

**ECONOMICS AND INDUSTRY  
STANDING COMMITTEE**

**INQUIRY INTO SAFETY-RELATED MATTERS  
RELATING TO FLNG PROJECTS IN AUSTRALIAN WATERS  
OFF THE WESTERN AUSTRALIAN COAST**

**TRANSCRIPT OF EVIDENCE  
TAKEN AT PERTH  
WEDNESDAY, 19 NOVEMBER 2014**

**SESSION ONE**

**Members**

**Mr I.C. Blayney(Chair)  
Mr F.M. Logan (Deputy Chair)  
Mr P.C. Tinley  
Mr J. Norberger  
Mr R.S. Love**

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**Hearing commenced at 9.31 am**

**Mr LLOYD BAILEY**

**Deputy Commissioner, Operations Command, Department of Fire and Emergency Services, examined:**

**Mr GARY JOHN GIFFORD**

**Assistant Commissioner, Operations Capability, Department of Fire and Emergency Services, examined:**

**Dr JEFFREY RONALD DAVIS**

**Principal Scientific Officer, Department of Fire and Emergency Services, examined:**

**Mr PETER JONES**

**Fire Officer, Department of Fire and Emergency Services, examined:**

**The CHAIR:** Good morning. On behalf of the Economics and Industry Standing Committee, thank you for your appearance before us here today. The purpose of this hearing is to assist the committee in gathering evidence for its inquiry into safety-related matters concerning FLNG projects in Australian waters off the Western Australian coast. You have been provided with a copy of the committee's terms of reference. At this stage I will introduce myself and the other members of the committee here today. I am the Chair, Ian Blayney. With me is the deputy chair, Hon Fran Logan, and the other members are Peter Tinley and Shane Love. The Economics and Industry Standing Committee is a committee of the Legislative Assembly of the Parliament of Western Australia. This hearing is a formal procedure of the Parliament and therefore commands the same respect given to proceedings in the house itself. Even though the committee is not asking witnesses to provide evidence on oath or affirmation, it is important that you understand that any deliberate misleading of the committee may be regarded as contempt of Parliament. This is a public hearing and Hansard is making a transcript of the proceedings for the public record. If you refer to any document during your evidence, it would assist Hansard if you would provide the full title for the record.

Before we proceed to the inquiry's specific questions we have for you today, I need to ask you the following: have you completed the "Details of Witness" form?

**The Witnesses:** Yes.

**The CHAIR:** Do you understand the notes at the bottom of the form about giving evidence to a parliamentary committee?

**The Witnesses:** Yes.

**The CHAIR:** Did you receive and read the information for witnesses briefing sheet provided with the "Details of Witness" form today?

**The Witnesses:** Yes.

**The CHAIR:** Do you have any questions in relation to being a witness at today's hearing?

**The Witnesses:** No.

**The CHAIR:** Do you have an opening statement today?

**Mr Bailey:** I believe, Mr Chair, that the comments of the department were received by yourself and the committee from the minister recently. That would be the content of our opening statement.

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**Mr P.C. TINLEY:** Thanks for coming in. I am sure you are aware of what we have been looking into and the nature of the inquiry. The evolution of offshore oil and gas is very much in its early days, even though it has been a long-existing industry. When we look forward we are talking about potentially as many as 10 floating platforms of a supersize sitting off the coast of Western Australia. I am particularly interested in where the architecture works or how it is established now to respond to an in extremis event within the range of it. Also there are cross-jurisdictional issues in relation to commonwealth waters and state waters. As the lead hazard management agency, can you give a brief overview of what this means in practice to you?

**Mr Bailey:** I will give a brief introduction and Jeff might be able to help out with some of the broader issues. Essentially the Fire and Emergency Services Commissioner is the hazard management agency for a number of hazards in the state that are confined to the state and state waters, which is basically three nautical miles off the coast. Beyond that it is beyond our legislative responsibilities. There are opportunities obviously to assist when requested to do so. One of the similarities could be compared with Christmas and Cocos Islands where we do not have any legislative responsibilities, but if the commonwealth requires assistance or requests assistance we could consider that. But that is more in line with our normal day-to-day business as usual activities that respond to fire and cyclones and so forth. Such platforms as this are probably outside our resourcing, financial and legislative responsibilities at the moment. Being so far offshore, it certainly would present challenges with just training to get on site, flying there obviously, but there are some issues there as well as the timeliness of response. We do have a largely metropolitan-based career response capability. We have very limited resources in the north west and as we have seen recently, with a ship fire up in the north west, the prime response came out of Perth. It is very difficult in terms of a major emergency when it is 200 or 300 kilometres offshore to provide a timely response from the metropolitan area. As far as the legislative responsibilities, Jeff may be able to help there.

**Dr Davis:** Obviously when it is within commonwealth waters, the expectation is through NOPSEMA's management of the operation that the proponent or operator has adequate emergency response facilities, procedures and arrangements built into the project to deal with it because they are on site, they have the expertise and they know the operation most intimately to be able to respond in a timely and more expert fashion than you would see with people who are not familiar with that sort of operation or that specific operation coming from a remote area.

**Mr P.C. TINLEY:** What conversations, if any—formal or informal—have you had with NOPSEMA in relation to where your services may be called upon?

**Mr Gifford:** I am not aware of any formal or informal communication coming to the department with regards to FLNG at this point in time.

**Mr R.S. LOVE:** It seems to me that there is an assumption on your part that FLNG or oil and gas in general is in commonwealth waters, but that is not actually necessarily the case because there are pretty significant oil and gas areas in Western Australian waters, including quite a significant part of the potential FLNG area at Browse Basin. I am getting the idea that you do not have any expertise in that area at the moment.

**Dr Davis:** Even within state waters, whether a facility is under the Petroleum Pipelines Act or the Petroleum (Submerged Lands) Act—however the facility is managed—it would still be the operator's primary responsibility to deal with planning and the installation and the requirements for emergency response on those platforms. That is part of their safety case as I understand it for the operation of those no matter what statutory instrument they run under. It is a significant component of the safety case approach to the management of those facilities that that emergency response is planned for. Well, prevention is planned for in the design of the facility; the response and the materials and procedures for response are incorporated within the safety case and assessed by the appropriate agency that manages the safety of the facilities.

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**Mr R.S. LOVE:** As the lead management agency for WA, what role do you have in reviewing those safety cases?

**Mr Bailey:** None. The hazards are specific for us and that is the extent of the commissioner's responsibilities. We certainly do liaise with industry and take part where requested on working groups or exercises on those facilities and mine sites and so forth, but essentially as Jeff said they are responsible for developing their own emergency management plans and response capability.

**Mr R.S. LOVE:** We have Westplan arrangements for different scenarios. What role do those plans have for you and private operators of oil and gas facilities?

**Mr Gifford:** There are approximately 26 Westplans in the state. They are allocated to various government departments. As the deputy commissioner alluded to, DFES has responsibility for a number of them, including hazardous materials. The scope of the hazardous materials plan does not include oil and mining industry sites. It is largely confined to the communities of Western Australia and the lands in Western Australia and just offshore. We are largely dependent on the liaison and engagement that our regional officers have working with industry to if necessary have like arrangements in place through the local emergency management committees and response plans to provide that sort of response.

[9.40 am]

**Mr R.S. LOVE:** The local emergency management committees are local government based, are they not? If we are talking about an offshore facility, what is the liaison between Westplan and that facility?

**Mr Bailey:** Beyond that distance, Westplan would not have any legislative standing.

**Mr R.S. LOVE:** What about in state waters?

**Mr Bailey:** Three nautical miles is the marine transport emergency state water limit, if you like, and that is the Department of Transport and marine safety and beyond that it becomes AMSA's remit.

**Mr F.M. LOGAN:** One of the reasons that the inquiry has been called is not to grill FESA by any stretch of the imagination, but to identify where there are gaps and identify where there are areas that we are overlooking. When the industry charges ahead putting the largest structure human beings have ever built—600 000 tonnes of processing plant in the water 400 kilometres north of Broome and staffing it with more than 300 people during a shutdown period in an area that is known to have category five cyclones and above—they are putting the biggest thing ever built into a very high risk zone. You know yourself that if anything went wrong, the commonwealth has virtually no capability of responding so it will fall back to the state, as it always would; you would get a phone call from the commonwealth or NOPSEMA asking for help because 10 people have gone overboard during the cyclone and they cannot be found or a fire has broken out on the ship and our capacity is just not keeping up. That is the reason we have called the inquiry. We have to, I think; it is an obligation on our committee and Parliament to ask the questions about incidents that seriously could occur. We do understand that FESA is responsible for the jurisdiction three nautical miles off the coast, but that does include, as Shane pointed out, places such as Varanus Island—you know what happened there—Barrow Island, which is one of the world's biggest LNG facilities being installed, and of course Browse Basin, a significant part of which falls within the state jurisdiction because of the islands offshore. When we question companies like Shell, the operator, about its capacity to respond, they say, as you pointed out, "We think we've got it under control" because on the facility, which is an LNG plant the size of Pluto —the Pluto LNG plant on the North West Shelf—it is the same capacity as that on a ship.

**The CHAIR:** Barge.

**Mr F.M. LOGAN:** On a barge. Ship, barge, facility—whatever! If you look on a map the scale of Pluto, which is enormous on a land basis, is being squeezed down onto a ship 500-metres long and

78-metres wide. Shell says it has on board fire retardant and two standby supply vessels that they believe will control a fire should it break out. If it cannot be controlled, if a fire breaks out right in the centre of the vessel, they may well not be able to respond to that at all and it becomes bigger and bigger. Remember the scale of the vessel we are talking about. There is no doubt you will be called upon. We saw in the Montara incident off the Northern Territory that they had to abandon it. Luckily nobody was killed and then it blew up. There was no capacity to fight the fire. We also had no capacity at the time to fight the oil spill either. It shows from where we sit that the north west of Western Australia is having more and more oil and gas installations, some of which are the biggest in the world that have never been put into any other place, and we have no emergency support facilities should something go dramatically wrong. We know the commonwealth does not have them either. That is a big explanation of why we are doing what we are doing. Do you have any comment to make about the situation in which we find ourselves?

**Mr Bailey:** From the response role, you made mention of the fact that if you are on board and the onsite crew cannot combat it, it just gets bigger and bigger and therefore a timely enough response from the metro area per se or even the coast would not make a big difference. Therefore, the timelessness of any other response would be the worldwide response with the experts, which we saw even with the Dongara gas fire a number of years ago where it took two weeks to get it under control. It was a pretty simple little gas blowout on land. It is a specialist area, that is for sure, and if you turn one valve off what effect does that have even if you are trying to isolate the fire? There is a lot of reliance on the ability of the planners and structural engineers to ensure it is as safe as possible. There is a lot of reliance of that. If it is misplaced—I hope it is not. They obviously have a big investment and they want to protect that as best they can with the infrastructure they provide for it. I am not saying that I have a degree of comfort in that. I suppose we have to rely on their ability to provide the best protection for their investment. If something does go wrong—we have seen them, of course, as you mentioned and they are catastrophic—a lot of the time there is not a lot you can do in the immediate phase until you bring on greater control measures of shutting off supply, for instance. That is pretty complex.

**Mr Jones:** I totally agree. The timeliness of a response is so far away anyway that what we can do is very limited and if we cannot be there in that time then it probably cannot be done by ourselves. We have some training that deals with marine firefighting. That is really our parameters; that is where they stop because we have not been exposed to such a risk before. This is all very, very new. We have looked online at what this thing may look like and what it may do. In the main it is obviously centred around the removal of persons from the risk in a timely fashion. What we may face after that time would be, I think, quite a larger significant event. I concur with Mr Bailey in that time is a real factor. The training and knowledge we have is really limited. I suppose knowing what the companies do in terms of training, they obviously have exercises to test that repeatedly, which we have not been involved in.

**The CHAIR:** You provide some search and rescue facilities. Are those primarily in support of WA Police? Are WA Police the first port of call for an emergency such as a search and rescue at sea? How do you work together in those circumstances? Can you walk us through that process?

[9.50 am]

**Mr Gifford:** I will take that, Chair. Basically the Department of Fire and Emergency Services supports our volunteer marine rescuers in the state. They are what we refer to as a combat agency to Western Australia Police, which is the hazard management agency to search and rescue both land and marine. Police can use DFES volunteer marine rescue and they can also use a cray boat out in Dongara. If they use the volunteer marine rescuers, they are using a trained capable asset, which they have visibility and awareness of. Our volunteer marine rescuers also have legislation through the FESA act to perform rescues at sea. They also have to a certain extent their own autonomy to respond, but basically with a notification to the police that there is a search and rescue going on,

because the police, as I said, are the HMA of search and rescue. With that being aside, Western Australia Police and volunteer marine rescue have working relationships both through the police's central base of water police in Fremantle and through local arrangements through local police stations up and down the coast where again, that liaison, engagement and response can be managed from a local area as well as it can from a central facility with the water police.

**Mr F.M. LOGAN:** At the moment the proponents for FLNG and other operators in the Browse field are suggesting—in fact, Shell has gone ahead and has done it, but it is seeking others to come on board and support it—the purchase of services of a search and rescue helicopter and also a helicopter that would have medivac capacity on board to take injured people off a facility, particularly an FLNG facility. That is coming, but it is not there at the moment. I think the contract has been entered into and it will be delivered once the facility is up and running. What happens now? Say, for example, whether inshore in state waters or offshore, what happens now in terms of a search and rescue should someone go over the side of a platform or drilling rig or a FPSO?

**Mr Gifford:** Depending on the circumstances—the circumstances at sea can be quite dynamic, as I am sure you are aware—there can be a number of activation methods of a search or a rescue at sea. Certainly when you are talking about outside coastal waters or commonwealth waters, the Australian Maritime Safety Authority and its coordination centre would be a key component in that as well as far as coordinating a search and rescue.

**Mr F.M. LOGAN:** Who do they call upon?

**Mr Gifford:** I expect that the first point of contact given the national search and rescue arrangements would be to police, although there have been times when they have come direct to our department knowing that we do have capability there as well both from an air resource point of view and from a marine point of view.

**Mr F.M. LOGAN:** I refer to page 7 of the state emergency plan for tropical cyclones and to paragraph 1.4.1 which refers to “Industry”. Part of the third paragraph reads —

... FESA should strongly encourage industry to develop specific mitigation and preparedness measures in partnership with the LEMC.

Do you know whether Shell has contacted the LEMC and arranged such a partnership for a tropical cyclone?

**Mr Bailey:** I would have to take that on notice.

**Mr Gifford:** When we talk about Shell, if we talk about industry or a major industry specifically—I am going to Karratha now with Woodside. Having had personal experience up there, I can give some level of surety that quite a major industry in the north west does work in concert with the local emergency management committees to try to coincide its preparedness activities with community preparedness activities so that they are in step with each other. Specific to FLNG and the proposed location of it and the most likely, from what I can understand, the Broome local emergency management committee, I cannot comment on that.

**Mr F.M. LOGAN:** If you can provide any advice, because that is an area that needs to be addressed.

**Mr P.C. TINLEY:** In your opinion is there a wide awareness of capability across agencies? Does NOPSEMA know of the capabilities of the Department of Fire and Emergency Services and the proponents and operators of the facilities? Obviously, it is an integrated plan and no one agency has carriage and answer. Do you believe that it is fully aware of all capabilities?

**Mr Bailey:** I cannot comment on its awareness.

**Mr P.C. TINLEY:** Do you have any confidence that it is aware of your suite of capabilities?

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**Mr Bailey:** I guess if we look at the proactive approach of all the oil and gas platforms when they are aware of cyclones, for instance, certainly through the bureau of met and other agencies—they have a lot of intelligence coming in—they are planning a pre-emptive evacuation and a timely evacuation. They will close down rigs. It is not on our insistence or anything, it is just part of their normal emergency management activity. Last year, and it is constant every time cyclones are threatening, they took that action to make the hard decisions and close down their industries and leave on skeleton crews. It is a long way to try to evacuate people in a hurry. As Mr Logan said, even if they do evacuate the 300 people in the water, you are not going to ferry them to the mainland by helicopter in a great hurry. You have got the service boats. Do they have the capacity to take that number of people or do they protect in place or act as a staging-type scenario and we pick them off the rig and pop them on a boat a holding distance away from the threat? The level of interagency cooperation and awareness when, for instance, cyclones are approaching is very high. The operation area support groups get established and they are across industry. There is good dialogue, regular meetings and everybody is pretty well up to date on the status of the rigs, even the remote Indigenous communities and so forth inland. Mr Gifford has had a lot more direct exposure in establishing those and overseeing the preparations for cyclone impact.

**Mr P.C. TINLEY:** Is that specifically around cyclones or is it just all emergency response? Is there a general architecture for emergency response?

**Mr Bailey:** We get a good warning that some hazards are going to occur and that makes it a bit easier to pre-plan for and put in place those preparatory steps. Fires are a bit more dynamic and floods—sometimes we have a bit of a lead into floods as well and so those sorts of impacts you can do a bit more preparation for, but through the local emergency management committees going into the other OASGs and so forth, there is good representation of all agencies and industry to ensure that the best actions are taken.

**Mr Gifford:** As a point of clarification as well, the state's emergency management arrangements principally try to manage an emergency at its lowest level through a local emergency management committee or what we refer to as an "incident support group", which is largely within what we refer to as the confines of an incident area. But if that incident area becomes geographically so large or the incident becomes so much larger from a magnitude point of view, there is opportunity to escalate that within the region so that the region has oversight and management and coordination. If multiple regions become affected or the incident is of such a scale that the state needs to become involved, it can then escalate to state and you have state liaison, state coordination and state resources responding. From my personal experience, certainly the state emergency management arrangements have held up well in the past

[10.00 am]

**Mr P.C. TINLEY:** Are they exercised often?

**Mr Gifford:** They are. Certainly from a department point of view, we have exercised our Westplan fire in the last two months as we prepare ourselves for the fire season. We have exercised tsunami in the past two months to look at the effects of tsunami up and down the west coast. I know that my colleagues behind me from the Department of Transport have an exercise planned in the next couple of weeks as far as a marine transport emergency is concerned. I would not say that we could not do the exercise regime at all levels better, but it is certainly improving.

**Mr P.C. TINLEY:** I refer to Varanus Island as an example. What plan was activated to respond to that? Do you remember?

**Mr Bailey:** The department was not directly involved in that incident.

**Dr Davis:** The only plans that I suspect would have been involved were to do with fuel supply disruption with the gas supplies. It was more of a recovery than a response in that regard. That was to do with alternative sources of gas and changing businesses over from natural gas to LPG to run

businesses where possible and cutting back use and winding down industry where possible to cope with a reduced gas supply. It was outside of DFES's responsibility or FESA as it was at the time

**Mr F.M. LOGAN:** On that issue about responses, particularly cyclone responses, given that the oil and gas industry has been established in the hub of the North West Shelf and offshore for the past 25 years, the responses and plans are fairly well established in those areas along the lines that you were talking about. Now the industry is finally developing the area in the Browse region north of the Kimberley and Broome itself, do you think there are any gaps in the facilities and capabilities of the responses that may be organised or needed out of Broome? You can take that on notice.

**Mr Bailey:** We will take that on notice.

**Mr F.M. LOGAN:** Really what we are seeking is your professional advice on the capabilities out of Broome for any of those events. We know the industry and emergency services have operated over a long period out of Karratha and Dampier and now the concentration of very large facilities off the coast of the Kimberley will try the state in another area.

**Mr Bailey:** I suggest the response capability there is the industry-based one. I am not fully conversed with its capability from a land-based side. We only have volunteer fire and rescue and bushfire brigade volunteers in Broome with a regional office with support from managerial staff. We as a department would not have a great ability to respond but would be able to contribute to any incident management team that was established there through our staff in the region. That is the immediate response, otherwise it is probably metro based.

**The CHAIR:** The first two projects, Prelude and Ichthys, are the first projects serviced by marine support vessels out of Broome. Up to now have any other projects been serviced out of Broome to your knowledge?

**Mr Bailey:** I cannot comment on that.

**Mr F.M. LOGAN:** If I can go to spill risks, and again the state emergency plan for spill risks, obviously we saw the incapacity of the country as well as the Northern Territory to respond to the spill that came out of the Montara platform explosion, drill rig explosion, which went on for weeks and luckily did not strike land. It hit a few islands, but it did not strike the mainland. As a result of that, I believe a spill capability has been established but I believe it is based in Darwin—we were advised that it was based in Darwin. Given the distances we are talking about between Darwin and a spill that could occur from a platform off the North West Shelf or the Browse region, is that sufficient?

**The CHAIR:** I think it is actually Henderson.

**Mr P.C. TINLEY:** That is the wells cap.

**Mr F.M. LOGAN:** That is the wells cap. There are two responses that we got muddled up on. One is the spill capacity and the other is the capping of wellheads. There is a facility at Henderson for the capping of wellheads but I believe the spill capacity is based in Darwin. I think that was the agreed position. Do you have any comments about its location?

**Mr Bailey:** That question is best directed to the Department of Transport.

**Mr F.M. LOGAN:** I thought you might say that!

**The CHAIR:** In your future planning is there any planning that anticipates the emergence of FLNG and, as a part of that, where would you conduct specialised training?

**Mr Bailey:** At the moment there is no specific planning training proposed for FLNG. We are aware of some international facilities where that training can be undertaken. I think Malaysia and Netherlands are two that come to mind—and the US. Our capacity to train at our Forrestfield academy is not there in terms of industry. We have had that in the past and now it is waning. We have a pretty full calendar of training for our own requirements. The capacity of that facility is

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not there. Also I would suggest that the facility is not what was required for such a complex operation as FLNG. If there were to be any training in the state, I would suggest that we need new infrastructure to provide that specialist training.

[10.10 am]

**Mr F.M. LOGAN:** That was a question that I was going to ask in response to an LNG crisis, because it is not just FLNG offshore, it is LNG on the North West Shelf, LNG at the Kwinana facility—and remember the power stations in the Kimberley region. The Broome power station, for example, and many of the remote power stations are now powered by LNG from a small facility in Karratha. It is not Woodside's; it is a separate one. There are quite a number of LNG facilities, including domestic power stations, at which an incident could occur and the first people called upon to respond would be fire and emergency services. How would you be trained up for that? We can accept your previous comments as some advice.

**The CHAIR:** While we have got you here, in addition to producing LNG, Prelude will produce sizeable quantities of natural gas condensate and LPG. Comparatively, how volatile are the other two products?

**Dr Davis:** Obviously, the LNG itself, being cryogenic, will boil. Initially, when it is cold, its density will stay at water level. We are working on water, so I will assume that it has hit the water. As it warms up to considerably below room temperature it gets less dense than air, so the LNG, in terms of a spill, is not a major issue in that it will raise and disperse. It is a significant greenhouse gas, so it is an environmental issue from that perspective, but in terms of creating a cloud of gas, it is not so much of an issue. LPG, being propane mainly with butane, is denser than air. If that were to spill and hit the surface, there would be a gas cloud that would disperse from potentially liquid LPG on the surfaces—that is, boiling—and you would get a cloud of propane butane on the surface of the water. Again, that has all the inherent hazards with that. It depends on the mixture of propane and butane as to what the ignitable mixture will be, but, you know, there is potential for ignition if that did occur. With the condensate, it depends very much on what the condensate is, which is dependent on the process. I am not privy to the detail of how light or otherwise that condensate may be. Condensates can be very light, sort of like a petrol-type product, right through to a heavy fuel oil almost sort of a condensate. I am guessing this one will be lighter, so it might be like a petrol–diesel sort of a spill. Given that they are mainly trying to produce lighter hydrocarbons, it is likely to be more a lighter fraction. From an environmental perspective, that may be advantageous in that it might more readily evaporate, for example, in a spill rather than going onshore and causing onshore issues with wildlife and the coast and that sort of thing. But that is working on an assumption that it is a lighter condensate, which I expect it may, but I do not have the technical detail for what they are expecting out of this particular project.

**Mr F.M. LOGAN:** In the consequence, in the situation of not a catastrophic incident, but a lead up to what could be quite a catastrophic incident—for example, a direct hit by a cyclone on the LG—given all the various materials that it is processing, which you have just discussed, is there an issue where you have a leakage from LPG and the gas cloud, is there an issue with an LNG leak at the same time also creating a greater hazard? You already have a possible ignition source with a gas cloud of LPG, but if you have a valve leaking of LNG on there as well, is that an issue?

**Dr Davis:** It is not probably something that I can readily comment on without having seen what they are doing with the specific vessel and where prospective production facilities on the vessel are for the LPG and LNG. The issue is the ignition sources you are looking at, such as electrical equipment that is not protected, any point where pieces of steel may bang together or rub on each other or those sorts of thing. In the whole design of these vessels, in much the same way as say a fuel tanker that bunkers fuel for delivery from Singapore to Australia or Royal Australian Navy vessels that transfer fuel at sea to other vessels, there is an awful lot of effort put in to making sure that there are no ignition sources there so that in the worst case that you have significant spill and an

ignitable cloud, that hopefully it is all going the way it is supposed to be going. They are usually very stringent with that sort of thing on those sorts of vessels and those facilities that there are no ignition sources. It goes down to the clothing that people are wearing—they are not allowed to wear anything other than what is issued because it may generate static if they have something else. That goes to underwear and everything that people are wearing—radios, torches, everything on the vessel including not just the fixed stuff but all the portable things that people may or may not bring on board with them and how they are controlled. I suppose I cannot provide any sort of sensible detail or specific advice because I am not familiar in any detail with the vessel that we are talking about, but if I was to look at that, I would probably confer with people who are more expert in those facilities as well to provide a useful opinion on that.

**The CHAIR:** I would like to thank you for your evidence before the committee today. A transcript of this hearing will be forwarded to you for correction of minor errors. Any such corrections must be made and the transcript returned within 10 days from the date of the letter attached to the transcript. If the transcript is not returned within this period, it will be deemed to be correct. New material cannot be added by these corrections and the sense of your evidence cannot be altered. Should you wish to provide additional information or elaborate on particular points please include a supplementary submission for the committee's consideration when you return your corrected transcript of evidence. Thank you very much.

**Hearing concluded at 10.17 am**

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