the well. Since that time, capping stacks have been designed, constructed and located strategically around the world. In the event of a blowout in the Bight, BP would have access to a capping stack in Singapore. It would take up to 35 days to bring this stack to the Bight and cap the well[12]. The company has rejected a suggestion that a capping stack be located locally, observing that the time taken to transport the device from Singapore to the Bight is not a critical issue. Preparatory work would need to be done at the blowout site and the Singapore capping stack would have arrived before this work was completed[13].

BP estimates that in the event of an oil spill in the Bight, oil could begin reaching the shore in as little as 9 days[14]. In other words substantial environmental damage along the shore line may already have been done long before the Singapore capping stack is in place. A recent exercise in the Gulf of Mexico[15] shows that using a locally available capping stack a blowout could be capped in 15 days. In this respect, BP’s estimate of the time it would take to cap a blowout is a long way short of industry best practice.

Whether or not travel time from Singapore is the critical issue, it is worth noting that there are five different capping stacks available for use in the Gulf of Mexico and three for use in UK waters. The expectation is that these stacks could be on site in 24-48 hours[16]. It is also worth noting that new rules[17] imposed by the regulator in the US for drilling in the Arctic require that a capping stack be located within *24 hours travel time* of the drill site. One could well ask, if the Arctic justifies this kind of protection, what about the Bight?

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[12] BP GAB Exploration Drilling Program, Environment Plan Summary, October 2015, p10
[13] ibid
[14] BO GAB Drilling Program, *Fate And Effects Oil Spill Modelling Assumptions, Parameters And Results* Rev 2, 14 September 2016
[15] http://www.mtshouston.org/pdfs/2014/nobleenergyhwcgjanuary2014.pdf
[16] https://www.newsdeeply.com/arctic/articles/2016/07/08/new-rules-for-u-s-arctic-offshore-drilling
[17] https://www.newsdeeply.com/arctic/articles/2016/07/08/new-rules-for-u-s-arctic-offshore-drilling

Drilling a relief well

Should the capping strategy fail for any reason, BP has a back up for stopping the flow. This is to drill a relief well to intersect the blowout well below the sea floor and to "kill" it by pumping it full of heavy fluid and cement. This is the ultimate method of controlling a blowout.

The question this raises is: where would BP find a spare drilling rig to carry out this operation? Petroleum companies operating in Australian waters have a memorandum of understanding among themselves to provide a suitable drilling rig in the event of an emergency[18]. One wonders, though, how easy it would be for another company to release a rig quickly for this purpose. In view of the uncertainties, BP has assumed it will take up to 149 days to acquire an appropriate rig, drill a relief well and plug the blowout.

The new Arctic regulations require that a relief rig be *available nearby,* so that a relief well can be complete and a spill stopped in the same season in which the drilling began and before sea ice moves in. The situation in the Bight is not as constrained by the seasons, but it can still be argued that 149 days is an unacceptably long time to plug a well. The Gulf of Mexico blowout was stopped in 87 days and still the costs were upwards of $40 billion. Who knows how much additional damage would have occurred if it had taken 149 days to plug it.

When Shell was proposing to drill in the Arctic, it intended to have two drilling rigs working simultaneously in the area. The plan was that if one of the wells suffered a blowout, the other rig would quickly and safely disconnect from the well it was drilling and begin drilling a relief well[19]. BP's documents do not discuss this possibility. Perhaps they should.

An even more cautious approach was taken when exploratory drilling was being done off the east coast of Canada. The strategy was to have a second drilling rig which would begin drilling a relief well as soon as drilling the exploratory well had begun. The relief well lagged behind the exploratory well but would have been able to intercept that well at short notice in the event of a blowout[20].

These practices in other parts of the world suggest that BP is well short of industry best practice and should rethink its approach to drilling relief wells.

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[18] EP Summary p10

[19] Richard Steiner, Environmental Risks of Offshore Exploratory Drilling Planned by Repsol, as Approved by the Government of Spain, off the Islands of Fuerteventura and Lanzarote ,Canary Islands. Report to the European Commission, November 3, 2014

[20] Personal communication from Bob Bea.

Questions BP Needs to Answer

Based on the previous comments, I believe BP should be asked to respond to the following questions and requests.

1. There are presumably half a dozen or more people in the line of management from the BP company man on the rig to the CEO.

- Describe in detail the bonus system for each person in this chain.
- Explain how group and individual performance are taken into account.
- Identify the metrics used in these evaluations.
- Provide examples of performance agreements for each person in the chain. (Redact any sensitive information).

2. How will the Diamond Great White drilling crew be incentivised?
Provide details of any metrics involved.
If drilling crew members have performance agreements, please provide examples of these agreements for the driller and the senior tool pusher.

3. How will BP encourage the reporting of bad news in its GAB operations?

4. What role will the Safety and Operational Risk (S&OR) Function play in the Bight?
Specifically, what S&OR staff will be involved and what will they do?
How are they incentivised?

5. How has BP responded to the organisational lessons identified in the Chemical Safety Board report on the GoM accident, volume 3?

6. How has BP responded to the matters identified in chapter 5 of the report of the Chief Counsel to the Presidential Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling?

7. Explain in detail why it would take 35 days to mobilise a capping stack and cap a blowout.

8. Explain why BP should not be held to best industry practice when it comes to the availability of relief drilling rigs.

Brief Biographical Statement

Andrew Hopkins is Emeritus Professor of Sociology at the Australian National University in Canberra.

He has been has done safety consultancy work for major companies in the resources sector, as well as for Defence. He speaks regularly to audiences around the world about the causes of major accidents.

He was a consultant to the US Chemical Safety Board in its investigation of the Texas City accident. His book on that accident, *Failure to Learn: the BP Texas City Refinery Disaster*, was published in 2008. He was again a consultant to the Board for its investigation of the Gulf of Mexico oil spill disaster and has written a book on that subject - *Disastrous Decisions: The Human and Organisational Causes of the Gulf of Mexico Blowout (CCH, 2012)*

He was the winner of the 2008 European Process Safety Centre safety award, the first in time it was awarded to a non-European.

In 2016 he was made an honorary fellow of the Institution of Chemical Engineers in recognition of his “outstanding contributions to process safety and to the analysis of process safety related incidents”.

He has a BSc and an MA from the Australian National University, a PhD from the University of Connecticut and is a Fellow of the Safety Institute of Australia.