

ORAL HEARING

PROPOSED LIQUEFIED NATURAL GAS (LNG) REGASIFICATION
TERMINAL LOCATED ON THE SOUTHERN SHORE
OF THE SHANNON ESTUARY IN THE TOWNLANDS
OF RALAPPANE AND KILCOLGAN LOWER, CO. KERRY

HEARD BEFORE THE INSPECTOR,

MR. ANDREW BOYLE

ON THURSDAY, 24ND JANUARY, 2008

AT THE BRANDON HOTEL, TRALEE, CO. KERRY - DAY 4

I hereby certify the
following to be a true
and accurate
transcript
of recordings of the
evidence in the
above-named action.

4

APPEARANCES

KERRY COUNTY COUNCIL: MR. T. SHEEHY

FOR THE APPLICANT
(SHANNON LNG): MR. HUGH O'NEILL SC
MR. JARLATH FITZSIMONS BL

INSTRUCTED BY: NICOLA DUNLEAVY
SOLICITOR
MATHESON ORMSBY PRENTICE

OBJECTORS: MR. J. McELLI GOTT
MS. GRIFFIN
MR. NOEL LYNCH
MS. JOAN MURPHY
MR. DONNCHA FINUCANE
MS. EILEEN O'CONNOR
MR. E. McELLI GOTT
MRS. LILY O' MAHONY
MR. RAYMOND O' MAHONY
MR. TIM MAHONY
MR. THOMAS O' DONOVAN
MR. MICHAEL FINUCANE
MR. RICHARD O' SULLIVAN
MR. DES BRANIGAN

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1 THE HEARING RESUMED AS FOLLOWS ON THURSDAY, 24TH
2 JANUARY, 2008:

3
4 **INSPECTOR:** Good morning everybody,
5 welcome to Day 4 of the 10:05
6 Shannon LNG oral hearing. If you could take your seats
7 please.

8
9 Now, yesterday we left off in the middle of the
10 applicant's presentation on the health and safety 10:05
11 issues, but before we continue with them this morning I
12 have a request from Mr. Des Branigan, he has been
13 asking me repeatedly if he can say a few words, so I am
14 going to let him in first thing this morning. So,
15 Mr. Branigan, if you would like to come up to the 10:06
16 lectern here.

17
18
19 MR. DES BRANIGAN PRESENTED HIS SUBMISSION, AS FOLLOWS:

20 10:06
21 **MR. BRANIGAN:** Thank you, sir. Good
22 morning everybody. I would
23 ask for you to be tolerant with me, I am not
24 particularly well this morning. I had a bad fall. But
25 I will proceed to make it as brief as I possibly can. 10:06
26

27 For those of you who don't know, my name is Desmond
28 Branigan and, if anything, I am a professional, or was
29 a professional seafaring man. My organisation is

1 Marine Research & Associates and we are about 50 years
2 in existence, nearly half a century. Our organisation
3 is a corporate body and the Articles of Association
4 define our functions as being marine research and
5 public education of marine affairs. So, we have a good 10:07
6 deal of expertise in this particular field. We have,
7 always, people who willingly give their services to us
8 when required. We have an archivist, a geologist,
9 accounts, engineers, physicists, Master Mariners,
10 coastal authorities, economists, statisticians etc., 10:08
11 all of these people, like myself, act voluntarily. We
12 have no income from anywhere. We are non-commercial,
13 we are not answerable to anybody. We are only
14 concerned with the competent development of the marine
15 resources and the marine needs of Ireland. 10:08

16
17 Now, having said that I will very briefly read in this
18 forward. The proposal by Shannon LNG to construct and
19 operate a terminal to contain and process liquid
20 natural gas in the estuary of the Shannon is the 10:08
21 subject of a planning permission application to An Bord
22 Pleanála. The question of the proposed terminal is to
23 be the subject of an oral hearing, and that is, of
24 course, what we are in now. The procedure to conduct
25 and open informal discussion is in accordance with the 10:09
26 statutory provisions of the planning legislation, which
27 empowers the Board to conduct a procedure which permits
28 all interested parties and concerned parties to make
29 submissions containing their views. The provisions and

1 procedures are governed by the terms of the Planning
2 Strategic Infrastructure Act, 2000. It was the Board's
3 decision that the proposed development is a structure
4 infrastructure and hence qualifies for direct
5 application for planning permission the An Bord
6 Pleanála.

10:09

7
8 There has been an attempt and, indeed, some of it is
9 misinformed, to create great anxieties, that there is
10 going to be desperate loss of energies, especially of
11 oil. I am not going to go into the detail now, but
12 many experts have had a long look at the situation and
13 instead of listening to what not so well informed
14 people had to say about the duration of the oil
15 supplies, and availability of electricity, etc., we
16 decided we will just find out for ourselves.

10:09

10:10

17
18 Now, it will be determined, how long that is, will be
19 determined both by population and by the standard
20 living of people. Now, in order to get a grip of this
21 we consulted the United Nations, World Population
22 Statistics, which are very, very informative, and we
23 also gave a great deal of attention to the position of
24 electricity, especially in the care of the ESB, and we
25 came to the conclusion, having also considered the
26 annual report issued by British Petroleum, who are
27 international authorities on the question, and it is
28 quite evident that existing supplies have by no means
29 exhausted and even other supplies will be secured.

10:10

1 But, of course, hand in hand with that consumption is
2 also going to increase, particularly as far as the Far
3 East is concerned, so that they may cancel each other
4 out. But it is our view that we are not talking about
5 an oil difficulty of inside half a century. But in the 10:11
6 meantime that doesn't mean we stand still. We have got
7 to make every possible provision against that future
8 when neither oil and, perhaps, any other source of
9 energy is available.

10
11 In the past there has been, even in the press, efforts 10:12
12 to create anxieties about energy availability, due to
13 the expected loss of oil as a main source of energy.
14 Even the decision of An Bord Pleanála to define the
15 application for the proposed Shannon terminal having it 10:12
16 allegedly designed to fast track the proposal. The
17 Board quite correctly, when the allegation was brought
18 to their attention, made it clear that they have no
19 control over what appears in the press and their
20 decision was in accordance with their terms. There is 10:12
21 an attempt to suggest that there is a tremendous
22 urgency. There is no tremendous urgency, except to
23 take whatever steps that will give us what require in
24 the long term.

25
26 Against that background we say there is no immediate 10:12
27 concerns for the alleged shortage of energy, especially
28 of oil. There is no need for the proposed Shannon LNG
29 terminal, and that even now the State can purchase,

1 both for immediate consumption and strategic storage,
2 as much natural gas as is needed for our present and
3 future needs. There are bodies in the State, CER, the
4 The Commissioner for Energy, and the ESB etc., who
5 should have taken responsibility for this and so far 10: 13
6 haven't done so. But we will be calling upon the State
7 and campaigning, indeed, to get national involvement in
8 the control of this vital [inaudible], the need for
9 energy.

10 10: 13
11 We are particularly concerned that by 2020 -- and this
12 came out the other day again, although we had done our
13 work on it -- that in 2020 -- that's tomorrow for all
14 practical purposes -- 65% of electricity needs will
15 need natural gas. Now, you know, when we talk about a 10: 14
16 national need, we are talking about every house, we are
17 talking about every factory, we are talking about
18 hospitals, transport and all of the things that dictate
19 and assist us in our modern lives. All those things
20 could be placed in jeopardy and the very fact that it 10: 14
21 is so vitally necessary for us to get control of this
22 is one of the main activating features of our
23 organisation.

24
25 We say, by adopting a policy which will permit this, 10: 14
26 Ireland will, for the first time in the history of the
27 State, be in a position to exercise total national
28 control of the vital supply and to make provisions to
29 ensure that even in future generations people can

1 control their own destiny. We must get control of that
2 facility.

3
4 The purpose of the proposed terminal in the Shannon
5 Estuary is to arrange the transit of LNG, to store it 10: 15
6 in giant storage tanks, which are extremely costly to
7 construct, and later reconvert that liquid into a
8 natural state. In the following submission it is
9 intended to demonstrate that these functions can and,
10 indeed, must be under State control as energy -- and 10: 15
11 this is extremely important -- as energy, in whatever
12 form, is the life blood on which ever facet of national
13 life is dependent. It is, in our view, the solemn and
14 inescapable duty of the Government to exercise absolute
15 control over every factor by which it is secured and 10: 16
16 administered, and we will be campaigning along those
17 lines.

18
19 One such fundamental factor is risk control. Now, I
20 have got no intention of talking about risks, we had a 10: 16
21 full day of that yesterday. And, indeed, the situation
22 is that local people have shown every concern, both
23 with regard to safety and other factors concerning
24 their properties, and I don't intend. Before yesterday
25 we had in fact dealt with the question but I don't 10: 16
26 intend to refer to that at any great length again.

27
28 But one point is risk control. With all the technical
29 means by which this could be managed to lessen,

1 L-E-S-S-E-N, the consequences of danger, these cannot
2 completely cover them. The construction of the ships
3 which carry LNG and the construction of the structural
4 regulations of the shore terminals may reduce but
5 cannot remove the risk factor. 10: 17

6
7 Now, there are many reasons to be anxious, some of
8 which I have no intention of referring to on this
9 platform. But one very strange one that is not even
10 thought about, as far as I know, or I did see one 10: 17
11 reference to it. Only last year some dwelling or other
12 structure in the Kerry area was struck by lightning
13 and set alight. It doesn't take a great deal of
14 imagination to see what would happen if the same thing
15 were to happen, apart from any other dangers that there 10: 18
16 are, if it was to strike the facility plant or the land
17 here.

18
19 Now, as a long established marine research body,
20 incorporated by the company registration office, we are 10: 18
21 profoundly concerned to ensure, as an island nation,
22 that the country secures the services by which the
23 nation's needs are met. Not just in certain
24 situations, but which are absolutely guaranteed for all
25 time. In this policy we are extremely concerned to 10: 18
26 ensure that the most vital of all our needs, energy, is
27 unfailingly available. While every other method of
28 generating electricity must be cultivated we, as
29 professionals, are mostly concern with the waters and

1 the wild. They are acutely aware of how important the
2 generation of energy by wind and water power are.
3 These, that is the wind and the water, are both
4 permanent factors in our island life and are the sure
5 source of renewable energy.

10: 19

6
7 Finally, we consider electricity, not just its
8 generation, as being the one matter which is common to
9 all our lives and endeavours. This having been made
10 abundantly clear in the most recent and excellently
11 produced document by Sustainable Energy Ireland. Those
12 who have not read it will be well advised to do that.

10: 20

13
14 On the report of the Joint Committee on energy by the
15 Department, which was attended by all the State's major
16 bodies, it was stated that the Government has to take
17 policy actions and the Joint Committee recommended that
18 this action is taken as a matter of the greatest
19 urgency. Now, that would seem to cut across what I was
20 saying, that there is no urgency. There is no urgency
21 insofar as supplies are concerned, not even in the
22 medium term. That's a long term factor. But there is
23 an urgency for us to get control of the situation now
24 and to establish the necessary authorities to do that.

10: 20

10: 20

25
26 In response to that statement, that as a matter of
27 urgency there were to do this, the Government issued a
28 Green Paper, which gave rise to the above statement.
29 They issued a Green Paper seeking public reaction to

10: 21

1 the proposals it made, and later issued a White Paper
2 containing the policy. We have been party to and
3 responded to each of those things.

4
5 Now, I have here a list of things which are stated by 10: 21
6 our friends in their EIS. I don't intend to read down
7 through them all because they are absolutely correct in
8 most respects, but time does not allow that we would
9 examine them all. But while it says that these are, as
10 presented, valid and largely accurate points, however, 10: 22
11 there are some reservations.

12
13 Firstly, in our opinion, the establishment of the
14 proposed terminal on the Shannon is not the best or
15 only method of sustainable supplies. Even if it was, 10: 22
16 it should not be granted planning permission in view of
17 the grounds of safety and protection of the
18 environment. That has been well dealt with up to now
19 and I have no intention of referring to it further.

20 10: 22
21 There is one historic thing. You can tell that I am
22 not exactly a youngster, this is my 90th year. At the
23 outbreak of the last war, or before the outbreak of the
24 last war, I was party of a delegation to the then
25 Minister in charge of supplies, Mr. Sean Lemass. They 10: 23
26 didn't act in time and, consequently, we found
27 ourselves in a bad situation. Later Mr. Lemass gave me
28 a copy of something he had said in a radio address to
29 the nation.

1 "We must never again allow our vital
2 industries, and the health and comfort
3 of our people, to be jeopardised
4 through a lack of fuel supplies."

5 That's an extraordinary statement considering where we 10: 23
6 find ourselves today.

7
8 We say there was, is, could be a perfectly safe and
9 economical -- and I would like Mr. MacIntyre, if he's
10 still here, I would like very much to hear again the 10: 23
11 reasons they say that Kinsale -- and perhaps Mr. Power
12 might do it -- the reasons that the Kinsale alternative
13 that we suggested is not feasible. We don't argue, we
14 don't condemn. Incidentally, I must say we never
15 express opinions, we only deal in facts. We make no 10: 24
16 assumptions. We would like to know just exactly why it
17 is being stated that Kinsale is not an option insofar
18 as an alternative to the proposed facility in this
19 area.

20 10: 24
21 We did a great deal of work on the history of
22 electricity supplies and graph after graph after graph
23 we were able to establish what the situation was in the
24 past and what the situation is now, and to establish
25 that 37% of the electricity units currently are used 10: 25
26 for domestic purpose, 24% commercial and 39%
27 industrial. Now, they are pretty meaningless
28 statistics because they are so broad, but they are
29 accurate nonetheless. As I have already said, the

1 Committee report that I have just referred to gives
2 great detail of exactly how the electricity is being
3 used.

4
5 There is just one other factor. We still say, and we 10: 25
6 have authority for this and one of the authorities is
7 this LNG non-traditional concept for receiving and
8 regasification in floating storages, etc., and the body
9 that produced that said:

10 "Public opinion in several countries is 10: 26
11 getting more and more opposed against
12 onshore LNG terminals considering
13 perceived safety risks and/or vital
14 pollution of surroundings.

15 Furthermore, governmental issues, like
16 permits, Environmental Impact Studies
17 etc., may significantly slow down the
18 progress of new onshore LNG proposals." 10: 26

19 And I think we are all guilty of that one, insofar as
20 our presence here is concerned. But that is the
21 considered opinion of a body that is not in favour of
22 the traditional methods continuing. 10: 26

23 As I said, we have conducted a national and
24 international survey based on British Petroleum
25 figures, not ours, and tried to establish how long we 10: 27
26 would be able to last in relation to depending on oil.
27 And by the simple method of getting an accurate picture
28 of all the reserves that are known and dividing them by
29 what was happening last year, and it is just a silly
thing in the sense that what happened last year does

1 not necessarily mean much, but it gives an indication
2 of how long we thought they would have. As I say, it
3 is our opinion and we are not in anyway in any urgent
4 situation, except the need to make provision for the
5 future.

10: 28

6
7 Now, I am almost finished, Chairman, and I am sorry if
8 I have taken too long. Or Mr. Inspector I think they
9 address you as, sir. I always address my superiors as
10 sir.

10: 28

11
12 There is this ongoing suggestion constantly repeated
13 and reiterated, that LNG has been carried
14 internationally for 40 years without a [inaudible]. As
15 a subscriber to Lloyd's Publications, unfortunately in 10: 28
16 the recent past they have discontinued a monthly
17 journal of casualties at sea, but going through our
18 records 2003 is the nearest we can get to it. In that
19 year there were 5,000 serious casualties at sea, and
20 that is by no means unusual. And every day, and by the 10: 29
21 time I go home my papers will be there for every day of
22 the week, showing casualties that have occurred
23 elsewhere. But there is one, I think, only that I
24 would like to refer to, because it is quite
25 significant. It is an LNG tanker that had difficulties 10: 29
26 of its own, its rudder crashed against its propellers or
27 some peculiar thing, while at sea, with a full load.
28 Those who drew up the report on it, they said this:

29 "There are, of course, endless
combinations of less favourable

1 circumstances which could occur and for
2 which the responsible operator must
3 plan. There is some cases currently
4 under detailed study by the Industry
5 Working Group on Contingency Planning
6 For Liquefied Gas Transportation."

10: 30

6 That is perfectly true. There are endless combinations
7 out there, and I was a tanker man for many years, and
8 other ships as well. Nobody can predict the problem.
9 But we know statistically that there is and has been
10 and will continue to be casualties at sea, including --
11 and let us be thankful that up to now the terrible
12 possibilities of an explosion of an LNG tanker, or in a
13 tank, it hasn't happened. We have to be thankful for
14 that.

10: 30

10: 30

16 Now, there is one other bit in this which is not
17 terribly important, and it is a bibliography which
18 shows that we considered over 50 actual documents
19 before we came to the conclusions that we did.

10: 31

21 Let me conclude by saying that it is our organisation,
22 in the national interest of this country, to urge the
23 State to purchase our own tankers and make a deal with
24 somebody like Norway, where we can be assured of a
25 sustained supply. Norway not only has the reserves,
26 but are a very stable country by comparison with the
27 Middle East, Algeria, Mexico and many other places.
28 So, they are a stable and assured source. Our need is
29 great and it can only be met if we can secure national

10: 31

1 independence. Thank you, sir.

2

3 **END OF SUBMISSION**

4

5 **INSPECTOR:** Thank you Mr. Branigan. 10: 32

6 Mr. Branigan, I wonder
7 could you just stay there for a moment in case anybody
8 has any questions. Are there any questions from the
9 audience? The applicants? Okay, you can step down.
10 Thank you very much for that. 10: 32

11 **MR. BRANIGAN:** Thank you, Mr. Inspector.

12 **INSPECTOR:** Mr. Branigan has given us a
13 written submission, which I
14 think has circulated already, but it is now officially
15 on the record and we are taking it in and you already 10: 32
16 have your copy.

17 **MR. O'NEILL:** That's correct, sir, yes.

18 **INSPECTOR:** I now call on the
19 applicants to resume their
20 submission. I think it is likely that I am going to 10: 32
21 have to interrupt you between speakers because the
22 Health and Safety Authority want to make a
23 presentation. But for the moment we will continue with
24 your presentation.

25 **MR. O'NEILL:** We have no difficulty with 10: 33
26 that, sir, and, of course,
27 we are in our hands in any event. Our next speaker
28 then is Mr. Lynch, who is going to speak on
29 construction. He has a precis and, in accordance with

1 your suggestions, where appropriate he's going to ask
2 that various passages be taken as read. Those are
3 passages which are either covered by other witness or
4 the subject matter of the EIS.

5 INSPECTOR: Thank you.

10:33

6
7 MR. EOGHAN LYNCH PRESENTED HIS SUBMISSION ON BEHALF OF
8 THE APPLICANTS AS FOLLOWS:

9
10 MR. LYNCH: Good morning, my name is
11 Eoghan Lynch. I hold a
12 Degree in Civil Engineering from University College
13 Cork and a Master of Science in Ocean Engineering From
14 University College London. I am a Chartered Engineer
15 and a Member of the Institution of Engineers of
16 Ireland, the Institution of Structural Engineers and
17 the Institute Of Marine Engineers. I am a Director of
18 Arup Consulting Engineers, based in the Cork office.
19 I have 26 years of experience in the project management
20 and design of offshore and onshore oil and gas related
21 projects, such as Marathon Ballycotton gas field, the
22 installation of gas compression facilities on the
23 existing Marathon platforms, the installation of a
24 tanker mooring system at Whiddy Island for Bantry
25 Terminals Limited, the development of a gas compressor
26 station for Bord Gáis at Beattock in the south west of
27 Scotland, the development of a number of gas pipelines
28 for Bord Gáis, such as a 35km- 36 inch transmission
29 pipeline around the western outskirts of Dublin and the

10:33

10:33

10:33

10:34

1 150km - 26 inch pipeline for Bord Gáis from Galway to
2 the north west of Mayo. My role on the Shannon LNG
3 project is Project Manager of the Arup team, which is
4 responsibility for the preparation, on behalf of
5 Shannon LNG, of the Environmental Impact Statement and 10: 34
6 planning application for the terminals.

7
8 I was responsible for overall preparation of Chapter 7
9 of the EIS, entitled "construction".

10 10: 34
11 Mr. Inspector the following introduction has already
12 been covered Mr. Bowdoin and Mr. Vinecombe. So if we
13 move on to page 2. I will move over earthworks and
14 site preparation also. This section here deals with
15 site preparation, safe access, temporary site roads, 10: 35
16 the fence, surface water, drainage, silt settlement
17 ponds, the fact that approximately 1.1 million m³ of
18 overburdened soils and rock will be excavated. The
19 fact that blasting may be required. Material excavated
20 in the course of the earthworks and site preparation 10: 35
21 phase will not be hauled off site.

22
23 If we turn to page 4, just going through it. Laydown
24 areas will be established during the earthworks and
25 site preparation phase. Then if we could move on to 10: 35
26 water supply alternatives, because that is an item that
27 Mr. Bowdoin referred to yesterday so I would like to
28 read through that, if I may.

29 These fresh water requirements include, during the

1 construction phase: Mixing of concrete, the control of
2 the dust, cleaning of equipment, hydrotest of piping
3 and equipment, and hydrotest of the LNG tanks.

4
5 During operation there is a requirement for a fire
6 water source

10:36

7
8 The largest water requirement is associated with the
9 hydrostatic testing of the LNG tanks. After the tanks
10 have been constructed the tanks will require a
11 hydrotest, which will require a supply of approx.
12 110,000 m³ of water over a period of about 1 week. If
13 scheduling permits, the same water can be used to test
14 another tank. Potable water is not essential for this,
15 provided the water complies with certain chemical and
16 solids limitations and has a limited residence time in
17 the tank.

10:36

10:36

18
19 Potential water sources were investigated, include the
20 existing municipal water supplies to Tarbert and
21 Ballylongford, seawater, ground water from bored wells,
22 importation of water by ship or road tanker and the
23 existing stream within the site.

10:36

24
25 The existing water main approaching the site from
26 Ballylongford is 50mm in diameter and forms part of the
27 local Ballylongford Group Water Scheme. It is not of
28 sufficient capacity to meet the water requirements for
29 the hydrotest. Likewise, the Tarbert municipal system

10:37

1 is not adequate to provide the required volumes, either
2 alone or in concert with the Ballylongford Group Water
3 Scheme.

4
5 Sufficient volumes of seawater are available in the 10: 37
6 Shannon Estuary but the tanks would require a thorough
7 high pressure wash down with large volumes of
8 freshwater after the hydrotest to remove residual salt
9 contamination. This would require working in the tank
10 while the seawater is draining away and would, 10: 37
11 therefore, require personnel to work from
12 baskets/cradles over the seawater as it is draining.
13 This has safety implications for the personnel, in
14 terms of working in confined spaces, and a procedure
15 for their safe evacuation in an emergency would have to 10: 37
16 be prepared. Furthermore, the steel (9% nickel) of the
17 inner tank would have to be primed with zinc paint
18 prior to filling the seawater and the paint removed
19 after the hydrotest. This would also have safety
20 implications for the personnel. The use of stainless 10: 38
21 steel materials for the tank and its fittings would
22 have to be avoided as much as possible (to prevent
23 contact with seawater) and any essential stainless
24 steel components would have to be installed after the
25 hydrotest. Desalination of large volumes of seawater 10: 38
26 is considered to be uneconomical for the project.

27
28 The aquifer in the North Kerry area generally gives low
29 yields and it was concluded that a continuous supply of

1 a large volume of water from bore holes on-site could
2 not be guaranteed. This was confirmed by pumping tests
3 that were carried out as part of the geotechnical site
4 investigation works.

10: 38

5
6 Shipping large volumes of suitable freshwater by sea
7 was also investigated, but due to logistical
8 difficulties, the volumes required and costs associated
9 with such a method it was not pursued.

10: 38

10
11 Importation of water by road tanker is not considered
12 feasible as very large quantities would be required
13 over short periods of time and a source for this large
14 volume of water would have to be identified.

10: 39

15
16 The stream within the site was identified as a possible
17 water source. A manmade pond of sufficient capacity
18 would be developed along the stream bed by constructing
19 an embankment using material excavated on the site.
20 The volume of the pond will be 150,000 - 160,000 m³.

10: 39

21 The ponds will initially be filled by the stream when
22 there is good flow. This option has been chosen as the
23 best option to source the hydrotest and construction
24 water. This pond will also provide the source of fire
25 water during the subsequent operations phase. The
26 filling of the pond will be planned and undertaken to
27 ensure adequate residual flow in the stream and to
28 prevent any adverse impacts. Extensive investigation
29 of the hydrology and hydrogeology of the site has been

10: 39

1 carried out to determine the amount of residual flow in
2 the stream and also to demonstrate that the impoundment
3 of the stream will have not adverse effect on the
4 ecology of the site - in particular, the SAC and the
5 NHA designated areas outside the north west boundary of 10: 40
6 the site. This is addressed in chapter 13 of the EIS
7 and Ms. Eileen McCarthy and Mr. John Redding will
8 describe this in detail in the ecology module. The
9 maintenance of residual flow in the stream is only a
10 temporary condition while the pond is being filled. 10: 40
11 Upon completion of filling the pond the stream
12 overflows the embankment so that the flow in the stream
13 downstream of the embankment is, as before, the same as
14 the flow into the pond.

15 10: 40
16 Moving on the construction of the pond and embankment.
17 It will be constructed at the same time as the
18 earthworks are being carried out. The construction of
19 the embankment will begin with the diverting of the
20 existing stream through an engineered culvert. This 10: 40
21 culvert will be located adjacent to the stream and will
22 extend a sufficient distance upstream and downstream of
23 the embankment to ensure that the construction works do
24 not interfere with the stream. This culvert will also
25 form part of the permanent embankment structure and, 10: 41
26 combined with control valve arrangements, will help to
27 control the flow of the stream while the pond is being
28 filled. Construction works on the embankment will not
29 commence until the stream has been diverted into the

1 culvert. Next, the area under the footprint of the
2 embankment will be excavated down to good bearing soil,
3 with the excavated material being stockpiled for
4 incorporation into the embankment.

5
6 The embankment will then be constructed using suitable
7 material obtained from the on-site excavations.

8
9 As the embankment is being constructed the topsoil will
10 be removed from the pond area and the pond bottom 10: 41
11 profiled as required. Where necessary, clay or other
12 suitable material obtained on-site will then be used to
13 line the pond. The topsoil removed from the pond will
14 be used for landscaping on-site. During the profiling
15 of the pond base the run-off into the stream will be 10: 42
16 minimised by diverting the stream into temporary flume
17 pipes from upstream of the works to the engineered
18 culvert under the embankment. It is envisaged that
19 these pipes will be either concrete or steel, of a
20 suitable size and number to maintain the flow through 10: 42
21 the stream.

22
23 The road on top of the embankment will be constructed
24 and the external surfaces of the embankment will then
25 be prepared. And overflow spillway will be constructed 10: 42
26 and control valves will be installed on the culvert
27 under to the embankment.

28
29 The pond will be filled by closing the lower valve in

1 the culvert system sufficiently while still allowing
2 the residual flow as outlined above. Once the required
3 level is reached in the pond the culvert valve will be
4 closed fully and the water will overtop the embankment
5 at the spillway and flow down to the stream.

10: 42

6
7 I would like, Mr. Inspector, just to move on, there is
8 no need for me to refer to the next sections.

9
10 But if I could move to page 8. I have a description of
11 the boundary fence, which comes up in some of the
12 submissions later, which I would like to go through.

10: 42

13
14 The purpose of the boundary fence is to secure the
15 perimeter of the property of Shannon LNG. The
16 configuration of the fencing at the site, that is both
17 the boundary fence and inner site perimeter fence, was
18 discussed with the Gardaí during the development stage
19 of the site layout. The specification of the fence is
20 a 2.4 metre high chain-link fence galvanised and PVC
21 coated in evergreen, topped with three strands of
22 barbed wire, giving an overall height of 2.9 metres.
23 These are included in planning drawings No. 13 and 408,
24 which were submitted with the planning application.

10: 43

10: 43

25
26 In general, it is planned to erect the fence just
27 inside existing boundary hedgerows. However, at the
28 boundary with the Coast Road the situation is different
29 because it is proposed that the road would be upgraded

10: 43

1 by Kerry County Council. This proposed upgrading will
2 entail widening the road to 7m of carriageway plus 0.5m
3 hard shoulder on both sides (thereby removing the
4 existing hedgerow at the side of the road) with a 2m
5 setback to a new boundary fence along the road
6 frontage. The original site visual impact mitigation
7 plan was to plant a row of trees inside the fence to
8 provide some screening and to soften the impact of the
9 fence. During the development of the design the
10 immediate neighbours were consulted on the project and
11 the planting of trees along the road frontage. Our
12 initial proposal to plant trees continuously along the
13 road was not preferred by the neighbours because it
14 created a wall of trees and hindered views out to the
15 estuary. The proposal was duly amended to show
16 discontinuous tree planting and to generally tone down
17 the planting at the roadside. A planned drawing of
18 this was presented to the immediate neighbours and this
19 was submitted for planning.

10: 44

10: 44

10: 44

10: 44

21 I propose, with your approval, Mr. Inspector, just to
22 move over the next section, which is mitigation
23 measures. These are all industry standards measure and
24 are covered in the EIS. Which brings us to page 14 of
25 the statement, which brings us up to the submissions
26 and my responses.

10: 45

27
28 The first one is a submission by the Development
29 Applications Unit of the Department of the Environment,

1 Heritage and Local Government. The submission is that:
2 "The responsible person, during both the construction
3 and operational phase, must ensure that an appropriate
4 waste management plan is in place".

10: 45

5
6 Response: Shannon LNG will make it a specific
7 requirement of the construction contract, as is
8 normally the case on construction sites of this scale,
9 that a Senior Manager of the construction company will
10 be given this responsibility and Shannon LNG will have
11 their own construction monitoring personnel on-site
12 full-time to ensure that the waste management plan
13 requires with requirements and that it is implemented
14 properly.

10: 45

15
16 The next submission is also by The Development
17 Applications Unit of the Department of the Environment.
18 "No blasting can be undertaken at the site without
19 prior consultation with the Local Natural Parks and
20 Wildlife Conversation Ranger".

10: 46

21
22 Response: The construction method statement pertaining
23 to any blasting which is required will be submitted to
24 the National Parks and Wildlife prior to commencement
25 of construction, allowing an appropriate time period
26 for the NPWS to review and comment.

10: 46

27
28 The next submissions are on the phasing of
29 construction. These submissions, starting off with No.

1 L003 from Adam Kearney & Associates: In essence they
2 are seeking a ten year construction window where tanks
3 will be added as desired. People in the area who are
4 unaware of this approach would grossly unacceptable to
5 live adjacent to a construction site with all its 10: 46
6 associated hazards and nuisances for such a lengthy
7 period.

8
9 Submission L001 from Kathy Sinnott: In essence they
10 are seeking a 10 year construction window where tanks 10: 47
11 will be added as desired. People in the area who are
12 unaware of this approach would consider it grossly
13 unacceptable to live adjacent to a construction site
14 with all its associated hazards and nuisances for such
15 a lengthy period. 10: 47

16
17 The final submission on that item is No. 24 from
18 Mr. John Fox: The planned first phase should have a
19 time limit and not be allowed to development piecemeal.
20 Ten years is too long a period to ask the locals to 10: 47
21 endure. Different phases should have separate time
22 constraints and be stated clearly.

23
24 Response: It is proposed to construct one or two tanks
25 in the first phase and the overall duration of this 10: 47
26 first phase will be approximately four years, as
27 described in section 7.2 of the EIS. In a later phase,
28 or phases, additional tanks, giving an overall total of
29 up to four, may be constructed within the ten year

1 planning period. Extra vapourisation equipment may also
2 be installed in the later phase within the ten year
3 planning period to increase the throughput capacity of
4 the terminal to its ultimate level. The first phase
5 will entail the site preparation and earthworks for the 10: 48
6 total area of the site which is the subject of this
7 planning application, the construction of all site
8 roads and drainage systems, the construction of the
9 embankment and pond, the construction of the materials
10 jetty, if required, the construction of the LNG jetty, 10: 48
11 the construction of all the mechanical, electrical,
12 process, instrumentation, control and administration
13 buildings, the installation of the equipment required
14 for the initial throughput capacity and, finally, the
15 completion of landscaping and planting for the whole 10: 48
16 site. In the first phase the tank platform will be
17 completely excavated and prepared to accommodate four
18 tanks, even though one or two tanks will be built in
19 the first phase. All buildings are sized and will be
20 built in the first phase to accommodate all the 10: 48
21 equipment which will be required for the ultimate
22 throughput of the terminal. The ancillary projects,
23 such as the road upgrade by Kerry County Council, the
24 electricity transmission lines and the gas transmission
25 pipeline will, of course, all be completed in the first 10: 49
26 phase.

27
28 The construction impacts that have been described in
29 the EIS are based on the peak figures. For example,

1 the analysis of the construction traffic and the
2 analysis of the noise associated with construction
3 traffic and the analysis of the impact on air quality
4 associated with the construction traffic is based on
5 the figures for the peak construction workforce and the 10: 49
6 peak truck movements. These peak figures are
7 determined from the overlapping of all the construction
8 activities which I have described above. The
9 construction traffic generated during the construction
10 of tanks in a later phase will be less than these peak 10: 49
11 figures. Furthermore, as stated in section 9.5.1.3 of
12 the EIS, the noise from the actual construction of
13 tanks is generally significantly lower than the noise
14 during the initial excavation works and the generation
15 of dust during the construction of tanks at a later 10: 49
16 phase would also be significantly less because all the
17 site preparation and earthworks will have been
18 completed and internal site roads will be paved and
19 clean.

20
21 The next submissions are on the boundary fence.
22 Starting off with L002 from Kathleen Kelly. She has a
23 reference to "a prison like boundary treatment".

24
25 L003 from Adam Kearney & Associates: With regard to 10: 50
26 boundary treatment Shannon LNG propose to erect a 2.9m
27 metal fence with barbed wire around the circumference
28 of the 280 acre site. This includes several hundred
29 metres of road frontage. There are numerous dwellings

1 to the south of the site who will have hedgerow
2 replaced by a boundary more suited to a high security
3 prison. Yet the company maintain that there will be no
4 impact on property values. Many residents were offered
5 photo perspectives of the tanks as can be seen from 10: 50
6 their front doors. Unfortunately, Shannon LNG failed
7 to include the proposed boundary. One has to question
8 why? Such boundary treatment proposals speak plenty
9 about the inherent risks associated with the facility
10 should there be an unauthorised incursion. From a 10: 51
11 purely planning perspective the boundary treatment and
12 the tanks are completely incongruous with the receiving
13 environment regardless of the zoning decisions made by
14 ill informed County Councils.

15
16 L004 from Mary Kelly-Godley: Also they propose to
17 erect a 10 foot high fence around the site with barbed
18 wire on top, this would be an unnecessary blight on the
19 landscape and the scenic rural area.

20
21 L043 from Raymond and Margaret O' Mahony: The 10 foot
22 high fence across the road from my house will make the
23 place look like a prison.

24
25 L049 from An Taisce, Kerry Association: The 10: 51
26 landscaping of the site boundary should have a
27 beneficial effect, particularly if mature trees are
28 planted in the most sensitive locations. It would be
29 useful to have photomontages of the effect of this

1 planting on the views from the Coast Road.

2
3 L054 from Killorgan Residents Association: Section 24,
4 paragraph 7 - we are afraid that children might cut
5 themselves on the barbed wire fencing proposed around 10: 52
6 this site. Section 24, paragraph 13 - the EIS does not
7 include the 2.9m barbed wire fencing in the
8 photomontages and this is giving a misleading image of
9 the full visual impact of the proposed development.

10
11 Response: Discussions have been held with some of the 10: 52
12 immediate neighbours on the Coast Road in this regard.
13 The neighbours asked if the fence could be moved back
14 from the edge of the road so that it would be less
15 visible. Shannon LNG have assessed this and developed 10: 52
16 an alternative layout which shows the fence
17 approximately 20 to 30 metres in from the centre of the
18 existing road. Further to this Shannon LNG have
19 indicated that a sod and stone ditch with native
20 hedgerow could be reinstated at the edge of the road, 10: 52
21 3m in from the edge of the hard shoulder. The ground
22 slopes down into the site so the top of the boundary
23 fence would be below the top of the hedgerow for a
24 large extent of the road frontage. Further to this
25 planting, which would grow no about 3m to 4m high, it 10: 53
26 can also be placed approximately 4m to 5m in front of
27 the fence to screen the fence. The neighbours have
28 also asked that low shrubbery rather than trees would
29 be planted between the hedgerow and the fence. Shannon

1 LNG has confirmed to some of the neighbours, subject to
2 An Bord Pleanála approval, that these various
3 mitigation measures will be implemented. Mr. Thomas
4 Burns will describe this proposal in his presentation
5 later on landscape and visual. 10: 53

6 **INSPECTOR:** Mr. Lynch, if I can just
7 interrupt you there. Will
8 you have or do you have a map showing these
9 alterations?

10 **MR. LYNCH:** Yes. 10: 53

11 **INSPECTOR:** That will be submitted at
12 some stage.

13 **MR. LYNCH:** Yes. We would propose to
14 do that with the landscape
15 and visual module, Mr. Inspector. 10: 53

16

17 Moving on to the section on recommended conditions from
18 Kerry County Council. Mr. Inspector, we propose that
19 we would take all of these as read, except for the
20 condition which is just at the bottom of page 17. 10: 54

21

22 Prior to the commencement of development all necessary
23 public infrastructure works shall be completed to the
24 satisfaction of the planning authority. In the EIS we
25 have proposed that the main construction work would not 10: 54
26 commence until road between Tarbert and the site is
27 upgraded, but that the site preparation and earthworks
28 would be carried out at the same time as the road
29 upgrade work, because this activity is largely

1 self-contained within the site and would not entail
2 significant construction traffic on the road. We would
3 propose, Mr. Inspector, to discuss this aspect with
4 Kerry County Council in terms of its timing and would
5 be agreeable to that provided we can agree the timing 10: 54
6 and that it wouldn't delay the project. I propose not
7 to go through all the other conditions and responses,
8 because in our responses we are basically explaining
9 how we would comply with the conditions of Kerry County
10 Council. 10: 54

11
12 So that would bring us on to bottom of page 21. That
13 is the submissions on drainage.

14
15 The first submission there is from the Kerry 10: 55
16 Association of An Taisce: Section 16.2 states that
17 surface water from paved areas etc. will go to the
18 existing stream drainage ditch, presumably so that it
19 can be collected in the pond created by the embankment.
20 An alternative would be to collect water from 10: 55
21 non-process areas and use it for washing and toilet
22 flushing in the plant buildings. It is also proposed
23 any surplus would go to the estuary. This is not
24 necessarily satisfactory for an industrial development,
25 where surface waters could become contaminated, 10: 55
26 possibly with LNG. In recent times it has become more
27 usual to have water disposed on-site after separation
28 from any hazardous materials present.

29 Response: Kerry County Council have already expressed

1 a preference, which is referenced above, for all the
2 surface water to be discharged to the estuary, which
3 Shannon LNG agree to, as outlined in a previous
4 response above. A Class 1 hydrocarbon interceptor will
5 be incorporated in this outfall. It is not possible 10: 56
6 for the surface water to become contaminated in LNG
7 because the LNG spill containment system is kept
8 separate from the surface water system and in any event
9 LNG would simply vaporise if it came in contact with
10 water. Discharging surface water run-off from an 10: 56
11 industrial facility to a water course, estuary or
12 harbour is satisfactory as long as the volume of water
13 being discharged does not have an impact on the body of
14 water it is discharging to. And given the size of the
15 estuary we consider that this is not an issue. 10: 56

16
17 The next submission is, again, from the Kerry
18 Association of An Taisce: It is proposed to have
19 separate effluent treatment facilities to service the
20 Gate House, because of its distance from the wastewater 10: 57
21 treatment plant. It is anticipated that the toilets
22 will be used only infrequently and a biocycle unit with
23 a discharging going to the estuary is proposed. The
24 low volume of waste going to the plant could create
25 problems by providing insufficient nutrients for the 10: 57
26 bacteria which break down the waste. Has the applicant
27 ensured that this is the best system? Or would other
28 methods, such as a septic tank and percolation area or
29 dry composting, be more suitable?

1
2 Response: The proposed biocycle wastewater treatment
3 unit has the capacity to deal with infrequent flows.
4 It will treat the wastewater to an effluent standard
5 the 20mg/l BOD and 30mg/l SS. We believe this standard 10: 57
6 should be acceptable to the EPA and Kerry County
7 Council under the IPPC licence procedure, especially
8 given the volume of the receiving waters.
9

10 The next submission is from the Shannon Regional 10: 57
11 Fisheries Board: We have concerns about the discharge
12 of polluting or deleterious matter that can be expected
13 to arise during the construction phase. It is
14 anticipated that precipitation on site will carry
15 significant amounts of suspended solids in the surface 10: 58
16 waters leaving the site. It is essential that
17 sufficient treatments and any other necessary measures
18 are applied to the surface water discharge streams to
19 prevent the discharge of polluting or deleterious
20 matter. The discharges should comply with a licence to 10: 58
21 discharge granted by either the EPA or Kerry County
22 Council. The Fisheries Board, as a statutory
23 authority, must be consulted in relation to draft of a
24 licence. Details relating to the discharge points
25 shall be notified to the Board. At each discharge 10: 58
26 point adequate and safe provision must be provided to
27 facilitate the taking of grab samples and any time by
28 authorised persons from any statutory agency. We
29 request that as a condition of planning the developer

1 should be required to consult and comply with the
2 requirements of the Shannon Regional Fisheries Board so
3 as to ensure the protection of fisheries and fisheries
4 habitat in the Shannon Estuary.

10:59

5
6 Response: Treatment of surface water run-off has
7 already been raised by Kerry County Council and is
8 referenced above as one of their recommended conditions
9 and, as described above, a response to this is:

10 The construction environmental management plan will

10:59

11 include this requirement with reference to the
12 Construction Industry Research and Information
13 Association UK guidance note on the control and
14 management of water pollution on construction sites

15 '*Control of the Water Pollution for Construction sites,*

10:59

16 *guidance for consultant and contractors*'. Shannon LNG
17 will issue the environmental management plan to the
18 Fisheries Board in a timely manner and this will
19 reference the discharge points and sampling facilities.

20 Shannon LNG will consult with the Fisheries Board as a
21 matter of course on these matters.

10:59

22
23 The next and final submission is from the Kilcolgan
24 Residents Association: Concern has also to be
25 expressed on the effect of the additional surface water
26 run-off from the site.

10:59

27
28 Response: Kerry County Council has expressed a
29 preference for all the surface water to be discharged

1 to the estuary. Which we agreed to as outlined in a
2 previous response above. Treatment of the surface
3 water is also raised by Kerry County Council and the
4 Shannon Regional Fisheries Board and our response is as
5 presented above.

11:00

6
7 So, in conclusion, Mr. Inspector, by virtue of the
8 appointment by Shannon LNG of Senior Management
9 personnel to control the environmental and community
10 liaison aspects of the construction, such as a
11 community liaison officer and environmental protection
12 officer, and the application of construction contracts
13 with very strict health, safety and environmental
14 criteria, the employment of reputable contractors with
15 the appropriate experience and resources, the use of
16 conventional construction methods, the mitigation
17 measures which are described in the EIS, the
18 implementation of a comprehensive environmental
19 management plan and the implementation of a
20 comprehensive waste management plan I believe that the
21 construction of the terminal will not have a
22 significant negative impact on the neighbours, the
23 general community or the environment.

11:00

11:00

11:01

24
25 **END OF SUBMISSION**

11:01

26
27 **INSPECTOR:** Thank you Mr. Lynch. Our
28 time is moving on this
29 morning and I know that the Health and Safety Authority

1 are anxious to make a presentation because they are
2 unavai lable later.

3
4 Now, at this point I would just like to repeat the
5 matters that I raised at the outset of the hearing, 11:01
6 concerns that we have. I will just go through them
7 again. What I asked was precisely what consents are
8 required, and from which bodies, which have
9 implications in relation to health and safety issues
10 arising from the overall operation of the proposed 11:01
11 development? I include in this the transshipment of
12 LNG in the estuary, the unloading of LNG from the ship
13 to the tanks on the proposed terminal site and the
14 export of gas off the proposed site.

15 11:02
16 2. In terms of the Seveso Directive and associated
17 regulations, does the establishment include the jetties
18 and, if so, do the unloading ships form part of the
19 establishment when they are moored at the jetties.

20 11:02
21 3. What is the precise remit of the Harbour and Port
22 Authority in the area of health and safety? Does it
23 include the jetties and any activities associated with
24 the jetties, such as the unloading of LNG?

25 11:02
26 4. Are there any specific legislative provisions under
27 any legislation relating to the control of LNG vessels
28 docking and unloading at the site? If any, do these
29 provisions relate to the health and safety issues

1 affecting the establishment and surrounding area?

2
3 5. In coming to its conclusion and advice to the Board
4 -- and that's the advice that we had received to
5 date -- did the HSA take into account the risk of a 11:03
6 dangerous accident occurring in the estuary in
7 proximity to the establishment and which could
8 significantly impact on the establishment and
9 surrounding area?

10
11 6. Did the HSA liaise with or have any communications
12 with the harbour or Port Authority prior to submitting
13 its advice to the Board?

14
15 7. The Harbour Port Authority has indicated that it is 11:03
16 having an independent Quantitative Risk Assessment
17 carried out for the estuary, we would like to know what
18 the purpose of this QRA is and what decision making
19 process is this designed to inform, should this QRA
20 form any part of the consideration of the HSA in 11:04
21 relation to the establishment?

22
23 Now, I think we have had answers or partial answers to
24 some of these questions already and I don't know
25 whether the HSA will address more of it in its 11:04
26 presentation. So, I am going to call now on the Health
27 and Safety Authority to make its presentation.
28 Mr. Conneely, if you can come up here.

29 **MR. COUGHLAN:** Chairman, could I make a

1 small observation at this
2 point. You have asked questions of the Port Authority.
3 I also would like to make a statement on behalf of the
4 Port Authority, if you will permit, that may clarify
5 some of the issues that you have just raised. 11:04
6 **INSPECTOR:** That's fine, but because
7 Mr. Conneely is pressed for
8 time.
9 **MR. COUGHLAN:** I accept.
10 **INSPECTOR:** Then I think I may come 11:04
11 back.
12 **MR. COUGHLAN:** That is fine. I have one
13 question for you: What do
14 you mean by transshipment?
15 **INSPECTOR:** The bringing in of the 11:05
16 LNG.
17 **MR. COUGHLAN:** Okay, I understand. That's
18 fine.
19 **INSPECTOR:** Mr. Conneely, you want
20 about five minutes to do 11:05
21 preparations, is that right?
22 **MR. CONNEELY:** Just to get set up.
23 **INSPECTOR:** Okay, we will take a five
24 minute break, but just bear
25 in mind that it is just to allow him time to set things 11:05
26 up.
27
28 **SHORT ADJOURNMENT**
29

1 THE HEARING RESUMED, AS FOLLOWS, AFTER A SHORT
2 ADJOURNMENT

3
4 MR. PAT CONNEELY PRESENTED HIS SUBMISSION, AS FOLLOWS,
5 ON BEHALF OF THE HEALTH AND SAFETY AUTHORITY
6

7 MR. CONNEELY: Good morning, I think I
8 will have to go ahead
9 without the presentation. We have circulated paper
10 copies and I will talk through it. There is somebody 11:17
11 on the way to try and fix it so hopefully we can pick
12 it up during it.

13
14 Pat Conneely, Senior Inspector, Health and Safety
15 Authority. We were requested to offer technical advice 11:17
16 to the Board on this matter and we did so by letter on
17 January 9th, 2008. The purpose of this presentation is
18 to explain the role of the HSA in terms of Seveso and
19 land use planning and, hopefully, in doing that to give
20 some background to our advice and, also, to assist the 11:18
21 Board in some of the questions that they have raised.

22
23 The duties of the Health and Safety Authority in
24 relation to the Seveso II establishments are set out in
25 regulations. Now, the regulations set out a lot of 11:18
26 duties on operators but it also sets out duties on the
27 Health and Safety Authority. Among those duties are
28 the provision of land use planning advice for new
29 establishments and around existing establishments. The

1 assessment of safety ports for Upper Tier Seveso
2 establishments. The enforcement of safe legislation in
3 all Seveso II establishments.

4
5 The Authority are required to report to the Commission 11:18
6 on the preparation of External Emergency Plan for Upper
7 Tier Seveso establishments. They are required to set
8 the specified area for the provision of information to
9 the public in the event of a major emergency. They are
10 required to investigate accidents/incidents and to 11:19
11 undertake an inspection programme. That can result in
12 enforcement action up to and including prosecution and
13 closure of an establishment.

14
15 Now, in relation to the land use planning role, this 11:19
16 derives from Article 12 of the Seveso Directive, also
17 called the Major Accident and Hazards Directive and
18 sometimes referred as COMA Directive. So, all the same
19 directive. Article 12 of that requires Member States
20 to take account of the objectives of preventing major 11:19
21 accidents in their land use planning policies through
22 controls on the siting of new establishments, which are
23 covered by this Directive, modifications to existing
24 establishments covered by the Directive and new
25 developments in the vicinity of establishments covered 11:19
26 by the Directive.

27
28 Article 12 then goes on: Land use planning policies
29 must take into account of the need in the long term to

1 maintain appropriate distances between establishments
2 covered by the Directive and residential areas,
3 buildings and areas of public use, major transport
4 routes, as far as possible, recreational areas and
5 areas of particular natural sensitivity. In the case 11: 20
6 of existing establishments, of the need for additional
7 technical measures so as not to increase the risks to
8 people.

9
10 The land use planning provisions, insofar as the HSA is 11: 20
11 concerned, are implemented under SI 74/2006, which are
12 the Major Accidents and Hazard Regulations. Under
13 those the HSA is required to provide technical advice
14 to the planning authorities, on request, on the
15 assessment of risks from an establishment. Advice is 11: 20
16 given either on a case by case basis or on a generic
17 basis and from which the planning authorities can
18 inform this decision. Advice is provided by the Health
19 and Safety Authority to the planning authorities in
20 consideration of the development of a new 11: 21
21 establishment, the modification of an existing
22 establishment or where development is proposed in the
23 vicinity of an existing establishment.

24
25 Broadly speaking, in terms of deriving our land use 11: 21
26 planning advice, it can be based on consequence or it
27 can be based on risks. We might come back to that
28 later.

1 Now, in terms of understanding our role, it is very
2 important to understand that we deal with major
3 accidents and sites covered by these regulations and
4 major accidents. Therefore, the question will arise:
5 What is a major accident? A major accident is defined 11: 21
6 in the regulations and it is an occurrence, such as
7 "major emission, fire or explosion resulting from
8 uncontrolled developments in the course of the
9 operation of any establishment, leading to a serious
10 danger to human health or the environment, whether 11: 21
11 immediate or delayed, inside or outside the
12 establishment, and involving one or more dangerous
13 substances".

14
15 I would emphasise two points on that, that it is 11: 22
16 relating to developments in the course of the operation
17 of any establishment and it has to involve dangerous
18 substances. Now, dangerous substances are listed in
19 the regulations, there is an annex 1 and there is a
20 generic list and a specific list and quantities 11: 22
21 relating to those substances. Therefore, a dangerous
22 substance must be in one of those categories to be
23 considered.

24
25 So, therefore, obviously, an important question then 11: 22
26 is: What is the establishment? Again, the
27 establishment is defined in the regulations. It means
28 the whole of the area under the control of the same
29 person where dangerous substances are present at or

1 above the qualifying quantities in one or more
2 installations, and for this purpose two or more areas
3 that contain installations in the control of the same
4 and separated only by a road, railway or inland
5 waterway will be treated as one whole area. 11: 23

6
7 In practice the establishment is generally comprised of
8 the area within the facility boundary where the
9 hazardous substances are processed and stored. This
10 approach has been agreed with the EU Commission and 11: 23
11 representatives of under Member States.

12
13 In this instance, the establishment will consist of the
14 area within the facility boundary, any pipelines within
15 the facility boundary and the jetty associated 11: 23
16 exclusively with this facility.

17
18 I suppose it is important when we are deciding what's
19 in, and what's out is also very important in knowing
20 what our role is. Obviously, the HSA, along with all 11: 23
21 the State bodies, is empowered only to act within the
22 statutory powers and cannot act ultra vires. So, the
23 regulations do not cover the occurrence outside of an
24 establishment of the transport of dangerous substances
25 by road, rail, inland waterways, sea or air; 11: 24
26 intermediate temperate storage, the loading or
27 unloading the dangerous substances at dock, wharves or
28 marshalling yards. It also excludes the transport to
29 and from another means of transport at docks, wharves

1 or marshalling yards and the transport of dangerous
2 substances in pipelines and the pumping stations.

3
4 Now, I understand that the CER the Energy Regulator, is
5 to take control of pipelines. But within 11: 24
6 establishments, as I pointed out already, it would fall
7 within the Health and Safety Authority's remit.

8
9 Now, in practical terms certain other things are
10 excluded as well. So, in giving its land use planning 11: 24
11 advice the HSA considers only the effects of credible
12 major accidents in Ireland at the establishment. So,
13 for example, routine emissions, (e.g. stack emissions,
14 emissions to water) will be subject to licence under
15 the IPPC licence regime determined by the EPA. 11: 25

16
17 The advice of the HSA does not deal with site selection
18 or the suitability of one site above another or one
19 design above another. It deals with the specific
20 request that comes in, it offers technical advice on 11: 25
21 that and it does not go beyond that.

22
23 Activities relating to site development construction
24 are not considered in the context of provision of land
25 use planning advice. These issues are covered by the 11: 25
26 general remit of safety legislation.

27
28 An issue that has been raised is around off-site
29 initiators of major accidents. The way the HSA looks

1 at this is they look at could an event off-site
2 initiate a major accident on-site. Could it act as a
3 trigger. In determining whether that would be
4 considered or be given credibility: It will not be
5 considered if the event is of equal or lesser damage 11: 25
6 potential than the events for which the plant is being
7 designed. So, for example, in this case if the plant
8 is being designed to a certain standard we would rule
9 out earthquake as an initiator for major accidents.

10
11 If the event has a significantly lower frequency of 11: 26
12 occurrence than other events with similar uncertainties
13 and could not result in worse consequence than those
14 events. And the event cannot occur close enough to the
15 plant to effect. Or, if the event is slow developing 11: 26
16 and there sufficient time to eliminate the source of
17 the threat or to provide an adequate response. So, in
18 those circumstances, external events would not be
19 considered.

20
21 To move on then to deal in a little more detail on the 11: 26
22 technical aspects of land use planning advice. When
23 developing land use planning advice on the basis of
24 consequence of major accidents the following endpoints
25 are used. I know other speakers have dealt with this, 11: 26
26 in the case of heat we are looking at thermal
27 radiation, which implies a particular intensity and
28 exposure duration. In the case of explosion we would
29 be looking at overpressure. If toxic material has been

1 released we look at toxic dose, which is a combination
2 of the concentration and exposure period. So it is not
3 just the concentration, we look at exposure time as
4 well in looking at the endpoints for land use planning.

11:27

6 This table, again, summarises some of the data on the
7 effects of thermal radiation on both equipment and on
8 people. The first three there are related to equipment
9 and then the bottom three are related to people.

10 Obviously, people are much more sensitive to thermal
11 radiation than equipment. Not particularly relevant in
12 this case, but in terms of overpressure and consequence
13 we also look at that.

11:27

15 Land use planning advice may also be generated on the
16 basis of risk as opposed to just taking account of
17 consequence. Risk is a combination of the consequence
18 and the likelihood of it occurring. The risk endpoint
19 that is used is the risk of death or of receiving a
20 dangerous dose. I would say typically in QRA the risk
21 of death seems to be the accepted. But the HSA
22 currently use a risk of dangerous dose, as does the UK
23 HSE. Dangerous dose is somewhat of a lesser endpoint,
24 it is a lower threshold.

11:27

11:28

25
26 In looking at risks approached the immediate question
27 that arises is: What is a tolerable risk? If you are
28 going to inform your technical advice on land use
29 planning in terms of risk, what is a tolerable risk?

11:28

1 In order to try and form a view on that the Authority
2 looked at what were everyday risks, what risks were
3 people exposed to and accepted. This table comes from
4 the second Kennedy Report, a UK publication on major
5 hazards. The data there is looking at the number of 11: 28
6 fatalities and the chances of an individual being
7 killed based on various activities. Roughly speaking,
8 if you look at the first two, motor vehicle accidents
9 or accidents in the home, it suggest, roughly, the
10 chances are 1 in 10,000 per year. So that's the risk 11: 29
11 of those happening.

12
13 Taken from our own statistics for 2002, it shows
14 workplace fatality. I have just highlighted there
15 "construction", which is the highest, has the worst 11: 29
16 fatality rate. If you see there, there are 20 workers
17 killed in 2002 out of a working population of 183,200.
18 That equates to a rate per million of 109.1 per million
19 and that's equivalent to 1 in 10,000 again. So, in
20 terms of how these things are expressed, that would be 11: 29
21 a similar type of a risk.

22
23 In terms of land use planning advice, if we look at
24 what's used elsewhere -- and the Authority did look
25 elsewhere to see what benchmarks were being set -- in 11: 29
26 the case of the HSE, if you look at the third line down
27 there, benchmark for new plant developments, they
28 suggested a risk of 1 in 100,000 per annum of dangerous
29 dose. Under that then, at the bottom, for land use

1 planning, residential development unrestricted they
2 suggest that a risk figure of 1 in a million per annum
3 of dangerous dose is the figure that should be used.

4
5 The Netherlands has a very well developed risk based 11:30
6 system and, again, I have highlighted the final entry
7 under The Netherlands. They suggest that broadly
8 acceptable public individual risk is 1 in a million per
9 annum. I think, as well as that, above that they
10 suggest maximum tolerable public individual risks for 11:30
11 new developments, which is the second line there, at 1
12 in a million per annum.

13
14 In Australia the acceptable risk to the public in
15 residential zones from hazardous injuries is set at 1 11:30
16 in a million per annum. So, you can see that there is
17 pretty general agreement around, certainly new
18 developments, that one in a million per annum is a
19 benchmark figure to measured against.

20 11:31
21 In practical terms, in terms of existing
22 establishments, the Authority has a three zone system.
23 Again, I know some of these numbers are confusing. The
24 inner zone works out to one by a ten to the minus five
25 per year. That is roughly 10 chances in a million per 11:31
26 year, the risk. The next one then works out to one
27 chance in a million per year. The third zone works out
28 to 0.3 chances in a million per year. So, they are
29 just measures of risk.

1
2 Within those risk zones then the Authority have defined
3 what they consider to be suitable developments. Again,
4 this is looking at Best International Practice. This
5 also would have an eye to recent publications, for 11: 31
6 example, the "Guidelines on Land Use Planning" that
7 were published this year by the European Commission.
8 As you can see, in the inner zone it is pretty
9 restricted really. The inner zone often would just
10 encompass the establishment itself. Outside of that we 11: 32
11 would permit workplace development, we would permit a
12 certain amount of residential development. Out in zone
13 3 there would be no restrictions, except for sensitive
14 developments. Outside of that generally there would be
15 no restrictions at all, except for extremely large 11: 32
16 development or, again, very sensitive developments.
17 They would consider that in looking and they would do
18 that by look at societal risk.

19
20 That's the situation for existing sites. In effect, 11: 32
21 that middle zone starts at a 1 in 100,000 risk and
22 works it way up to 1 in a million. So, around existing
23 establishments it is considered tolerable to have
24 residential development in that zone.

25 11: 32
26 Now, a Board paper off the Health and Safety Authority
27 deals specifically with the provision of land use
28 planning advice, and this is a direct quote from it:
29

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"It is now necessary to demonstrate for new establishments that they do not present a risk of a dangerous dose greater than five by ten to the minus six to their current neighbours, or a risk of dangerous dose greater than one by a tenth minus six...

That is one in a million, one chance per million.

"...to the nearest residential type property."

It then goes on to say:

"This may be relaxed in respect of neighbours where the new development is the same and similar to existing neighbours. For example, new oil storage depot being set up in location already occupied by a tank farm."

11: 33

So in setting that then the Authority is I think following best practice internationally of the one in a million and it is also setting a higher standard for new developments than for existing developments.

11: 34

Now, that Board also goes on say:

"The Authority will seek from the operators of proposed establishments a detailed consequence of risk assessment in order to help it formulate a response to a request for advice on a planning application."

11: 34

So the normal process then in land use planning is that we would get a request from the Local Authority and we

1 give the advice to the Local Authority in whatever from
2 is suitable depending on the type of development. If
3 it's subsequently appealed to An Bord Pleanála then we
4 would review that advice and we would advise An Bord
5 Pleanála accordingly. 11: 35

6
7 In this particular case the sequence of events
8 I suppose is somewhat different. We were approached by
9 Shannon LNG earlier last year to have meetings in
10 relation to their application. Normally the Authority 11: 35
11 does not get too involved with developers in terms of
12 plans they have because we have a lot of other
13 functions to do and land use planning is only one part
14 of it and we don't want to get into a lot of discussion
15 with people for projects that will never proceed. 11: 35

16 Shannon LNG were quite persistent in looking for
17 meetings with us. Having met them and having
18 understood that this was likely to go through the fast
19 track system, the strategic infrastructure under that
20 legislation, and given that it was the first of its 11: 36
21 type in the country we were happy to meet with them and
22 their technical advisors prior to the application going
23 in.

24
25 Now, the form of that would have been several long 11: 36
26 meetings. Essentially at the first meeting the
27 Authority would have explained its approach to the
28 developers and what it would look for in a QRA and as
29 we saw previously the board of the Authority says we

1 should look for those submissions for new developments.
2 We would have explained to them what our criteria were,
3 what we had done in previous cases, what are the issues
4 we need to see addressed in there in order for us to
5 accept a QRA. There were several meetings over the 11:36
6 course up to the summer certainly.

7
8 Subsequent to that then we undertook a literature
9 review of what was published in peer reviewed journals
10 and so on. Subsequently the QRA was submitted to us 11:36
11 and over a period a time we would have reviewed that
12 QRA and by about mid-November I think we sent 14

13 written queries to Shannon LNG based on our assessment
14 of the QRA -- actually I think it was 13, I think
15 that's a mistake there. Subsequent to that then at a 11:37
16 meeting in the middle of December Shannon LNG met us
17 and presented a response to those queries. We had some
18 long discussions around some issues and as a result of
19 that then a further seven written queries went out to
20 Shannon LNG for a response and those responses came in 11:37
21 in late December and at the very beginning of January
22 I think.

23
24 On the basis of that then on 9 January the Authority
25 wrote to An Bord Pleanála with its technical advice and 11:37
26 as a result of that is here today to discuss and
27 explain its role.

28
29 The outcome of the process at that date was that we

1 accepted the risk contours from the QRA that were
2 present to us. Our view was that the criteria that are
3 set by the Board had been met and, therefore, the
4 advice to An Bord Pleanála was our standard format of
5 advice in a situation is that we do not advise against 11: 38
6 it.

7
8 That's a graphic there from the QRA report that is
9 submitted and that shows the contours from the QRA
10 showing the risk. As part of the questions that were 11: 38
11 raised with Shannon LNG a number of sensitivity checks
12 were carried out to see how sensitive those contours
13 were to the various assumptions that were made by
14 Shannon LNG. There was some variation to the contours,
15 but none that would have affected the advice that we 11: 38
16 would have given. In other words, the test that we had
17 of the one in a million would still have been met even
18 if one made some different assumptions in several
19 different areas. Now, that may or may not be the final
20 land use planning zones that the Authority will set, 11: 39
21 I think we would want to look at all the documents and
22 looks at some of those sensitivities and it may well be
23 that the land use planning zones that we set will not
24 be quite the same as are represented there.

25 11: 39
26 I suppose the question then arises 'what happens next,
27 is that the end of it'. Certainly from the Health and
28 Safety Authority's point of view it would not be the
29 end of it. If this proposal proceeds we would have a

1 lot of involvement. This graphic is taken from the
2 European guidelines on land use planning as I have
3 referred to earlier and it shows the roles I suppose of
4 the different agencies and the different activities in
5 terms of Seveso establishments. We see land use 11: 40
6 planning there is one aspect, but within the
7 development itself there is issues around safe
8 technology and safe management and they are required to
9 submit a safety report in relation to that and I will
10 come to that maybe on another slide. 11: 40

11
12 There is also a requirement then for emergency
13 planning. Now, emergency planning is a function of the
14 local competent authorities. The local competent
15 authorities would typically be the fire authority of 11: 40
16 the Local Authority, the HSE and An Garda Síochána. So
17 together they would develop external emergency plans.
18 Now, there is a role for internal emergency plans and
19 that is falls under the Health and Safety Authority.

20 11: 40
21 There is also a requirement for provision of
22 information to the public and I will deal with that as
23 well maybe in a later slide. Again there is a role for
24 inspections from the Health and Safety Authority and
25 I will deal with that in a little bit more detail as 11: 40
26 well.

27
28 The safety report is a substantial requirement, it's
29 probably the biggest requirement under the regulations

1 on these type of sites. In that safety report they
2 must demonstrate, and 'demonstrate' is quite a powerful
3 word, it is not just saying things, they have to
4 convince us of various things. They must demonstrate
5 that a major accident prevention policy and a safety 11: 41
6 management system are in place and that they are
7 operating, that all credible major accident hazards
8 have been identified, that all necessary measures are
9 in place to prevent and mitigate against major
10 accidents, that adequate safety and reliability have 11: 41
11 been incorporated into the design and construction of
12 the establishment as well as the operation and
13 maintenance.

14
15 I suppose I should say there it's very fortunate that 11: 41
16 there is a European standard on LNG plant and equipment
17 and layout and so on and certainly Shannon LNG have
18 committed to abide by that standard and they would be
19 measured against that. There is a requirement that
20 internal emergency plans are in place and that 11: 41
21 information has been supplied to the local authorities
22 to provide for the external emergency plans.

23
24 If planning permission is granted the operator must
25 supply a preconstruction safety report. Construction 11: 42
26 cannot commence until the HSA is satisfied with the
27 contents of that report. Operation cannot commence
28 until a preoperation safety report has been assessed to
29 the satisfaction of the Health and Safety Authority.

1 The specified area is set by the Health and Safety
2 Authority and it's the area within which members of the
3 public must be informed of what to do in the event of
4 an emergency so the specified area is an area in which
5 the operator is required, for example, to provide 11: 42
6 information routinely as to if there is an emergency
7 'this is what you should do'. That's what the
8 specified area covers. It's not the same as the
9 external emergency planned area which I said is a
10 matter for the local competent authorities. 11: 43

11
12 The obligation to provide that information in the
13 specified area is on the operator and they must inform
14 persons or institutions of the safety measures and the
15 correct behaviour to adopt in the event of an 11: 43
16 emergency. That information has to be reviewed every
17 three years and it must be provided every five years.

18
19 I suppose finally then to finish off on that. There is
20 an inspection and enforcement role as pointed out in 11: 43
21 that graphic as well. The Health and Safety Authority
22 undertakes and in fact under the Directive and under
23 the regulations we have to have a programme of
24 inspection for these sites. Our current programme is
25 that we would visit all of these sites at least 11: 43
26 annually and carry out a structured inspection on them.
27 We take inspections and we take enforcement action as
28 appropriate where we come across the need for it. The
29 enforcement powers include notices which must be

1 complied with, we also have the power to initiate
2 prosecution of the operator, of directors of the
3 company where it is necessary. We have the power to
4 shut down all or part of the facility where necessary.
5 Thank you. That is my submission.

11: 44

6
7 END OF SUBMISSION OF MR. CONNEELY

8
9 MR. CONNEELY WAS QUESTIONED AS FOLLOWS BY THE INSPECTOR

10
11 **INSPECTOR:** Thank you, Mr. Conneely.
12 Before I open it to
13 questions, the document I have been given is in black
14 and white and I think it would be useful where colour
15 is critical, particularly on the contour map, if you
16 could make available to the board a colour edition.

11: 44

17 **MR. CONNEELY:** Yes.

18 1 Q. **INSPECTOR:** Just to go back to the
19 slide, major accident
20 initiating events?

11: 44

11: 44

21 A. Yes.

22 2 Q. **INSPECTOR:** Some of that appears to
23 relate to external events
24 which might impinge on the site?

25 A. Yes.

11: 45

26 3 Q. **INSPECTOR:** Does that include the
27 possibility of a severe
28 accident occurring to a ship, an LNG ship, which is
29 tied up?

1 A. As it states earlier the establishment is included --
2 sorry, the establishment includes the jetty, I beg your
3 pardon; therefore, operations on the jetty are
4 included, firstly. When the ship is tied up at the
5 jetty that is part of what we look at. There are 11: 45
6 various exclusions, we don't deal with transport and
7 transport by sea and so on, but we would consider could
8 an event at sea initiate a major accident on the
9 establishment which is what we are interested in. Now,
10 we do not consider terrorist activities, we are dealing 11: 46
11 with accidents, we do not consider issues like that.
12 So our consideration is could there be an accident that
13 could impinge on the establishment, not already be
14 considered in what we have considered, is it more
15 likely than some of the events we have considered and 11: 46
16 our view is that it's not.

17 4 Q. **INSPECTOR:** Sorry.

18 A. Our view is that such an event should not be included
19 in our considerations.

20 5 Q. **INSPECTOR:** What, a terrorist event? 11: 46
21 A. A terrorist event or an event involving a loss of
22 containment in a ship outside of the jetty.

23 6 Q. **INSPECTOR:** When the ship is tied up to
24 the jetty?

25 A. If the ship is tied up we will consider what is 11: 47
26 credible events at the jetty. Am I not being clear on
27 this?

28 7 Q. **INSPECTOR:** Well, supposing there is a
29 major rupture of one of the

1 tanks, possibly the scenario that was presented
2 yesterday of a cascading effect, the possibility that
3 the ship might shift its moorings, that the
4 polypropylene lines tying it would melt and the ship
5 would drift? 11:47

6 A. I said earlier as well we consider credible events. In
7 all events we have to consider how likely they are.
8 Some of those events, for example when the ship is
9 moored we would consider that it's not credible that by
10 accident it will be ruptured and lose half its 11:47
11 contents, that is not our view.

12 8 Q. INSPECTOR: Okay. Just turning to the
13 contour map, which is in
14 relation much to the same thing, just looking at the
15 red zone around the jetty, that is marked in that way 11:49
16 am I right in thinking to reflect any danger?

17 A. Risk.

18 9 Q. INSPECTOR: Risk arising from the
19 offloading of the gas and
20 the passing back of the boil-off gas to the tanker? 11:49

21 A. Yes, it's related to the loading arms and unloading
22 arms and the assumption that a leak could develop there
23 and that could have consequences including fire and
24 explosion, including fire and flash fire I suppose
25 I should say more properly. 11:50
26

27 **END OF QUESTIONING OF MR. CONNEELY BY THE INSPECTOR**
28

29 INSPECTOR: Okay. I am going to throw

1 this open to the floor, but
2 I would ask you to bear in mind that Mr. Conneely is
3 only going to be available up to lunchtime so I would
4 ask you to hone your questions and I would also ask you
5 to also bear in mind that the Applicants themselves 11:50
6 will probably have questions. Mr. McElligott?
7

8 MR. CONNELLY WAS THEN CROSS-EXAMINED, AS FOLLOWS, BY
9 THE OBJECTORS

10 11:50
11 10 Q. MR. McELLI GOTT: Mr. Conneely, it is written
12 in your guidelines in the
13 setting of the specified area, the approach of the HSA,
14 it is clearly that:

15 "The Authority will review its approach 11:50
16 in the light of new technical
17 information, including accident
18 experience concerning the effects of
major accidents."

19 A. Yes.

20 11 Q. Now, yesterday we had Dr. Jerry Havens, a renowned LNG 11:51
21 expert here, and he in the presence of Shannon LNG who
22 have brought over their own LNG experts, they did not
23 question him or very little because they could not
24 challenge anything he said, Kerry County Council could
25 not ask him any questions, the HSA could not ask him 11:51
26 any questions and he raised several very serious
27 issues. First of all, I would like to know are any of
28 the issues that he raised which constitute new
29 technical information, for example he showed a video

1 which has never before been shown in public, are you
2 going to take any of that information into account?
3 A. Thank you. I suppose I should make clear that we did
4 give our advice on January 9th and we indicated to
5 yourselves and your group certainly that it wouldn't go 11:52
6 out until January 11th and that was for administrative
7 reasons that I won't go into again. You did submit
8 quite an amount of material that we are still looking
9 at. I have looked at the presentation and heard the
10 presentation of Professor Havens and certainly we will 11:52
11 consider what is in there. Having said that, I am
12 familiar with the views of Professor Havens, I have
13 read several of his articles, but I will certainly
14 consider it. What I am saying is if we feel there is
15 something in there that would cause us to change our 11:52
16 advice then we would change our advice. We have no
17 brief either for or against this development. We are
18 trying to do it on a fairly scientific basis so if
19 there is information available that would cause us to
20 change our advice then we would change our advice. 11:52

21
22 Can I just go back and answer a couple of the other
23 questions that you did raise. The guidelines on
24 specified area, again not to confuse things. The
25 specified area is this area in which the public would 11:52
26 have to be informed about what to do if there was an
27 accident on the site, okay, so it's about provision of
28 information. It hasn't been set yet, that is something
29 that still has to be set and probably would not be set

1 for some time. You said I could not ask Professor
2 Havens any questions. Of course I didn't feel the need
3 to ask him any questions, just to make that clear as
4 well. I am very familiar with what he said, I have
5 read several of his articles so I know his views on 11: 53
6 issues.

7 12 Q. Because he quoted the Sandia Report and he stated that
8 it was a credible event, a credible possibility to have
9 a breach of a half tank of an LNG ship and you are
10 saying that you are not an LNG expert? 11: 53

11 A. I am saying at the jetty ... (INTERJECTION)

12 MR. O'NEILL: Sorry, it's only fair that
13 if a question is put it is
14 accurate. What Dr. Havens was very, very clear to say
15 that he no involvement and no expertise in risk 11: 54
16 assessment, he did not deal with issues as to credible
17 events or not, Sir.

18 A. Just to make it clear in any case that I was suggesting
19 that at the jetty I did not think that was a credible
20 event. 11: 54

21 13 Q. MR. McELLI GOTT: What led you to think it
22 was not a credible event,
23 did you get other LNG expert advice?

24 A. The advice is on the design of those tankers that a
25 certain amount of energy would be required to breach 11: 54
26 the double hull and that energy would not be available
27 at a tanker that's at berth at a jetty. There are
28 arguments certainly about when it's out and it's
29 travelling at speed and it has the potential maybe to

1 meet other objects and so on, but at the jetty we would
2 not considered that not to be a credible event.

3 14 Q. What about an LNG spill on water?

4 A. Again looking at the type of operations that could
5 occur at the jetty, a spill is a credible event, but 11:55
6 the systems in place there would limit that spill.
7 Certainly that is considered in the QRA and we think
8 that's correct.

9 15 Q. Do you remember how much of a leak of LNG was in that
10 video yesterday that caused that massive explosion? 11:55

11 A. No, I don't recall the exact figure.

12 16 Q. It was very low?

13 A. I am sure I have it in my notes and I can follow up on
14 it, but, no, I don't have it to hand.

15 17 Q. You also say that your advice can be both consequence 11:55
16 based as well as risk based, why do you not take the
17 consequences into consideration also, he said the
18 consequences are so serious that we should in this
19 case, because LNG is so specific, why do we not take
20 some of the consequences into account and not just on 11:56
21 probabilities?

22 A. I suppose it's an argument about if events are so
23 unlikely how far should you go to consider them.
24 That's why the risk argument comes in there. There are
25 events that are so unlikely, do you say no development 11:56
26 can take place or you cannot put those types of
27 developments anywhere when the risks are so low. The
28 fact that there is a European standard, for example, on
29 these type of sites suggest that they are considered

1 not to be intolerable, they are not banned, nobody says
2 you cannot build them. You have to weigh up the risk,
3 that's the nature of how these assessments are done.

4 18 Q. Okay. What about the probability of an accident
5 happening on the estuary, how do you know that some of 11:57
6 those events are not so credible if you don't measure
7 the probability of them happening?

8 A. Are you referring to something out on the estuary?

9 19 Q. Of a ship moving in towards the jetty, it is still a
10 moving ship, it is not moored, it is just about to 11:57
11 move?

12 A. Again from various reports out there they suggest a
13 certain speed is required. Again we would have
14 considered this only in terms of could such an event
15 initiate a major accident on the establishment, that 11:57
16 would have been our only consideration. In looking at
17 that we looked at a publication called the Purple book,
18 which is Dutch book which deals with QRA and various
19 probabilities, they do suggest a methodology there
20 about looking at the likelihood of collisions and 11:57
21 things like that for ships in ports. We did do a
22 calculation on that that suggests if there were 30,000
23 movements it would be something that could be credible.
24 It would have to be greater than that number of
25 movements and given that the number of movements are 11:58
26 very small on the estuary at that stage we decided we
27 would not look any further at that.

28 20 Q. Who is going to be responsible so for a QRA of marine
29 risk in general if it's not the HSA outside of the

1 establishment?

2 A. I would only answer for the HSA. The HSA's remit is
3 very clear, it's to do with the establishment.

4 21 Q. It's for the health and safety of Irish people so if
5 there is a risk somewhere else, if there is a credible 11:58
6 risk of an accident are you not supposed to -- if you
7 have been warned of a danger or somebody is adverting
8 you to the possibility of an accident?

9 A. Other than health and safety of people at work which
10 other legislation covers, we are dealing in terms of 11:59
11 land use planning with the Seveso regulations and they
12 are quite clear in what we deal with and we do not go
13 outside that and I explained in my presentation we do
14 not have powers to go outside of that.

15 22 Q. The health and safety of people at work so people 11:59
16 working on an LNG ship coming in to port wouldn't they
17 be under your powers?

18 A. They would be, yes, they could be.

19 23 Q. So the health and safety of the workers on the LNG
20 ships, should you not take that into consideration as 11:59
21 well or is that different?

22 A. We do, all persons on shipping at work in Ireland are
23 under consideration.

24 24 Q. But that won't come into land use planning?

25 A. No, it won't. 11:59

26 25 Q. Do you not see a problem with the way it is broken down
27 into different statutory bodies?

28 A. It's the way it is. We have a lot to deal with, we
29 deal with what's in front of us and we don't go beyond

1 that.

2 26 Q. Okay. So the serious issues raised by Dr. Havens
3 yesterday, you are somehow able to say because your
4 responsibility is to a certain point that you can
5 ignore what he just raised yesterday, I find that 12:00
6 really a bit strange don't you think?

7 A. We can only do what we are entitled to do and if we
8 went beyond it I am sure people would be pretty quick
9 in telling us we are not entitled to go beyond that.
10 Insofar as it affected our advice to the establishment 12:00
11 I am certainly interested in what you said. As I said
12 we have made notes of his presentation yesterday and we
13 are still looking at documentation that your group have
14 submitted so until that is completed we cannot say we
15 have finalised our advice. 12:00

16 27 Q. Would you not consider also that the advice you are
17 giving to An Bord Pleanála is only very specific for
18 land use planning advice, but it does not constitute
19 overall safety advice of the whole project?

20 A. I think that's a matter for the Board. I have 12:00
21 explained very clearly what our remit is and where it
22 applies.

23 28 Q. Do you not think that there are safety issues that have
24 been raised that do not concern the HSA but they are
25 safety issues that you will not be dealing with? 12:01

26 A. As I said those matters you are raising are a matter
27 for the Board.

28 MR. McELLI GOTT: Okay. I just want to point
29 out to the Inspector that

1 I think the HSA is not dealing with all of the safety
2 issues in the siting of this terminal, that they are
3 just giving a view on a very narrow land use planning
4 criteria solely risk based analysis, not consequence
5 based analysis as put forward by Jerry Havens yesterday 12: 01
6 so I am asking the Board to take that on board in its
7 decision. The HSA might be able to say that they have
8 no problems with the land use planning criteria which
9 is just specific to its remit, but it is very much
10 obvious that it is not giving an overall safety view of 12: 02
11 the whole project, thank you.

12 **INSPECTOR:** Does that conclude what you
13 want to say,

14 Mr. McElligott?

15 **MR. McELLI GOTT:** Yes. 12: 02

16 29 Q. **MR. ROBINSON:** David Robinson from Milford
17 Haven. We have the same
18 type of problem in Milford Haven. My question is will
19 a QRA, a Quantitative Risk Assessment, for a spill of
20 LNG on water from a 265,000 cubic metre LNG ship 12: 02
21 consider the spill from one tank, half the tank or the
22 full tank and its consequences be needed for the Local
23 Authority to write an emergency plan for on site and
24 off site personnel? Will the Local Authority have to
25 see the consequences from that spill of half of one 12: 03
26 tank before it can write the emergency plan?

27 A. I don't want to speak on behalf of the Local Authority
28 either, I am sure that they can answer for themselves.
29 I would only say that in terms of the Seveso

1 regulations that the external emergency plan
2 requirement relates to the establishment and it's a
3 function of the local competent authorities. There may
4 be other bodies with responsibility for spills in the
5 estuary, I presume there are, but I am not going to 12: 03
6 speak for them either so in terms of my function
7 I can't really answer that one for you.

8 30 Q. I mention this because in Milford Haven the HSE have
9 done what you are doing on land and the job on the
10 water has been given to Milford Haven Port Authority to 12: 03
11 do the risk assessment. They have done a risk
12 assessment for the guillotine cut of one hard arm that
13 takes the LNG from a ship to shore, that's where the
14 grey area is between the two. Now, they have not done
15 a full independent risk assessment for Milford Haven 12: 04
16 for a spill of one half of one tank so our
17 Pembrokeshire County Council are trying to write an
18 emergency plan without knowing the consequences of what
19 that spill might entail and as I mentioned the other
20 day we have a lifeboat 900 metres from the ship and we 12: 04
21 know that if there is a 12 metre hole in one tank the
22 impact range is 1.9 kilometres. There is something
23 wrong somewhere in our case, I am not saying it's wrong
24 here, but I am just warning everybody that you must be
25 careful. There is a grey area somewhere. 12: 05

26 A. Okay. The only response I would make to that is that
27 again local competent authorities have to do these
28 emergency plans, it's the matter for them, but I do
29 think they take into consideration, our observations of

1 it is that they do take into consideration lots of
2 events even fairly unlikely ones, that has been our
3 experience.

4 31 Q. Would you take into account that the Sandia Report says
5 that a spill of one half of one tank is a credible 12:05
6 spill?

7 A. I have seen various reports. I saw one from DNV as
8 well suggesting that it wasn't credible and suggesting
9 a smaller one would be credible so there is a number
10 out there. 12:06

11 32 Q. Sorry did you say it was incredible or credible?
12 A. DNV suggested that it wasn't credible.

13 33 Q. Incredible?
14 A. Well, not credible, yes. Not credible in terms of
15 accidental... 12:06

16 34 Q. Just to clarify. DNV say it is incredible and Sandia
17 say it is credible so there is disagreement?

18 A. Yes.

19 **INSPECTOR:** Ms. Griffin.

20 35 Q. **MS. GRIFFIN:** Hi, Catriona Griffin. I am 12:06
21 just wondering, the contour
22 lines, the red is obviously the most dangerous, why is
23 there only one red contour line around the tanks when
24 there is actually going to be four tanks?

25 A. I am sure the ERM can answer for that, but there is a 12:06
26 sump there, 400 metres cubed, that will take most of
27 the leaks. The most likely leaks, if you like, that
28 would occur will roll into that location and that's why
29 the highest risk is there. The risk of failure of the

1 tanks is extremely low and that's reflected in that
2 QRA.

3 36 Q. Another question: You mention that if the tanker is
4 moored at the jetty it is under your remit, have you
5 looked at any accidents like the tanker having an 12:07
6 accident while it is there, that it would break free
7 from its moorings and pull away from the pier, do you
8 think that's credible?

9 A. I am sure it is possible, but would it cause a major
10 accident at that location then. Sorry, just to be 12:07
11 clear, if it pulled away while it was unloading there
12 are safety features there that would stop the flow of
13 LNG within a very short period, that's part of the
14 design of the system so if it did happen I do not think
15 it would be any worse than what's included in the QRA. 12:08

16 37 Q. It is a credible incident because it actually happened
17 in Savannah in 2006 and the entire plant had to be
18 evacuated for 36 hours while it was under investigation
19 so who is going to look at that?

20 A. I suppose did it cause a major accident? If you want 12:08
21 to give me details of that I will certainly take a look
22 at it, I doesn't come immediately to my mind, but
23 I will certainly take a look at that.

24 38 Q. **MR. McELLI GOTT:** I just want to be very
25 clear. If Sandia says that 12:09
26 there is a credible event or a credible possibility of
27 an accident and even Shannon LNG accept that Sandia is
28 one of *the* reports how can you say it's not credible
29 whatever Sandia says is credible?

1 A. I don't have the report right in front of me, but
2 I certainly do recall looking through it. I think one
3 of the issues was what was the most likely type of
4 event if it did occur and they were talking about
5 distances of effect from about 500 metres based on 12:09
6 that. Even if one were to go with the Sandia it could
7 not have an impact on the establishment and on that
8 basis we would not pursue it any further.

9 39 Q. **MS. GRIFFIN:** Mr. Conneely, the
10 definition of accident in 12:09
11 the Oxford English dictionary is an unforeseen event?
12 A. It's very clear in terms of the regulations what are
13 major accidents and there are particular regulations
14 governing these sites, they impose additional duties on
15 them so it's quite specific in what it is dealing with. 12:10
16 **MS. GRIFFIN:** I have a serious problem
17 with it.

18 40 Q. **MR. McELLI GOTT:** How can you account for
19 human error, how do you
20 calculate the probability of human error? 12:10
21 A. Well, in most QRAs they allow a range of figures for
22 it.

23 41 Q. I don't know mean in the calculation, human error
24 itself?

25 A. We try and design systems to have as little human input 12:10
26 as possible usually. I don't know if I want to answer
27 on the whole details of the QRA, I think human error is
28 explicitly dealt with in the QRA as well in terms of
29 the inventories they use and the likelihood of various

1 things happeni ng.

2 42 Q. Why have you avoided terrorist events so as a matter of
3 interest?

4 A. Because we deal wi th major accidents and it's quite
5 speci fic on that, we are not dealing wi th terrorist 12: 11
6 event, terrorist created events.

7 43 Q. Is that excluded in the legi slation?

8 A. It's not included and the general view wi th the
9 competent authorities in Europe is that they don't deal
10 wi th it, there are separate organi sations set out, 12: 11
11 usually securi ty bodi es to deal wi th that. The people
12 who deal wi th Seveso don't attend those, it is the way
13 it works.

14 44 Q. **MS. GRI FFIN:** Who is dealing wi th it in
15 thi s case? 12: 11

16 A. The Department of Defence as far as I know, someone
17 from there deals wi th that.

18 45 Q. **MR. McELLI GOTT:** Do you thi nk they shoul d be
19 i nvolved in the planni ng
20 process so as well ? 12: 11

21 A. I don't have a view.

22 46 Q. **MS. GRI FFIN:** You are aware that Shannon
23 LNG is owned by an Ameri can
24 company and there is an ai rport at Shannon where planes
25 on route to Iraq refuel , you don't thi nk thi s wi ll be 12: 12
26 viewed as a potential terrorist target?

27 A. We do not deal wi th terrorism issues.

28 47 Q. **MR. McELLI GOTT:** You agree so there are
29 many safety issues in thi s

1 application that you are not dealing with; is that
2 correct?

3 A. I don't agree with that.

4 48 Q. Do you agree that there are many safety issues on this
5 project that are not in your remit? 12: 12

6 A. Yes, there may be.

7 49 Q. You agree so that there are many safety issues
8 concerning this project that are not in your remit as
9 you have just said so, therefore, the advice that you
10 give to An Bord Pleanála does not cover all of the 12: 12
11 safety issues; isn't that correct?

12 A. As I have said we cover the establishment and it is
13 quite clear what we are giving our advice on. I am not
14 going to advise An Bord Pleanála beyond that, that's a
15 matter for them. 12: 13

16 50 Q. No, I didn't say if you were going to advise them. Do
17 you agree so that there are many safety issues which on
18 this project which you are not dealing with in your
19 advice to An Bord Pleanála?

20 A. Well, clearly there are issues in the estuary that we 12: 13
21 are not dealing with.

22 51 Q. Not just the estuary?

23 A. And to do with terrorism.

24 52 Q. So other land based issues as well that you are not
25 dealing with; is that correct? 12: 13

26 A. As I have said in the estuary and to do with terrorism.

27 53 Q. **MS. GRIFFIN:** Do you look at the other
28 planning applications that
29 are going to be directly related to this one like the

1 pipeline and the electricity pylons, are the HSA going
2 to do a report on the health and safety issues there?

3 A. If this development goes ahead and it's a notified
4 establishment then there are land use planning controls
5 around it and, therefore, we would expect that the 12: 14
6 planning authorities would refer applications to us for
7 advice, is that the question you are asking?

8 54 Q. Yes. At that stage it will be too late, either the
9 planning will be put through for Shannon LNG or it
10 won't be, but do you think it's a good idea that these 12: 14
11 applications are all put in separately when an incident
12 in one could impact on the others, do you think it
13 should be put through as a whole rather than?

14 A. We try to stay as far as out of the planning process as
15 we can in practice, it's quite a narrow role we have 12: 14
16 and we try and keep it as clear as possible. In other
17 words, we will deal with what is referred to us by the
18 planning authorities and we give advice on that and we
19 don't go beyond that. If another planning application
20 comes in we also give advice on that. 12: 14

21 55 Q. Individually ... (INTERJECTION)

22 A. In general once this establishment, if it gets the go
23 ahead, we would look at the land use planning advice we
24 would give around that site and we would generally
25 advise then the local planning authority of what we 12: 15
26 would consider to be suitable developments. If they
27 want to put in another Seveso site there then that
28 would be a special consideration and we would have to
29 look at that in more detail because it wouldn't be

1 covered by our general advice.

2 56 Q. Okay. On 9 January you sent advice to An Bord Pleanála
3 that you are not going to advise against giving
4 planning to this project?

5 A. Yes. 12: 15

6 57 Q. The following day you e-mailed John McElligott to say
7 that you were taking on board documents that had been
8 sent in so what is your position at the moment, are you
9 still saying that you are not advising against planning
10 for this project? 12: 16

11 A. We gave the advice to the Board based on what we had.
12 We did get additional information and as I said
13 I listened to Professor Havens' testimony yesterday.
14 We will consider what is in that. If between those
15 there are issues that would lead us to revise our 12: 16
16 advice we will revise our advice.

17 58 Q. Right. Land based issues?

18 A. There are quite a number of issues raised in that
19 documentation.

20 59 Q. **MR. McELLI GOTT:** So does that mean that you 12: 16
21 are going to inform An Bord
22 Pleanála when you are finished the view of that?

23 A. Yes.

24 60 Q. Have you taken into account any alternative sites, you
25 do not deal with alternative siting? 12: 16

26 A. No.

27 61 Q. What about the cascading effects of other possible
28 planning applications like the Semeuro petroleum
29 storage facility, you said there something about if

1 there are two similar type of properties or type of
2 developments, you consider it as the same type of risk?

3 A. I am not familiar now with this other development,
4 I know nothing about it, to be clear on that, but in
5 general terms industrial development would not be a 12: 17
6 problem certainly, strictly speaking probably outside
7 the blue line, but it could be slightly further out on
8 that. In other words, industrial development would be
9 considered suitable relatively close to that site.

10 62 Q. Okay. Now we are getting into the idea that the 12: 17
11 pipeline that will be on the establishment going from
12 the tanks out up to Foynes, or wherever the pipeline is
13 going, some of that pipeline is going to be on the
14 establishment and do you not think it's credible that
15 there could be leaks in that pipeline? 12: 17

16 A. I suppose it is.

17 63 Q. Any possibility of leaks in that pipeline within the
18 establishment for this planning application, they have
19 not been taken into account; is that correct?

20 A. I am not sure on that now, I cannot absolutely give you 12: 18
21 an answer on that.

22 64 Q. From what I see there now you have a terminal without
23 any pipelines and they have given risk assessments on a
24 certain type of credible events, but none of them
25 include the pipeline and you said that the pipeline is 12: 18
26 in the establishment ... (INTERJECTION)

27 A. I am trying to probably summarise a lot of what I have
28 dealt with. I seem to have a recollection about that
29 pipeline, a discussion about it, I do seem to have a

1 recollection about it. Perhaps it was discounted.
2 I don't want to give an answer to a technical question
3 just off the top of my head on this one. Perhaps I can
4 be given assistance there on whether it is or not. My
5 recollection is that it may have been raised. 12: 19
6 **MR. FRANKS:** Mr. Inspector, if I can
7 just clarify. The pipeline
8 is actually considered in the QRA, the above ground
9 installation associated with it is covered in the QRA.
10 **INSPECTOR:** Thank you for that 12: 19
11 clarification.
12 **MR. McELLI GOTT:** Sorry, I didn't understand
13 what he said, could he
14 repeat it.
15 **INSPECTOR:** He said that the pipeline 12: 19
16 and the above ground
17 installations which would be associated with it were
18 included in the QRA.
19 **MR. McELLI GOTT:** There is something
20 difficult there so because 12: 19
21 the planning application for the pipeline has not been
22 submitted yet so how do they know where they are going
23 to be put it in and if they know where they are going
24 to put it in why is it not in the application because
25 you cannot have one without the other. 12: 19
26 **INSPECTOR:** Do the Applicants wish to
27 answer that?
28 **MR. O' NEILL:** If I could just take
29 instructions. If I may

1 deal with that, Sir. Apart from the pipes which are
2 the intimate part of the facility itself, the
3 application also assumes and the QRA also assumes that
4 there will be a pipeline going to the boundary of the
5 facility, this would be the pipeline to connect up to 12: 20
6 the BGE National Grid and of course which would be the
7 subject of a separate application so it is anticipated
8 there will be pipelines connecting up to the BGE site
9 or BGE grid and insofar as they are contained within
10 the site they have been assessed as part of the QRA. 12: 21

11 **INSPECTOR:** You are talking about known
12 technology and the likely
13 layout of that?

14 **MR. O'NEILL:** That I would understand,
15 that will be dealt with in 12: 21
16 due course by someone appropriately better qualified
17 than I am to answer that question, Sir.

18 **MR. McELLI GOTT:** Mr. Inspector, in the
19 pre-consultation
20 discussions between An Bord Pleanála and Shannon LNG, 12: 21
21 An Bord Pleanála specifically raised the issue of
22 assessing major accidents on the transportation of LNG
23 out of the terminal and they asked the question of
24 transportation of LNG on road, but the answer from
25 Paddy Power was that it was going via a pipeline. He 12: 21
26 said there from Shannon LNG just now that they presume
27 there is going to be a pipeline up to the boundary,
28 will there not be a pipeline from the boundary into the
29 tanks on the establishment?

1 **MR. O'NEILL:** Perhaps I didn't make
2 myself clear, Sir. What
3 I was talking about was a pipeline from the tanks to
4 the boundary of the property. Obviously a pipe has to
5 continue underground a further distance to connect up 12: 22
6 to the National Grid and that is the pipe that I was
7 talking about which will be the subject of a separate
8 application and an assessment.
9 **MR. McELLI GOTT:** I had a brief look at the
10 QRA and I saw nothing about 12: 22
11 any risks being done on accidents from the pipeline,
12 would they answer that, was there a risk assessment
13 criterion on accidents from the pipeline?
14 **MR. FRANKS:** Sir, it's covered in my
15 statement which I think we 12: 22
16 are due to take later today, perhaps we will address it
17 then.
18 **INSPECTOR:** Okay, we will do that.
19 65 **Q. MR. McELLI GOTT:** Can I further go on so.
20 The EIA, the European 12: 22
21 environmental assessment directive says that you cannot
22 have project splitting, would you not agree that the
23 possibility of many cascading events or ignition
24 sources that could occur, credible ignition sources,
25 one of the chief ones being static build-up that could 12: 23
26 be caused from, say, high powered electric cables that
27 would help provide an ignition source and these have
28 not been taken into account in the risk assessment?
29 **A. MR. CONNEELY:** Based on existing?

1 66 Q. Based on this current application because there is
2 power lines that have to go into it, there is the
3 pipeline, they are suggesting that a gas fired power
4 station will be put on the site, subject to a separate
5 planning application, they say that electricity to be 12: 23
6 supplied via 110 kV lines from the ESB network at
7 Tarbert will also be subject to a separate planning
8 application so what I am looking at here is I am
9 looking at a planning application that is going ahead
10 and they are putting in the minimum for this planning 12: 24
11 application so you cannot look at all the possible
12 credible accidents that are occurring that will
13 eventually occur on that site, you are doing it in a
14 piecemeal method do you not agree that you are not
15 looking at all the credible accident scenarios because 12: 24
16 not everything that is needed for this project is being
17 taken into account?

18 A. As I have said already we advise on what's submitted to
19 us and that's the project that was submitted to us and
20 the QRA dealt with that. We have given our advice to 12: 24
21 date on that. Again as I say we don't move outside of
22 that, for us we don't move outside of that.

23 **MR. McELLI GOTT:** Once again we want the
24 Inspector to note that it
25 is not possible for the HSA to give all safety advice 12: 25
26 on this project because the full project is not being
27 put forward for planning permission at this stage so we
28 do not see what exactly is being built on the site so
29 the HSA is not able to assess all the risks that are

1 possibly going to take place on the site.

2 67 Q. **INSPECTOR:** Mr. Conneely, does the HSA
3 have a role when the power
4 lines or the gas pipeline are put in subsequently, do
5 you revise your assessment? 12: 25

6 A. If the permission is given and they notify then as
7 being covered by the regulations, we did highlight we
8 had quite a role in there in terms of before
9 construction and before operation they must submit
10 safety reports to us which would be quite substantial 12: 26
11 documents outlining that they are taking all necessary
12 measures to prevent and/or mitigate against major
13 accidents so issues like that would come up in that
14 context. As I said earlier there is a European
15 standard there on these type of facilities and they 12: 26
16 would be measured against that. So they have committed
17 I think anyway to comply with that, but that's what we
18 would measure them against.

19 68 Q. **INSPECTOR:** Supposing you find that
20 there is suddenly an 12: 26
21 unacceptable risk, can you stop the project at that
22 stage?

23 A. Yes.

24 69 Q. **MR. McELLI GOTT:** Mr. Inspector, you must
25 note that this project is 12: 26
26 so big that they are never going to stop it at that
27 stage. Would you not agree, Mr. Conneely, that once a
28 massive project like this starts on a greenfield site
29 that's it, it has started?

1 A. I have no comment on that.

2 INSPECTOR: That's your view.

3 MR. McELLI GOTT: I am just asking would he

4 think that would be the

5 same. 12: 27

6 INSPECTOR: It would be his view too or

7 not his view, it's neither

8 here nor there. If you want to express that as a view

9 express it as a view.

10 MR. McELLI GOTT: Okay, I express that as a 12: 27

11 view so.

12 INSPECTOR: Mr. Robinson.

13 70 Q. MR. ROBINSON: I would like to ask one

14 further question. Will you

15 be reviewing your advice with regard to the Goa report 12: 27

16 that I mentioned yesterday to the US Congress made by

17 19 of the top world LNG experts when they report later

18 this year?

19 A. Yes.

20 71 Q. You will be reviewing your advice? 12: 27

21 A. Yes.

22 MR. ROBINSON: Thank you.

23 INSPECTOR: Ms. Griffin.

24 72 Q. MS. GRIFFIN: Catriona Griffin.

25 Mr. Conneely, to your 12: 28

26 knowledge once a large scale project has started in

27 Ireland has one ever been stopped due to a change or

28 due to health and safety issues?

29 A. Just to health and safety issues, none springs to mind.

1 73 Q. So I would say it's very unlikely that if this project
2 starts in my opinion no whatever what is discovered
3 later on it's going to be very difficult to get it
4 stopped?

5 A. Well, you may have that view. I suppose I can only 12: 28
6 tell you what our role is and it's clear enough. We
7 have an inspection role there and there is a duty on
8 the operator to do various things. That's what the
9 unit I work with spend most of their time doing is
10 inspecting those type of facilities and following up on 12: 29
11 issues relating to them. We are there to enforce the
12 regulations at the end of the day.

13 74 Q. **MR. McELLI GOTT:** You said you requested
14 further information from
15 the Applicant, I think you wrote 20 questions in an 12: 29
16 e-mail, what was that further information to the
17 Applicant that we have not been given?

18 A. I can read you the list of questions if you wish.

19 **MR. O' NEI LL:** The questions in fact, I am
20 sure Mr. McElligott is 12: 29
21 aware, the questions are actually on the table, the
22 questions and answers are on the table and have been
23 for the past few days.

24 **I NSPECTOR:** Mr. McElligott, have you
25 had an opportunity to look 12: 29
26 at those questions?

27 **MR. McELLI GOTT:** No, I did not realise,
28 I was not notified that
29 they were on the table.

1 **MR. O' NEI LL:** We actually indicated the
2 other day that they were
3 being put on the table just before the QRA report was
4 put on the table.
5 **MR. McELLI GOTT:** They were being put on the 12: 29
6 table, you never said the
7 questions that were asked by the HSA to Shannon LNG
8 were being put on the table.
9 **MR. O' NEI LL:** Yes, we did.
10 **MS. GRI FF I N:** You said the QRA was being 12: 30
11 put on the able.
12 **MR. McELLI GOTT:** The QRA was already
13 provided but he said
14 nothing questions.
15 **MR. O' NEI LL:** And the questions and 12: 30
16 answers I said
17 subsequently.
18 **MR. McELLI GOTT:** I didn't hear that. Did
19 you hear that,
20 Mr. Inspector? 12: 30
21 **I NSPECTOR:** I cannot say.
22 **MR. McELLI GOTT:** Could we know what the
23 questions are now.
24 A. Okay.
25 **MR. O' NEI LL:** In fact there were more 12: 30
26 copies of the questions and
27 answers on the table than now exist so some people have
28 taken them.
29 **MR. McELLI GOTT:** I would like it just to be

1 recorded what the questions
2 were.

3 A. Okay. The questions raised on November 15th was:
4 Where in the EIS QRA were the exact dimensions of the
5 tank and also the exact dimensions of the bund area; 12: 30
6 what pool fire sizes were modelled; could the Applicant
7 point to an article on the suitability of using LNG
8 event modelling; confirm whether methane or a custom
9 mixture was selected PHAST for LNG modelling; if the
10 NFP 59a [?] approach was followed what would be the 12: 31
11 accident of those deterministic zones; what is the
12 basis for the retention capacity in 6.8.5 of the QRA;
13 can you be more explicit on the failure frequencies
14 used in table 3.3, they do not appear to accord with
15 the frequencies used in Chapter 6-7 or 6K; there is a 12: 31
16 missing reference to a figure on page 42; can you
17 demonstrate explicitly that the criteria in annex A,
18 tables A2 of EN 1473, 2007 and A4 will be met; can
19 I take it that the commitment to comply with EN 1743 of
20 1997 now applies to EN 1473 of 2007. 12: 31
21

22 I suppose I should have called those out by numbers
23 because I am running through them, it could probably
24 cause confusion, sorry about that. 11: Have you
25 checked the sensitivity of the risk output (a) in 12: 32
26 relation to the proportion of the time the tank is
27 full, 90% full, etc., page 7 of the QRA, (b) in
28 relation to the use of failure frequencies in the
29 Purple Book; 12. Can you point me to a map that best

1 shows the nearest occupied dwellings in relation to the
2 site; 13, following receipt to a response to question
3 3, should dispersion modelling be to 0.85 of the lower
4 flammable limit rather than the full lower flammable
5 limit?

12: 32

6
7 The following questions then arose following a meeting
8 with Shannon LNG on December 13 at which they presented
9 the formal responses to the above questions: This is
10 question 14: What is the composition of Liquefied
11 Natural Gas and by how much does it vary; 15. Is the
12 use of methane as opposed to a mixture of methane and
13 heavier hydrocarbons appropriate when performing
14 consequence analysis; 16. What is the rationale for
15 exclusion of vapour cloud explosions from the QRA, what
16 are the implications of the bund speed incident
17 experience for the QRA; 17. Please provide
18 justification for the frequencies and durations of
19 unloading arm failures used in the QRA; 18. Please
20 provide further information regarding vapour cloud
21 ignition distances at the incidents in Cleveland Ohio
22 in 1944, if available; 19. Is there any credible event
23 at the terminal that could lead to a major
24 environmental accident; 20. Should both early and late
25 pool fire results be used in a risk based approach
26 where early and late ignitions have been the sign of
27 probabilities.

12: 32

12: 33

12: 33

12: 33

28 **MR. McELLI GOTT:**

Mr. Inspector, the answers
are not on the table.

1 MS. GRIFFIN: I just cannot find them,
2 maybe they are.

3 MR. O'NEILL: I understand in fact we are
4 now getting more copies,
5 but there were quite a number of copies, I don't know 12: 34
6 exactly how many. One has just been taken and I think
7 Ms. Griffin has arrived just too late. Mr. Lynch is
8 handing over his copy and we will make more copies
9 available as soon as possible and we will put them on
10 the table. 12: 34

11 75 Q. MR. McELLI GOTT: There was a report in the
12 O' Sullivan report, it
13 mentioned that if a vapour cloud starts that you could
14 possibly ignite the vapour cloud before it moved into
15 populated areas, did you look at anything to do with 12: 34
16 that?

17 A. Which O' Sullivan report is this?

18 76 Q. It was the O' Sullivan report, I think. I will just get
19 back to that question. Dr. Koopman pointed out that
20 there was an error in the QRA. He said that the flash 12: 35
21 fire hazard distance for a large hole D in the storage
22 tank is 11.3 kilometres down wind, but the frequency
23 estimate for such a hole is zero; therefore, the risk
24 is zero, but in the body of the report a frequency of
25 $5e$ to the power of minus 8 is used for a catastrophic 12: 36
26 failure, not zero, did you notice this error on the
27 QRA?

28 A. No.

29 MR. FRANKS: Sir, I would be happy to

1 deal with that when we
2 discuss the QRA later on.

3 77 Q. MR. McELLI GOTT: Can I be very speci fic
4 about one issue. You have
5 not questioned the possi bility of an LNG spill on 12: 36
6 water; is that correct?

7 A. You will have to be more speci fic about that questi on
8 now exactly what you mean by that.

9 78 Q. The QRA does not deal with any LNG spills on water from
10 my brief reading of it? 12: 37

11 A. It would deal with spills at the jetty involv ing
12 failures of the loading arms.

13 79 Q. Spills onto water?

14 A. It is certainly a possi bility, I would guess.

15 80 Q. You would guess? 12: 37

16 A. Yes.

17 81 Q. I mean you either did look at it or you didn't or it
18 does deal with it or it doesn't?

19 A. I am trying to answer for a lot of detail. I can look
20 at my notes and I suppose find out and come back to you 12: 37
21 on it. At this stage my recollection would have been
22 I suppose if it did leak what would happen, it could
23 catch fire or it could spread and you could have a
24 flash fire, would it have made any di fference, what
25 would the di fference be there, I wouldn't have 12: 37
26 appreciated it as signi ficant, but I would have to look
27 at it before I can give you a precise answer on that.

28 82 Q. You don't think Dr. Havens video yesterday showed that
29 it would be a little bit signi ficant?

1 A. In what sense?

2 83 Q. It was just a very small spill of LNG on water, what we
3 saw was from a small spill of LNG on water?

4 A. I don't think there is any dispute that if there is a
5 spill on water there is a chance that it will ignite, 12: 38
6 so I agree with that, yes, certainly.

7 84 Q. You do not agree that it would be significant given
8 what you saw in the video yesterday?

9 A. It relates to the quantities, it relates to the
10 quantity that is spilled. 12: 38

11 85 Q. Yes, but the quantity was very small, wasn't it?

12 A. It was, but I don't have the precise figure for that.
13 As I said I made notes as his presentation yesterday,
14 I will look at the quantity, but I just cannot do a
15 direct comparison for you while I am up here as to how 12: 38
16 that relates to the QRA, if that's the question you are
17 asking me.

18 86 Q. Yes. I just want to ask again so does that not mean
19 that there are a lot of LNG specific issues in this
20 application that would not normally be considered in 12: 38
21 other major hazardous sites because your land use
22 planning criteria is based on a fertiliser plant up in
23 Palmerstown?

24 A. No, that's a misunderstanding. We have a framework for
25 giving advice, it depends on the identification of 12: 39
26 hazards on a particular site and different sites will
27 have different types of hazards. The Kilkenny document
28 is a published document of our advice to Kilkenny
29 County Council in relation to a fertiliser plant and

1 it's based on our own QRA assessment that we carried
2 out. The front of that deals specifically with the
3 application in relation to the site at issue which was
4 in the vicinity of a fertiliser plant. The remainder
5 of that document is general and outlines how we 12: 39
6 approach land use planning and in fact I have quoted
7 quite extensively from it in my presentation today.
8 There is a substantial amount of detail in there about
9 what we do look at and for bulk storage sites we look
10 at one things, for LPG sites we look at something else, 12: 40
11 for fertiliser plants we would look at, and it sets out
12 then in somewhat more detail in that document how we
13 look at fertiliser plants, but it is a general document
14 and it summarises the approach of the Authority to land
15 use planning in somewhat more detail than I have given 12: 40
16 today.

17 87 Q. When you say there at the very beginning that you are
18 only using a risk based approach, could An Bord
19 Pleanála possibly ask you to take a consequence based
20 approach to this planning application or is there 12: 40
21 something in legislation that says you take one or the
22 other? For example, for us there are serious issues
23 that are not being dealt with because of the
24 consequences of an accident, we are not just looking at
25 the probabilities of an accident so it seems to me that 12: 40
26 there are certain areas of safety that are just not
27 being addressed and I think we are in a bit of a
28 quandary here that we do not know really who deals with
29 them, but if An Bord Pleanála made a ruling that they

1 wished for this particular application to look at the
2 consequences of credible accidents, for example as
3 outlined by Dr. Havens yesterday, would the HSA then
4 have to look at what An Bord Pleanála would have asked
5 them to do?

12: 41

6 A. I will answer you in a couple of ways there. An Bord
7 Pleanála I suppose can do what they wish, it's not up
8 to us. They ask us for technical advice so we give
9 them technical advice. The wording in the regulation
10 says we advise them on the risks. Now. Risks includes
11 consequences and likelihoods, I suppose. It's a
12 question of maybe deciding what's best practice in
13 particular situations, but we have a risk criterion for
14 new establishments from our board paper so therefore
15 for new establishments we would look at the risk rather
16 than the consequence. There are countries in Europe
17 that have more of a consequence based approach rather
18 than a risk based approach. My understanding there
19 would be that in deciding these matters they don't look
20 at the consequences of worst events, they look at what
21 they call credible events so there is a judgment there
22 made to the likelihood, it's not explicit, it is more
23 'this is credible, this is not credible' and they would
24 look at that.

12: 41

12: 41

12: 42

25 88 Q. Is there anything obliging you to take just the risk
26 based approach. If An Bord Pleanála asked you would
27 you look at this specific case, because this is the
28 first LNG terminal in Ireland, to look at it with a
29 consequence based approach, is there anything in the

12: 42

1 legislation that stops you from doing that? You said
2 the criterion you use, but who decides what that
3 criteria is, does that decision on the criteria you are
4 going to use come from legislation itself or does it
5 just come from a decision of the Authority that that's 12: 42
6 the criteria they are going to use?

7 A. I would say it comes again from two sources. It does
8 say in our regulations we advise on the risks and the
9 Authority in its policy has set out criteria based on
10 risks. 12: 43

11 89 Q. Is the policy set on regulations or do you set your own
12 policy, can that be changed for this specific case?

13 A. The policy follows from the legislation. The
14 legislation says give the advice on the risks.
15 I suppose as we are giving technical advice it's up to 12: 43
16 us maybe sometimes to decide technically what's the
17 right thing to do and technically we have decided for
18 new establishments the right thing to do is go with the
19 risks.

20 90 Q. So if An Bord Pleanála then said there seems to be 12: 43
21 issues here that are not being dealt with by other
22 statutory bodies and there is a certain area or certain
23 parts of the safety aspects that are not being dealt
24 with, if you were asked by An Bord Pleanála to look at
25 this using both a risk based approach and a consequence 12: 43
26 based approach would there be any rules within the HSA
27 that would prevent you from doing that?

28 A. I don't know how to answer that except if they did ask
29 us it would take us quite a long time to give them a

1 response. It would require us to develop a framework
2 around that and also as well as that to make a judgment
3 in any case. What I am saying is we are required to
4 give technical advice, our technical advice -- and I am
5 not prejudging the matter in any way, if we were faced 12: 44
6 with that we would have to say do we think it is
7 suitable or not and if we were to give advice on that
8 basis how would we give advice on that basis and would
9 we think it is appropriate. I am not prejudging it and
10 I don't know how we would respond, I have no idea. 12: 44

11 91 Q. You just said there that you would take time, do you
12 feel that you are under pressure with the fast track
13 planning process here to give an answer quickly, if you
14 had more time you would be able to do that; is that
15 correct? 12: 44

16 A. We got two extensions from the Board to submit our
17 advice so certainly it was challenging.

18 92 Q. It was challenging, okay. So when the advice was
19 challenging do you think you might have given a better
20 opinion if you had had more time to give it? 12: 45

21 A. I think we have given a good opinion. Notwithstanding
22 that obviously there is more information there that we
23 do look at. There were time constraints on everybody
24 involved. We had some discussion about 9 January
25 versus the 10th or the 11th, but the documents that 12: 45
26 were submitted to us in any case could not have been
27 responded to within the time frame, your documents in
28 other words, even if we hadn't given our advice until
29 the 11th. We will look at those documents. Our view

1 is that if we consider the advice we have given is
2 incorrect we will change it or we would advise the
3 Board and what the Board do after that is a matter for
4 them.

5 **MR. McELLI GOTT:** I would like the Inspector 12: 45
6 to note that we are now
7 formally requesting that the Board would ask the HSA to
8 formally look at both the consequences of accidents as
9 opposed to just the risk criteria of an accident and to
10 use that to assess this project because there seems to 12: 46
11 be no other statutory body that will be doing that and
12 that's only for the land use planning criteria, that
13 does not include the marine aspect which I do not know
14 who could deal with that.

15 **INSPECTOR:** Okay. It's 12: 45. I am 12: 46
16 going to... (INTERJECTION)

17 93 Q. **MR. KEARNEY:** Adam Kearney. I just want
18 to ask Mr. Conneely have
19 the HSA seen fit to engage any independent LNG
20 expertise in compiling their report? 12: 46

21 A. Not in this situation, no, we did not. The Authority
22 took a view I suppose from the beginning of the land
23 use planning that while consultants generally will do
24 the QRA for the Applicants that in the normal course of
25 events we would not engage consultants to assess that 12: 47
26 because as happens in some other countries you end up
27 with consultants talking to consultants and everybody
28 else is out of the loop. The view was taken that the
29 competence would be developed in the inspectors to do

1 that. Having said that if the Authority is of the view
2 that it doesn't have to competence to deal with it, it
3 would get advice, it would seek expert advice.

4 94 Q. Would it be within the remit of the HSA to conduct an
5 independent QRA? 12: 47

6 A. I suppose we have conducted QRAs ourselves, but it does
7 take up a lot of resources, the example that was
8 referred to earlier in Kilkenny. I would in the Corrib
9 case we consulted one as well or carried out one. I am
10 aware of several other planning applications where it 12: 47
11 was carried out. It depends on a number of factors and
12 I suppose it depends on the particular situation so we
13 could go either way, we have the option.

14 95 Q. Would you not see fit to conduct an independent QRA and
15 this is the first LNG of its type in the country? 12: 48

16 A. Well, we considered whether it was necessary or not, we
17 felt that in land use planning terms the issues are not
18 maybe as complicated, they are relatively
19 straightforward in determining what the major accidents
20 are. I think generally in the literature there is a 12: 48
21 lot of agreement out there as to what the major
22 accidents are and the consequences of those. There is
23 possibly less agreement on the likelihood, but for
24 those reasons it was decided that we would not carry
25 out our own, but we would go with the Applicants QRA 12: 48
26 making it clear precisely what it was we wanted dealt
27 with.

28 **INSPECTOR:** One more question,
29 Mr. Kearney, make it a good

1 one.

2 MR. KEARNEY: I will hand it over to

3 Mr. McElligott.

4 96 Q. MR. McELLI GOTT: In giving your advice, your
5 land use planning advice, 12: 49
6 does that advice not include the possibility of other
7 port facilities or other ships within those contours?
8 What I am thinking of, Shannon LNG say that it will not
9 affect other marine use or deep water use of the port,
10 but does the advice of other types of developments that 12: 49
11 you advise for or against, say, for example, for other
12 ships coming right up to within those contours?

13 A. Well, I suppose again we are in the establishment area
14 and that's what we are looking at. We give advice
15 there on what the risks are. It's not necessarily us 12: 50
16 that would follow up on those issues; in other words,
17 the marine area might not be under our control.

18 97 Q. Say mooring facilities for ships or other ships within
19 those contours, you deal with houses, residents and you
20 say types of establishments that could take place 12: 50
21 within those contours, but you not mention anywhere
22 about actually mooring facilities for ships that would
23 come into the port, you have given no judgment on that,
24 just the facilities for holding ships, not the actual
25 ships coming in but the actual mooring facilities for 12: 50
26 ships?

27 A. I am not clear.

28 98 Q. Because what I really mean is that if you don't deal
29 with the maritime aspect of it when a ship comes in

1 that might be some other department that deals with
2 that, but when it's attached to a port there are port
3 facilities that would exist so would you advise against
4 port facilities, you do not mention anything about port
5 facilities that could exist in that contour and is that 12: 51
6 taken into account in the advice you gave as well
7 because a sort of land use planning, the facilities for
8 ships?

9 A. I suppose we probably should recognise that we deal
10 with the risk on the site itself to be tolerable for 12: 51
11 workers so if it's a work related activity, and this is
12 off the top without looking at it, it is likely I would
13 say that work related activity would be considered
14 acceptable.

15 99 Q. You say also the type of establishments, you say 12: 51
16 houses, hotels so you do say it's a type of
17 establishment that is allowed, port facilities are not
18 included in that criteria?

19 A. They are not included. I would like to think about
20 that without giving you an answer off the top of my 12: 51
21 head.

22 **MR. McELLI GOTT:** We would like to request
23 the Inspector would port
24 facilities be included in the land use planning advice
25 that the HSA should take into consideration when giving 12: 52
26 to An Bord Pleanála, would the site be suitable for
27 other deep water facilities.

28 **INSPECTOR:** Okay, thank you,
29 Mr. McElligott. I see

1 Mr. Fox you have your hand up.

2 100 Q. MR. FOX: Mr. Inspector, I have just
3 two questions arising out
4 of that. Will this document sterilise the land to the
5 west of the site, you mentioned there in your 12: 52
6 submission that other suitable developments near but
7 outside the blue line?

8 A. I suppose I have also said that we haven't finalised
9 the contours yet. Certainly the QRA would form the
10 basis for that, but we are looking at some of the 12: 52
11 sensitivities there to see that maybe we would extend
12 on a little bit. By and large they would be quite
13 close to the contours that were on that map. It's
14 likely that industrial development would be permitted
15 quite close to that facility. 12: 53

16 MR. FOX: The second point I had
17 there, Mr. Inspector. The
18 joined-up thinking in relation to the overhead lines,
19 I foresee a difficulty with the overhead line, the
20 planning permission, this body are well aware that in 12: 53
21 other parts of the country there is stiff resistance to
22 the building of overhead pylons and I would like An
23 Bord Pleanála to take into account, I have said it the
24 other day, about underground cabling that will
25 eliminate that particular problem. Thank you. 12: 53

26 101 Q. INSPECTOR: Just hold on,
27 Mr. McElligott. I would
28 just like to ask you would the undergrounding of the
29 overhead lines and the undergrounding of the pipeline

1 make a significant difference to the impact of the
2 proposed development and the power line and gas
3 pipeline taken together?
4 A. That's a difficult question to answer from up here.
5 I would suspect not, but I would not hazard a proper 12: 54
6 response to that without looking at the contribution to
7 the risk and taking those out of it. I wouldn't like
8 to give an answer from here. I could come back to you
9 on it.

10 102 Q. **INSPECTOR:** Maybe it's not appropriate 12: 54
11 to ask a top of the head
12 reaction?

13 A. In general we prefer pipes and power cables to be
14 underground because there is less likelihood of things
15 happening with them. Now, what is the absolute value, 12: 54
16 I cannot give you that. We have certainly a site which
17 has a power line moving over it which we are trying to
18 get rerouted so we have a preference for it, how big a
19 contributor it would be I wouldn't like to hazard a
20 guess. 12: 55

21 103 Q. **MR. McELLI GOTT:** Mr. Tom O'Connor here next
22 to me from Ardmore, he is
23 within 400 metres of the tanks so if the contour lines
24 are going to change I think it would be good to hear
25 from him now. You said the contour lines are not 12: 55
26 completely fixed yet and they are on the verge of
27 several residences?

28 A. I also said that even if they do move, certainly based
29 on the sensitivities, for example that nearest

1 residence would still be less than 1 by 10 to the minus
2 6 so they won't move very far, but they will possibly
3 move a little bit.

4 104 Q. I notice that some of the contours are right -- they
5 seem to have found the contours just right outside 12: 55
6 somebody's residence and Tom O'Connor is one of those.
7 Maybe you should just hear from Tom O'Connor there for
8 a minute.

9 **INSPECTOR:** Can we have the contour map
10 again. Mr. O'Connor, that 12: 56
11 contour map is not very clear to me in relation to your
12 house. Can you show us where your house is?

13 **MR. O'CONNOR:** It would be
14 Termkineely, it would be
15 east of Termkineely. (Indicating) it's east of that -- 12: 56
16 no, west.

17 **MR. CONNEELY:** I think that would remain
18 outside the zones.

19 105 Q. **INSPECTOR:** Essentially you are talking
20 about a fine tuning? 12: 57

21 A. Yes, that's correct.

22 106 Q. **INSPECTOR:** As you are thinking of it?

23 A. Yes.

24 **INSPECTOR:** Okay. Do the Applicants
25 have any questions they 12: 58
26 want to raise?

27 **MR. O'NEILL:** No, sir.

28 **INSPECTOR:** The planning authority?

29 107 Q. **MR. SHEEHY:** Mr. Conneely, could you

1 just clarify for us, the
2 red line, what's inside the red line is zone one?

3 A. I suppose to be clear there the zones I showed
4 previously were for existing establishments. This is a
5 new establishment. The criterion we have is that the 12: 58
6 1 by 10 to the minus 6 should not extend to residential
7 development. Specifically in relation to this we will
8 have to develop the advice around the zones a little
9 bit, but in terms of that, yes, the inner zone, the 10
10 to the minus 5 is the red zone; 10 to the minus 6 is 12: 58
11 the blue zone; and 3 by 10 to the minus 7 is the green
12 zone.

13 108 Q. **MR. McELLI GOTT:** Mr. Conneely, does that
14 mean if you have a contour
15 around just one tank, just assuming there is only one 12: 59
16 tank being built, that you would not advise against
17 another tank being built right next to it which is
18 outside the red zone?

19 A. The standards suggests a suitable distance for tanks on
20 a site, for example, I think it's half a diameter of 12: 59
21 separation distance. It is common to have multiple
22 tanks on a site.

23 109 Q. They are going to really only want to build one or two
24 in the beginning so if they want to build one that's a
25 red contour and the lower one would say you shouldn't 12: 59
26 build in the blue zone something dangerous or within a
27 specific distance, is it not strange then that they
28 would have four tanks and the red contour doesn't go
29 around the other four tanks because if there is an

1 accident in one and you could have cascading effects on
2 other tanks?

3 A. Because of the construction of the tanks the
4 catastrophic failure is more or less so rare it will
5 not contribute greatly to the risk so the contributors 13:00
6 to the risk there are smaller events. They have a sump
7 there where the LNG will run in and, therefore, that
8 tends to be the source of most of the events, the one
9 with the highest risk, that's why that has that
10 structure. 13:00

11 110 Q. Have you based all this on tanks of 50 metres height or
12 60 metres height ... (INTERJECTION)

13 INSPECTOR: I think we had that issue
14 yesterday.

15 111 Q. MR. McELLI GOTT: I wonder did that change 13:00
16 anything in the risk
17 assessment?

18 A. The issue there would be the quantities that are
19 released rather than the heights of the tank and how
20 much would be released over what period. 13:00

21 112 Q. INSPECTOR: Can I just clarify the red,
22 that marks a sump; is that
23 right, the red contour just to the south of the first
24 two tanks?

25 A. Yes. 13:01

26 113 Q. INSPECTOR: There is another sump
27 between the next two tanks,
28 is that of lesser significance?

29 A. I would have to look at the QRA to be able to give you

1 an answer on that, perhaps the Applicants can.

2 114 Q. MR. McELLI GOTT: Don't those red contours
3 represent places where
4 accidents could start and those contours around the
5 source of the accident, what about the pipelines, if 13: 01
6 there is a problem with the pipeline which is on the
7 boundary ditch for instance, shouldn't there be a
8 contour around an accident in the pipeline as well?

9 A. It depends on the risk, you add up the risks and you
10 see where the risks are. What that is representing is 13: 02
11 the risk and as it decreases then it shows another
12 contour. Obviously there are lots of contours in
13 between for intermediate risk and there is obviously
14 somewhat a lower risk outside even the 3 by ten to the
15 minus 7, there is a somewhat lower risk outside of 13: 02
16 that.

17 115 Q. Don't we have a lot of accidents really with pipelines.
18 There was one there just a couple of months ago in
19 Saudi Arabia and it killed 27 people, that was just in
20 October. That was a pipeline going towards a LNG 13: 02
21 terminal, a liquefaction plant I think it was, but
22 accidents on a pipeline will move the contour to
23 different parts, but we are not looking at that at the
24 moment and then residents' houses would be within the
25 contours if you concluded those? 13: 02

26 A. A considerable portion of the QRA dealt with pipe and
27 pipe technology. They have argued that obviously a
28 pipe and pipe is safer than just a pipe alone. The
29 risk associated with that pipe is lower than a standard

1 pipe so I think the risks associated with the pipeline
2 are low.

3 116 Q. There is nothing in the QRA I see with the criterion
4 that mentioned the pipeline?

5 A. Oh, no, there is a significant portion of an argument 13:03
6 in there because I remember discussing it with the
7 Applicants about the technology.

8 MR. McELLI GOTT: I would like to Applicants
9 to refer to where in the
10 QRA that is because I think this is important. 13:03

11 MR. FRANKS: Would you like me to answer
12 that now or do you want to
13 deal with that when we get to my evidence?

14 INSPECTOR: Unless you feel that this
15 would affect Mr. Conneely 13:03
16 in any way, if it's just going to be clarification
17 later on maybe then it would be better done later on.

18 MR. FRANKS: Okay.

19 INSPECTOR: Ms. Griffin.

20 117 Q. MS. GRIFFIN: Catriona Griffin. The 13:04
21 outer red contour zone out
22 on the water, my eyesight is letting me down a bit
23 here, is that around a ship or around the jetty?

24 A. It's around both.

25 118 Q. Around both. So if a ship is not moored at the jetty, 13:04
26 say it's just coming into the jetty and it is say a
27 couple of hundred metres out wouldn't that affect the
28 contour lines? I know you will probably say that it's
29 not land based and it doesn't refer to you.

1 A. It doesn't refer to the activity at the jetty. We take
2 account of the activity at the jetty, outside of that
3 we don't take account of it.

4 119 Q. Who takes account of it?

5 A. I would say the port authority, but I am not giving you 13:04
6 an absolute answer, that's who I think would be looking
7 after it.

8 **INSPECTOR:** I think we will be coming
9 to the port authority later
10 on today. Does that conclude, I mean we could go on 13:05
11 all day at this.

12 120 Q. **MR. McELLI GOTT:** If the port authority raise
13 issues then the HSA should
14 be there to reply back to some of the issues because
15 the port authority might talk about something and we 13:05
16 are going to realise 'what the HSA's perspective on
17 that' and we would need Pat Conneely there for that
18 submission as well.

19 A. I think we have made our role clear and where it stops.
20 I wouldn't see that I would have a role there. 13:05

21 **MR. McELLI GOTT:** Isn't that just the problem
22 we have here, that
23 different bodies are dealing with different things.
24 You say 'I talk about my issue, he will talk about
25 his'. 13:05

26 121 Q. **INSPECTOR:** We have taken your concerns
27 about that on board.
28 Mr. Conneely, you are going to rethink things; is that
29 right?

- 1 A. As you know, Chairman, we are under a lot of pressure
2 in relation to this. We did receive documents late but
3 within the period within which we indicated we would
4 look at them. We have not had an opportunity to do
5 that properly because in preparing for the hearing and 13:06
6 so on. We also were interested in some of the
7 testimony given. We will review our advice in the
8 light of the information we have and we will then write
9 to the Board if we have any reason to change it.
- 10 122 Q. **MR. McELLI GOTT:** Sorry, Mr. Inspector, he 13:06
11 has just said there that he
12 gave basically an opinion without having read all the
13 documentation because he was under pressure to give an
14 opinion, that is wrong?
- 15 A. It is clear we got the documents on 10 and 11 January, 13:06
16 they were submitted to us and we sent advice on
17 9 January.
- 18 123 Q. No. You asked for two extensions and An Bord Pleanála
19 kept saying you must get this in before 11 January
20 because we need it for the An Bord Pleanála hearing so 13:07
21 weren't you pushed to give an answer quicker than you
22 would have had if you had had the proper time, enough
23 time?
- 24 A. We always work under a dead line. Normally in 13:07
25 responding to planning requests we have five weeks to
26 respond. Now, there are possibilities for extensions
27 under certain circumstances so we are often under
28 pressure to give our advice.
- 29 124 Q. You felt under pressure to give the advice?

1 A. We were working to a deadline.

2 125 Q. Don't you think a top tier Seveso II site, LNG
3 terminal, it's not a planning application for a sewer.
4 Does he think that that would not have required more,
5 you should have forced your hand and you should have 13:07
6 said 'I am sorry, I am not giving you that answer as
7 quick as you want it, I am giving you the answer in the
8 time I think it should take to give the answer', do you
9 not think you gave an answer too quick?

10 A. No. We gave advice to the Board, we were satisfied to 13:08
11 give the advice. There was some confusion maybe on
12 when documents would come in and when we would consider
13 them. In fairness as we pointed out if there is
14 technical knowledge out there, if there is reputable
15 technical articles that point to something that we were 13:08
16 not aware of that might influence our advice we would
17 certainly look at that. If we did find technical
18 information to what has been submitted that would cause
19 us to alter our advice we would advise the Board on
20 that, I think we would be duty bound to do that. 13:08

21 126 Q. Does that not mean so that the advice you have given is
22 not definitive advice, you are going to, like the
23 Inspector said, look at it again so at the moment the
24 advice you have given, it's as if you have not given
25 any advice yet really because you must look at this new 13:08
26 documentation, is that not correct?

27 A. I can't add to what I have said.

28 127 Q. What I am saying is because you have said that you are
29 going to look at new documentation and new submissions

1 which were given to you within the deadline that you
2 had requested, that in actual fact you are invalidating
3 your declaration of 9 January because you have just
4 said that you must review it so it's as if you are
5 saying that that opinion you have given on 9 January is 13:09
6 invalid for the moment?

7 A. It is valid until we change it, one could put it either
8 way.

9 128 Q. It's not a final opinion so; is that correct?

10 A. As I explained we have given our advice to the Board. 13:09
11 We received documents which in fairness we are
12 examining, if it turns out that there is information in
13 there that would cause us to change our advice then we
14 would advise the board accordingly.

15 129 Q. Normally for a planning application you will give 13:10
16 advice and that's it. Now you have said that you are
17 going to take this new information on board so you
18 basically saying 'this is not our final opinion, we are
19 still examining it and then we are going to give an
20 opinion' so you are basically saying you have yet to 13:10
21 give a final opinion to the Board, is that not correct?

22 A. I have nothing further to add.

23 130 Q. **INSPECTOR:** Mr. Conneely, do you have
24 any idea how long it is
25 going to take you to give this? 13:10

26 A. Again it depends on our own resources. It would
27 require two or three days work probably and at that
28 stage we would be in a position.

29 **MR. McELLI GOTT:** You would hardly type it up

1 in two or three days for
2 god' s sake.
3 **INSPECTOR:** Sorry, what was that
4 remark?
5 131 Q. **MR. McELLI GOTT:** What I mean is there was 13: 10
6 such serious information
7 given to you, you cannot take two or three days to do
8 it, it will take longer to analyse all those documents?
9 A. Again the documents arrived on 10 and 11 January,
10 obviously we read them, but I am saying we need more 13: 11
11 time to consider any issues that are raised by them.
12 My judgment is two to three days full-time would clear
13 that.
14
15 END OF CROSS-EXAMINATION OF MR. PAT CONNEELY BY THE 13: 11
16 OBJECTORS
17
18 **INSPECTOR:** Okay. It' s 1: 10, we will
19 break for lunch. Maybe we
20 could reconvene at 2: 10 please. 13: 11
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24
25 (LUNCHEON ADJOURNMENT) 13: 11
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29

1 THE HEARING RESUMED, AS FOLLOWS, AFTER A LUNCHEON
2 ADJOURNMENT

3
4 **INSPECTOR:** Good afternoon everybody.
5 I wonder if people could 14: 14
6 take their seats when they are ready. Just in a
7 further deviation from the originally scheduled
8 sequence of events, I have decided that after the last
9 speaker from the HSA, Mr. Conneely, it would be wise to
10 ask the Shannon Foynes Harbour Authority to speak. So, 14: 14
11 I am going to call on Captain Coughlan. But before I
12 do that, I just want to point out that a lot of copies
13 of the questions and answers in relation to the HSA's
14 queries have been placed on the table. So, they are
15 there now. 14: 14

16 **MR. O'NEILL:** And also, sir, copies of
17 ecology reports, I think
18 you might have suggested that they might be put on the
19 table. They have been put on the table as well.
20 Clearly, if anyone wants some copies and if the copies 14: 15
21 have run out I would ask the person or person who
22 require an additional copy to ask us. Rather than us
23 having to monitor whether copies remain on the table or
24 not.

25 **INSPECTOR:** What I had intended in 14: 15
26 asking for the ecology
27 reports was the second survey which you were going to
28 carry out, I think, last summer and which didn't
29 actually appear in the EIS. Is that included in those?

1 MR. O'NEILL: Yes, it is, sir.

2 INSPECTOR: Okay, Captain Coughlan.

3

4 CAPTAIN ALAN COUGHLAN PRESENTED HIS SUBMISSION AS

5 FOLLOWS:

14: 15

6

7 MR. COUGHLAN: By way of introduction. My

8 name is Alan Coughlan and I

9 am the Harbour Master in the Shannon Estuary. I went

10 to sea in 1966, rose to the rank of Master with Irish 14: 15

11 Shipping and came ashore in 1982 to work in the Shannon

12 Estuary. I was appointed as Assistant Harbour Master

13 in 1982 and in 1993 I was appointed as Harbour Master

14 and I have been Harbour Master for the entire estuary

15 ever since. I might also add that I am also President 14: 16

16 of the International Harbour Master's Association,

17 which represents Harbour Masters in about 40 countries

18 throughout the world. That's just by way of

19 introduction.

20

14: 16

21 I thought that before getting into what we are about to

22 hear that it might be informative to people to know

23 what the Port Authority actually does, so hopefully it

24 will be a bit informative for you.

25

14: 16

26 We were established by Statute under the 1996 Harbour's

27 Act, that means we are actually governed by the State

28 and we have to work within certain rules and

29 regulations. Like any company set up, we have objects,

1 things we can try and achieve and things we can do.
2 One of the objects that is incorporated in us is to
3 take all proper measures for the management, control,
4 operation, development of its harbour and the approach
5 channels thereto. So, we have to control things 14: 16
6 properly and we have to ensure that development takes
7 place properly. The other objective, which might seem
8 a corollary of that, is to promote investment in its
9 harbour. So, there are two things what we can do,
10 among other things. 14: 17

11
12 The port limits: It is the biggest port in the
13 company, it runs from Limerick down to -- there is a
14 line joining Loop Head and Kerry Head there to the
15 west. You can see where the principle installations 14: 17
16 are at the moment, Limerick, Shannon Airport,
17 Aughinish, Alumina, Foynes, Tarbert Island Jetty,
18 which, sadly, is becoming decreasingly important, and
19 Money Point Jetty. As we all know, the proposed
20 development is directly opposite Money Point Jetty 14: 17
21 pretty much.

22
23 The types of ships we look at. I would like you to
24 remember this shot, if you could. That's a ship going
25 into Money Point and it is about the same size of the 14: 17
26 ships we are talking about will come to this LNG
27 project. We handle those as a matter of fact. We
28 handle them without incident. So just keep that shot
29 in your mind please. We also handle them with three

1 tugs. It has been in operation for nearly 20 years
2 without incident.

3
4 That's another installation at Aughinish. You can see
5 there is a big ship on the outside, it is about 70,000 14: 18
6 tonnes, and a small tanker on the inside in the region
7 of 12,000 tonnes. A small installation at Limerick
8 that handles ship at 5,500 tonnes and ships at Foynes.
9 The only reason I didn't show you the other two
10 installations, I don't have pictures of ships on them, 14: 18
11 so.

12
13 I dealt with this yesterday in a question and it
14 illustrates the level of traffic in the estuary here.
15 The total number of ships, it is the second line from 14: 18
16 the bottom, 905 ships in 2007. That makes the total
17 movements 1810. I did some calculations and I think my
18 notes tell me that it is a little under five ships
19 every day coming in and going out of the estuary.
20 That's nothing. Absolutely nothing. I would love to 14: 19
21 see 1000 ships a month come in and go out. It doesn't
22 happen. If we were to add the additional two ships a
23 week that Shannon LNG are talking about that brings the
24 annual movements up to 2018 per year, or 5.5 ships per
25 day. It is still nothing. That means that one of 14: 19
26 these ships, or any other ship, can arrive with
27 absolutely nothing else in the estuary. It is not
28 busy. It is not congested.

1 The range of cargoes we handle, it is not exhaustive
2 but it is indicative of what we do. We handle
3 dangerous goods, we handle petroleum, chemicals and
4 heavy fuel oil, which are not dangerous but it is a
5 pollutant, and we do it well. There are no incidents. 14: 20

6
7 So, how do we control things? What happens to a ship?
8 What happens? Who controls things?

9
10 Section 46 of the Harbours Act gives the Harbour 14: 20
11 Master, me, power to give directions as he thinks
12 proper for the purpose of protecting persons and
13 property or regulating traffic, and in particular for
14 the following purposes. This is all germane to what
15 people have been talking about in the last few days as 14: 20
16 far as I can see. Regulating the time at which and the
17 manner in which the ship may approach, enter into, go
18 out of or lie in or at any part of the harbour and
19 regulating the position, mooring, unmooring, placing or
20 removing of the ship. We do all of those things every 14: 21
21 day to ships.

22
23 If you look at regulating the time at which and the
24 manner in which. That's to do with the tides. A ship
25 just doesn't come in and say 'we are here now, take us 14: 21
26 in'. It is planned. It is well planned. It is well
27 thought out. There is a good structure to it. The
28 time of the tide may be very important to the time you
29 berth the ship. The manner in which the ship may

1 approach, it includes the speed, the amount of tugs
2 used, whether it is in daylight or in dark. Any of
3 these things can be regulated and are regulated on a
4 regular basis. Following on from that we can regulate
5 the take or discharge of ballast. That is really to do 14: 21
6 with the draft of the ship, we can tell the ship that
7 she must take more ballast to remain secure or she must
8 take ballast out in order to make a certain draft.
9 Regulating the loading or the discharge of the ship,
10 that's possible. We have bye-laws in place to do that. 14: 22
11 I will come to that a bit later.

12
13 This is probably very important. Preventing the ship
14 navigating within the harbour if the Harbour Master is
15 of the opinion that it is or may become a danger to 14: 22
16 navigation. In other words, if it is going to
17 interfere with something else do we move it? If it is
18 in an unsafe condition do we move it? If it is going
19 to sink do we move it? What do we do with it? These
20 are things with which we are charged and they are 14: 22
21 things that we deal with, happily, not on a regular
22 basis. But we have dealt with them before.

23
24 So, how do we get a ship into the port? We have a very
25 strict procedure. We need pre-arrival information from 14: 22
26 the ship. We need information about the ship, about
27 its machinery, about its crew, about its cargo, where
28 it has come from, what ports it has been to in the last
29 ten ports and we make a judgment whether we take the

1 ship in on arrival or whether we let her wait. But we
2 have to have this as a statutory requirement, all the
3 information must arrive in our office before the ship
4 can enter the port. That information is also sent to
5 Government so they can keep a record statistically of 14: 23
6 what ships came in and, also, keep a record of things
7 like the security implications.

8
9 When we get that information and there is a slot at a
10 berth we decide the time of entry. And it is our 14: 23
11 decision. It is not the ships. And it won't be LNG's,
12 it will be our decision. We decide the conditions of
13 entry. In other words, how many tugs do we want. If
14 the weather conditions are suitable. Any of these sort
15 of things we make a judgment on and we decide. We 14: 24
16 advise the agents who handle the ship on behalf of the
17 owners, they are here locally, they make all the
18 arrangements, and we advise the agents of the tug
19 requirements, line boats, any other requirement that we
20 have and they pass it on, organise it and get it at the 14: 24
21 jetty for when the ship arrives, or get it out to the
22 ship before it is required. In other words, they are
23 talking about tugs. We advise the pilot station and we
24 advise the pilots.

25 14: 24
26 The next slide I am dealing with is pilots. This is
27 probably the most important thing to remember: Having
28 arranged to take a ship in, having given all the times
29 to arrive at and the arrival points to arrive at he

1 just doesn't come in on his own. We put a pilot on
2 board the ship and the pilot conducts the ship from the
3 boarding point up to the jetty. Similarly, he conducts
4 the ship from the jetty out to sea on departure. So,
5 it is controlled. We control it.

14: 25

6
7 We have eight licensed pilots in the estuary at the
8 moment. They are all first class pilots. By that I
9 mean qualified to the highest level. They are under
10 direct control of the port. They report to me. I am
11 the Superintendent of Pilots. We give them their
12 instructions, we monitor them, we keep track of them.
13 We operate a pilot boat from the pilot station, we own
14 that boat, the pilots don't. As I said before, the
15 function of pilots is to conduct ships safely into and
16 out of the port. They are highly competent and they
17 are continuously trained. We send them down to Cork,
18 where they do simulation exercises on incidents in the
19 river and they keep their professional training up to
20 date that way.

14: 25

14: 25

14: 26

21
22 We use new technology in assisting us berthing ships.
23 I had hope that the next few slides would actually
24 play, they don't, they are just static pictures. But I
25 would like to show them to you anyway to show you what
26 sort of controls we have. This one is interesting.
27 Well, to me it is interesting. It mightn't be
28 interesting to you but to me it is interesting. By way
29 of explanation. This is a laptop that the pilots carry

14: 26

1 aboard the ship. They rig it up when they get on board
2 and it is a DGPS receiver, which is a Differential GPS,
3 it is a computer that has the charts in it and you can
4 put the dimensions of the ship in it, you can show it
5 where the receiver is and it will draw an outline of 14: 26
6 the ship, and it will show you exactly where the ship
7 is at any time as it proceeds up the estuary. Which is
8 not so important to us, what we really want to control
9 is how we dock the ship. That's the crucial thing.

10
11 Now, this is a picture from a ship that's berthing 14: 27
12 stern to another. It is moving backwards, it is moving
13 down towards the bottom of the screen into that berth
14 that you see on the left-hand side. Now, if you look
15 at that line there and that line there (indicating). 14: 27
16 Those two lines on the inside of the ship there. If
17 you look at those two lines there is figures on them,
18 you can't read them, one says 52.8, that's up at the
19 front end, the topmost one, that means that that part
20 of the ship is 52.8 metres away from the line of the 14: 27
21 jetty and the line of the jetty is extended up. The
22 one at the bottom says the back end of the ship is 33.9
23 metres away from the jetty. We intend to use that
24 technology for these modern ships coming in. That
25 gives the pilot instant information of where he is in 14: 28
26 relation to the jetty and gives him total control.
27 What you don't see in that picture are the tugs that
28 are attached to that ship. I don't think we can do
29 anymore. That's the safest we can make it.

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There are a couple of other of these things. This one here, I show it to you because there is just here, ahead of that ship, there is a little sort of shadow or a blank envelope that mimics the actual ship itself. That's a predictor. That will show you where your ship is going to be in two to three to four or five minutes. It doesn't matter how many, you can put it in yourself. If you don't do anything else that is where your ship is going to end up in five minutes. So, you can predict what's going to happen, and as you approach a jetty that's vital because you can take action in time to prevent contact and to prevent damage. That ship actually swung, came around to the south and berthed at that jetty. Unfortunately it doesn't play, but there you go.

The next one. That took a ship into a place called Littleton in New Zealand. It really is very interesting, in as much as it brings everything together, if it had played it would have been wonderful. It shows you the little predictor, where the ship is going to be, and it shows you how the pilot conducted that ship more or less in the curved red dotted line, in through the entrance. He actually stopped the ship inside, swung it around and backed it into the jetty. It is a very difficult maneuver but he was able to do it with this piece of equipment, and the assistance of tugs. It is possible.

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Can we handle the proposed development? We believe we can. The one compelling argument as to why I say I believe we can is because the proposed ships will be no more difficult than the ships going to Money Point at the moment and we do it as a matter of fact.

14: 30

There is plenty of water available, so water depth is not an issue. The least depth of water over the track with which these ships will proceed is 16.3m. These ships will come in at 12.5m. It is not an issue. We are the only port in the State with a proven track record in handling ships of this size. Nobody else has done it in the State. The swinging room of the proposed jetty is over a mile. And as I say there, that is an absolute luxury in terms of port operations.

14: 30

14: 30

If I could just digress here for a moment. In my position as President of the International Harbour Masters Association I have a large circle of colleagues who are Harbour Masters in ports where they handle this trade and they would kill for that room to swing ships. They swing ships, they shoehorn ships into docks, they are almost scraping the paint off the front of the ship. That's not an issue here. We have plenty of room.

14: 31

14: 31

The pilots have already been involved in extensive simulation trials of the jetty as it is proposed. And

1 I rely on them, more than anyone else, to tell me it
2 will or won't work. And they tell me it does work, and
3 it works very well. They have no problems with it.
4 Pilots are a very, very independent bunch of people,
5 even though I control them as superintendent, they are 14: 31
6 not shy about giving you their opinion in any, way,
7 shape or form and if there was anything wrong with this
8 they would tell me, because they wouldn't do it.
9

10 The current ship traffic, as I have indicated before, 14: 32
11 is minimal. I mean, I mean minimal. Traffic does not
12 cross the ship. And that's the most dangerous
13 situation you can have when you are trying to affect an
14 operation like berth one of these ships. If you have
15 the ship proceeding into the channel and you have 14: 32
16 traffic flying across it, backwards and forwards,
17 that's a huge issue. If you have ships going the other
18 way, this way and that way, that's not such a dangerous
19 issue, because a little adjustment gets you a long way
20 out of the way. But the most important thing to 14: 32
21 remember is there is no crossing traffic, so that
22 danger is eliminated.
23

24 What do we need to safely handle these vessels?
25 Sufficient capable tugs. We do not have enough at the 14: 32
26 moment. But before we would handle them we would
27 insist that they are here and we would do nothing
28 without the proper equipment being in place. We need
29 to be able to monitor, communicate and control on a

1 full time basis. We don't have the facility to do that
2 at the moment. That's something we must address before
3 we get this up and running. If it is to get up and
4 running. We need modern bye-laws approved by the State
5 covering the handling of hazardous materials. Our 14: 33
6 petroleum bye-laws were written in the 50's, we are
7 going to have to upgrade that to cover this
8 eventuality, in particular, if it happens, and, I
9 suppose, any other resource or procedure that will be
10 identified in Marie QRA. 14: 33

11
12 Coming on to the QRA. It is ongoing as we speak and it
13 is being conducted by a firm from the UK called Marico
14 Marine. It is expected that the final analysis or the
15 final report will be issued to us by about mid March, I 14: 34
16 am told. We chose an independent firm to carry out
17 this work on our behalf. We chose a firm who are
18 proven port specialists and have practical experience
19 in ports and with these ships. The process to be
20 completed in mid March. 14: 34

21
22 The summary and the recommendations will be published
23 and made available. The reason that's going to happen
24 is because we want people to be able to measure our
25 performance against the recommendations. We want 14: 34
26 transparency. We want people to say, if there is a
27 problem, you are not doing what it says you should do.

28
29 What other checks and balances are in the system? I

1 think it was alluded to previously, maybe Monday, the
2 Department of the Marine have to issue a Foreshore
3 Licence for this project to proceed. A Committee
4 called The Marine Licence Vetting Committee advises the
5 Minister in the final analysis as to whether it should 14: 35
6 be issued or should not be issued. The Marine Survey
7 Office Surveyor sits on that Committee. The actual MSO
8 people, they are there to look at issues about
9 navigational safety and our operational procedures and
10 they will veto the issuance of a licence unless there 14: 35
11 are satisfied that all their requirements are met in
12 regard to navigational safety. They have told me that.
13 So, basically, it comes down to this: Unless we get it
14 right, the Port Company, no Foreshore Licence, no
15 project. That's what it comes down to. 14: 36

16
17 There was another contentious -- I suppose I brought it
18 up -- about security yesterday, with Jerry Havens. As
19 I said yesterday, I am the designated Port Security
20 Officer for the entire estuary and my function is to 14: 36
21 ensure that all facilities have proper plans in place,
22 exercise them, record the exercises and that there is
23 an audible trail there for people to see. That is done
24 under ISPS, which is the International Ship and Port
25 Security code, it is and IMO resolution. Each port 14: 36
26 facility -- and Shannon LNG will be a port facility,
27 Limerick is a port facility, all the individual things
28 that I showed you there on the estuary, they are all
29 individual port facilities -- they must draw up their

1 own individual port security plans and it is based on a
2 formal security assessment.

3 When they produce the plan, initially the security
4 assessment must be approved by the State. Secondly,
5 the plans that they draw up must be approved by the 14: 37
6 State also. As I say, the Port Security Authority must
7 ensure that all plans are in place. We will have the
8 power to recommend prosecution if people don't comply
9 or if they don't drill or if they don't carry out what
10 they are supposed to do under the terms of the Security 14: 37
11 Plan that they have put in.

12
13 Security in the river, which is exercising people more
14 than anything else I feel, not a lot I can say about
15 it. But the Port Company is not a military or security 14: 37
16 organisation. Neither is anybody else in this room.
17 Neither are any of the other facilities. We have no
18 power to task the police or the military to do
19 anything. We are civilians. We will not put our own
20 staff in danger. And I don't think anybody could 14: 37
21 expect us to do that. All ports rely upon State
22 security services to alert them of a heightened
23 security threat. That's the way it works. The way the
24 ISPS code works, there are three levels of security.
25 Level 1 is everyday business, no threat or minimum 14: 38
26 threat. Level 2 is a heightened threat. Level 3 is
27 imminent danger of action. The steps that people
28 recommend is that you put a certain amount of security
29 in respect of level 1. At level 2, where it is

1 heightened, you put more security in, and level 3,
2 there is a debate going on as to whether you shut down
3 or not. But that seems to be the commonly held way to
4 do things.

5
6 In respect of LNG, if we receive a warning from the
7 State about a particular vessel that there is a
8 heightened threat of security we won't let him in. We
9 would be foolish. We will await either the arrival of
10 or permission from the military before the ship can
11 enter. Or the security service, or whoever. But it is
12 not going to be us, it is going to be somebody with a
13 background in security who is going to make the final
14 decision on this.

15
16 Finally, chairman, you asked a load of questions. You
17 asked questions of the HSA and myself and in an attempt
18 to answer them I put together this. One of the first
19 questions you asked was about control of ships in the
20 estuary. It is controlled by the Port Company, and
21 namely me, under the powers under the Harbours Act.

22
23 The Port Company is responsible for the safety of all
24 marine activity on the water. When a vessel is secured
25 to the jetty she becomes part of that jetty for the
26 purpose of regulation and safety. I think the HSA
27 referred to that this morning. The Harbour Master has
28 powers to regulate to discharge if he is concerned, in
29 particular, about the stability of the ship, the draft

1 of the ship along side, in relation to the available
2 depth, the conditions of its mooring and whether
3 conditions.

4
5 Finally, there were no communications between the HSA 14: 40
6 and the Port Company prior to the HSA advise.

7
8 I think the last thing you asked was: What was the
9 intention of the marine QRA? It is to establish what
10 must be done to eliminate, control or reduce risks to 14: 40
11 satisfy a Marine Survey Office. I can add to that. To
12 ensure that we are doing the right thing and to give
13 people a level of comfort that we are doing the right
14 thing. That is why we are undertaking the QRA process.
15 It doesn't form part of the HSA decision making 14: 41
16 process, as far as I know. That is based on the fact
17 that we have had no communication. That is it really
18 in a nutshell.

19
20 I have to add that I am not a gas expert, I don't 14: 41
21 pretend to be, but I do know how to keep a ship out of
22 trouble, and the best way to tackle this is for me to
23 keep the ship out of trouble. And if we can put
24 procedures and resources in place to ensure that that's
25 the way it happens you minimise the threat of an 14: 41
26 accident. Statistically the accidents in ports that
27 have happened, as far as I can tell, there have not
28 been too many, regarding collision and escape as a
29 result of collision. That's all I have to say.

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END OF SUBMISSION

INSPECTOR: Thank you. Just a very basic question. What is a ship? When does a boat become a ship? 14: 42

MR. COUGHLAN: If it carries a life boat. If it carries a boat on board it becomes a ship. I don't mean to be flippant. There is a definition in the Collision Regulations which, to my shame, I can't recall, because I studied them in 1966. But there is a definition. 14: 42

INSPECTOR: Well, I am thinking of --

MR. COUGHLAN: Okay, for the purposes of this, a ship, a commercial ship. We say in our bye-laws that every vessels which is a ship, in excess of 50 tonnes gross -- which is a measurement of a ship -- shall be subject to pilotage. So, for the purposes of, maybe, your question: A vessel in excess of 50 gross tonnes is a ship. 14: 42

I think it is also important to add that every ship is under pilot. So, there is no ship going to pass that facility, or proposed facility, that will not have one of our men on board and be subject to pilotage and be subject to our control both inwards and outwards. There was a question that came up the other day about passing traffic and I think you raised the question with the HSA man this morning about another ship 14: 43

1 striking the jetty or striking a ship alongside the
2 jetty. The control there is that we have our own
3 people on board the ship to conduct the ship outwards
4 once it is clear of everything.

5 **INSPECTOR:** Are you saying that every 14: 43
6 small fishing boat over 50
7 tonnes will have one of your people on board?

8 **MR. COUGHLAN:** Every vessel that comes in
9 will have a pilot on board.

10 Now, there are small pleasure craft, there are small 14: 43
11 angling craft, there are local people who operate
12 dolphin watching craft, they won't have pilots on
13 board. They know the waters. We know them. They are
14 licensed by the Department of the Marine in terms of
15 passenger safety and in terms of safety of their boats. 14: 44
16 We don't see them as a threat. Things of that size,
17 and even some trawlers, they are underpowered, they are
18 not that heavy, say something of a 100 tonnes, if it
19 struck the ship I doubt it would go right the way
20 through. I mean, I don't know, this is just an opinion 14: 44
21 of mine. I have to say that we will await the results
22 of our QRA and see what they recommend.

23 **INSPECTOR:** A small trawler, that would
24 have one of your men on it?

25 **MR. COUGHLAN:** Yes, he would. I mean, a 14: 44
26 small trawler, you are
27 talking about a deep sea fishing trawler, that sort of
28 thing. Yes, he would have a pilot on board.

29 **INSPECTOR:** Right. Any questions for

1 the Harbour Master? Ms. Griffin?

2 **MS. GRIFFIN:** Captain Coughlan, I just
3 wondered do the Port
4 Authority have any control over or issue rules for
5 pleasure craft in the estuary? 14: 45

6 **MR. COUGHLAN:** The answer to that is no,
7 we don't. There were
8 powers given to us to make rules in relation to the use
9 of personal water craft, these jet skis, we refused to
10 do it. Because if you give them an area in which to 14: 45
11 work by implication that area is safe for them and if
12 they hit a floating or submerged log we are at fault.
13 So we refused to go that far.

14
15 The issue of control of a pleasure craft. I mean, they 14: 45
16 are subject to the same rules and regulations as
17 everything else. If they cause an incident or if they
18 cause a near miss or a hazard and it is reported to us
19 we chase them up. By chasing them up, you know, we
20 have bye-laws there. You write to a guy first and you 14: 46
21 ask him for an explanation and you hope that that's
22 sufficient to make him think about his actions into the
23 future. And that's basically the truthful way we do
24 it.

25 **MS. GRIFFIN:** Do you have any figures, do 14: 46
26 you have any idea of how
27 many people are using the Shannon Estuary for pleasure,
28 or dolphin watching, or whatever?

29 **MR. COUGHLAN:** In relation to dolphin

1 watching, there are two known vessels that operate in
2 the estuary to my knowledge. Now, I can get the
3 figures. I don't know, that's the honest answer. But
4 I suppose during the height of season, which might last
5 for seven months, they would work seven days a week. I 14: 46
6 I suppose their capacity would be in the region of 30
7 souls, 30 people each. So, if they were there and half
8 full, and my maths are not that good, but I don't think
9 it would be too many.

10
11 The other thing about that is we know those people, we
12 know the skippers of those boats. Everybody in the
13 river knows them, the Tug Masters know them, the pilots
14 know them, we know how they look.

15 **MS. GRIFFIN:** I am thinking as well of 14: 47
16 small pleasure craft,
17 individuals going out on a boat with a couple of
18 people. Do you have any idea how many of those boats
19 use the estuary?

20 **MR. COUGHLAN:** Not, I don't. If you were 14: 47
21 to ask me for an educated
22 guess I wouldn't say very many, because the estuary is
23 a difficult place for small boats. The currents are
24 very strong and there aren't many facilities for them.
25 You know, there is nowhere to go, so. Other than 14: 47
26 people in and out of Kilrush Creek Marina, I don't
27 think there are that many.

28 **MS. GRIFFIN:** Okay, thank you.

29 **MR. COUGHLAN:** You are welcome.

1 INSPECTOR: Mr. McElligott?
2 MR. J. McELLI GOTT: Hello Mr. Coughlan. LNG
3 spills on water, are you
4 going to take account of that in your risk assessment?
5 MR. COUGHLAN: The answer to that is no, 14: 48
6 because I am not an expert.
7 MR. J. McELLI GOTT: How close will the ships go
8 to Tarbert, the LNG
9 carries, when they are turning?
10 MR. COUGHLAN: I would think they would be 14: 48
11 at least a mile away.
12 MR. J. McELLI GOTT: How close will they go to
13 the ferry?
14 MR. COUGHLAN: At least a mile.
15 MR. J. McELLI GOTT: How wide is the actual 14: 48
16 navigational channel in the
17 estuary?
18 MR. COUGHLAN: I made reference to it
19 there in my presentation.
20 One mile. If that is it I would be pleased to stand 14: 48
21 down.
22 MR. HEAPHY: My name is Morgan Heaphy
23 and I live in a house which
24 is 900 metres from this proposed site. Mr. Coughlan,
25 you said that ships have been coming and going in the 14: 48
26 estuary about incident. Have ships ever run into
27 trouble on the Shannon Estuary, to your knowledge?
28 MR. COUGHLAN: They have on the way in,
29 one of them did on the way

1 in, Princess Vanja, ten years ago.

2 **MR. HEAPHY:** So you gave us false
3 information, there was an
4 incident.

5 **MR. COUGHLAN:** Just let me finish please. 14:49
6 She was coming in without a
7 pilot, she was not inside the inner harbour at all.
8 Despite everything that was available to her, in terms
9 of navigational aids, the Master wasn't on the ship, or
10 wasn't on the bridge, and she ran aground on a 14:49
11 sandbank. We got her off and we got her up to the
12 jetty.

13
14 We subsequently, after that event, realised that we had
15 a hole in our procedures and we amended them and we 14:49
16 moved the pilot boarding out to cover ships of that
17 size further out, so that in future no other ships
18 would get into trouble of that same capacity. Does
19 that answer your question?

20 **MR. HEAPHY:** Yes, I remember that 14:49
21 incident well. Are you
22 totally dependent on the technology which you spoke
23 about to berth those ships.

24 **MR. COUGHLAN:** Absolutely not.

25 **MR. HEAPHY:** What happens when it breaks 14:49
26 down?

27 **MR. COUGHLAN:** There are still eyes.
28 There will probably be
29 equipment on the jetties too.

1 MR. HEAPHY: But it is safer with the
2 technology.
3 MR. COUGHLAN: No. Would you let me
4 finish, please. What you
5 asked me is do we depend on that technology. The 14: 50
6 answer is no. It is an aid. Like everything else in
7 like, technology is an aid. That's all it is. You use
8 your eyes. Most people can judge speeds. Fellows who
9 have been to sea actually rely on their eyes heavily,
10 and their senses heavily. But these aids just give you 14: 50
11 the edge, they do make it safer. I haven't spoken to
12 LNG or the project developers but my impression would
13 be that they would have similar equipment on the quay
14 that would, in very big figures, put up the distance of
15 the ship off each end of the jetty. It is kind of like 14: 50
16 a radar technology and it is used in facilities where
17 large ships are handled regularly. So, in the event
18 that our stuff breaks down there is a back up, number
19 one, and, ultimately, the pilot can use his eyes, No.
20 3. I don't mean to be flippant about it, but that's 14: 51
21 the way it is done.
22 MR. HEAPHY: Can you confirm again that
23 every ship entering the
24 estuary would have a pilot.
25 MR. COUGHLAN: That is correct. 14: 51
26 MR. HEAPHY: Every ship?
27 MR. COUGHLAN: With the exception of one
28 that doesn't trade here
29 anymore. He had an exemption ticket. The issue there

1 is the fact that any Master coming up for an exemption
2 certificate in a vessel less than 100 metres must
3 conduct a prerequisite number of trips into the estuary
4 before I will examine him to see if he's a fit person
5 to proceed without a pilot. 14: 51

6 **MR. HEAPHY:** I live directly opposite
7 where the pilots board and
8 I know exactly when pilots are getting on and off the
9 ships.

10 **MR. COUGHLAN:** Well, perhaps you would 14: 51
11 like to tell me quietly
12 later.

13 **MR. HEAPHY:** I think it is something
14 that the Inspector might
15 look into. 14: 51

16 **MR. COUGHLAN:** Okay. The other thing is
17 that if we go ahead with
18 this project I am going to insist that we put what we
19 call a VTS system in place, Vessel Traffic Services.
20 That's a location which overlooks the estuary, which 14: 51
21 would be manned 24-hours a day and will have radar
22 imagery in the control centre, where people can keep an
23 absolute track of what's going on. If something is out
24 of the ordinary you can jump in straight away by radio
25 and correct it. That's to me is a prerequisite for 14: 52
26 this sort of activity.

27 **MR. HEAPHY:** Thank you.

28 **MR. COUGHLAN:** You are welcome.

29 **MS. O'CONNOR:** Can I just ask you: There

1 was a ship that docked at Foynes Port a few years ago
2 that turned over on its side. Would that be within
3 your remit?

4 **MR. COUGHLAN:** Yes, I was in charge
5 of the salvage operation 14: 52
6 for that ship.

7 **MS. O'CONNOR:** Was that due to human
8 error, failure of
9 procedures.

10 **MR. COUGHLAN:** It was due entirely to 14: 52
11 human error. That ship was
12 a peculiar ship, it was what they call a float on float
13 off ship. It was a floating dock. What actually
14 happens is you flood the ship and it submerges beneath
15 the surface, you float something in on top of it and 14: 52
16 you empty the ship of water again and it lifts whatever
17 is in top, like a barge, you know. It is a very
18 dangerous procedure, because you lose water plain area
19 very quickly and the ship becomes unstable, and unless
20 the people who are conducting the operation know 14: 53
21 exactly what they are doing it can turn over. There is
22 series of valves that are controlled by keys, like a
23 piano almost on the bridge, and without sounding too
24 flippant about this, it was the Masters first time
25 doing it and when it went wrong he started to play a 14: 53
26 concerto on the keys and it just made everything worse
27 and the ship eventually just turned over.

28 **MS. O'CONNOR:** Was he one of your pilots?

29 **MR. COUGHLAN:** No, he was a Russian

1 Master. Our pilots don't do that sort of work. The
2 pilots are there to take the ship from A to B and
3 secure it to the jetty. That's nothing to do with our
4 end of the operation at all.

5 **MR. J. McELLI GOTT:** Mr. Coughlan, exclusion 14: 53
6 zones, as recommended in
7 Sandia, for ships, they talk about one mile roughly,
8 will that have an effect on the shipping, if that
9 exclusion zone is applied?

10 **MR. COUGHLAN:** There seems to be two. 14: 54
11 What is the size of a
12 control zone? We will await the results of the QRA
13 before we decide what that control zone would be.
14 That's the first point. The second point is: Given
15 the level of activity in the estuary I cannot 14: 54
16 conceivably see how it is going to interfere with
17 shipping.

18 **MR. J. McELLI GOTT:** Okay. Will it interfere
19 with other activities or
20 future activities in the nearby -- the rest of the 14: 54
21 landbank, for development of other ships?

22 **MR. COUGHLAN:** I can't actually say that
23 it will. You know,
24 provided everyone's happy that the two industries are
25 compatible and will lie together and there is enough 14: 54
26 space between them the movement of ships in and out to
27 whatever is built there will be subject to the same
28 controls, so I don't see an issue.

29 **MR. J. McELLI GOTT:** Well, considering LNG

1 tankers will have to be at berth for a pretty long
2 time.

3 MR. COUGHLAN: No, 24 hours.

4 MR. McELLI GOTT: Yeah, but if there are
5 going to be two a week. 14: 55

6 MR. COUGHLAN: That's only 48-hours.
7 There is a lot more than
8 that in a week. What are you saying? Are you saying
9 trying to say that when a ship is alongside everything
10 stops? 14: 55

11 MR. J. McELLI GOTT: They are talking about
12 development of the rest of
13 the Landbank for port facilities.

14 MR. COUGHLAN: Okay. I am dealing with
15 the here and now and the 14: 55
16 here and now is what we are about in these ships. I am
17 not really concerned about what's going to happen in
18 the future because it is in the realm of dreamland at
19 the moment. Nobody knows what is going to happen.

20 MR. J. McELLI GOTT: Well, it is also relevant 14: 55
21 to the Development Plan of
22 the Landbank being, in the County Development Plan,
23 proposed for deep water port facilities. So, it would
24 have an impact.

25 MR. COUGHLAN: Fine, I accept your point, 14: 55
26 but I deal with the water.

27 INSPECTOR: Captain Coughlan, can I
28 just clarify. When you are
29 talking about a control zone, that is only when the

1 ship is actually moving?

2 **MR. COUGHLAN:** Correct.

3 **INSPECTOR:** Are you clear on that

4 Mr. McElligott.

5 **MR. COUGHLAN:** Well, no, if I could 14: 56

6 interrupt there. The

7 control zone is when a ship is moving, because it is a

8 zone around which you must control the access, too, for

9 other ships to ensure there is not going to be a

10 collision or an accident. There is also the issue of a 14: 56

11 control zone around the jetty while the ship is berthed

12 and tied up to the jetty, to ensure that nobody comes

13 too close to that activity. And that's probably going

14 to happen. That is standard practice all over the

15 world. So there are two control zones, there is the 14: 56

16 moving control zone of the ship in and out and the

17 control zone around the jetty.

18 **INSPECTOR:** Well, the berth control

19 zone then, what sort of

20 size would that be? 14: 56

21 **MR. COUGHLAN:** I don't know what the

22 recommendation is going to

23 be from our QRA. But, you know, looking at the size of

24 the estuary and looking at the water and the

25 availability and width 500 metres would not be a 14: 56

26 problem for us, to put a 500 metre zone in. Whether

27 that is recommended or not I don't know.

28 **INSPECTOR:** 500 metres out into the

29 estuary?

1 MR. COUGHLAN: Yes.

2 INSPECTOR: What about forward and aft
3 of the ship?

4 MR. COUGHLAN: At the moment why they
5 shouldn't put 500 metres 14: 57
6 each way as well, because there is not there.

7 INSPECTOR: But it could effect the
8 rest of the landbank?

9 MR. COUGHLAN: It could. But as I say,
10 and I don't want to split 14: 57
11 hairs, but I deal with the water.

12 Now, let's wait and see what the QRA says, because they
13 are practical people that take a practical view on
14 this. I just through 500 metres out to indicate what
15 space we have there. So, we have to wait and see what 14: 57
16 they say.

17 MS. O'CONNOR: So when you say they take a
18 practical, the QRA is
19 supposed to assess risk and not be too influenced by
20 what answers you wish to get. 14: 57

21 MR. COUGHLAN: I accept.

22 MS. O'CONNOR: It has to be what the
23 answers are.

24 MR. COUGHLAN: Well, we will publish the
25 results of this and 14: 58
26 everyone can see what they recommend. I have no fear
27 about that. Bear in mind this: That it is designed
28 merely to prevent accident while a ship is alongside.
29 And it is a navigational issue, it is a navigational

1 quantum. That is the space in which we work.

2 **MR. J. McELLI GOTT:** Dr. Havens talks about a
3 half tank spill, loss of
4 containment of half a tank on a ship as being a
5 credible event -- what's the word? 14: 58

6 **MR. COUGHLAN:** Event. You weren't paying
7 attention.

8 **MR. J. McELLI GOTT:** Thank you. To be a
9 credible event. So, if
10 that's a credible event are you going to take account 14: 58
11 of those credible events in... (INTERJECTION)

12 **MR. O' NEI LL:** Sorry to interrupt, sir.
13 That is actually a
14 misinterpretation of what Dr. Havens said. Dr. Havens
15 referred to the Sandia Report, which says that the loss 14: 59
16 of half a containment within a ship may occur, whether
17 it is credible will depend upon a lot of circumstances.
18 And, of course, those are to do with the local
19 circumstances and predominantly are judged by the local
20 circumstances. I am afraid Mr. McElligott is 14: 59
21 misinterpreting the position and this will be made
22 very, very clear. It is made clear in the EIS and it
23 will be made very clear by the witnesses to follow,
24 sir.

25 **MR. J. McELLI GOTT:** I am not sure I agree with 14: 59
26 you there now.

27 **MR. HEAPHY:** Can I ask just a simple
28 practical question. Are
29 the captains of these ships paid in relation to the

1 cargo that they are carrying in terms of how dangerous
2 it is? And are the pilots paid in relation to the
3 cargo and how dangerous it is, or the size of the ship?
4 Is there a standard rate?

5 **MR. COUGHLAN:** I can only answer one part 15:00
6 of that question. I have
7 no notions of what conditions of pay and earnings are
8 on board the ship. But the pilots are paid
9 specifically on the gross tonnage of each ship. So,
10 the bigger the ship the more they get paid. The 15:00
11 smaller the ship, the less they get paid. It is a
12 standard rate throughout the whole estuary.

13 **MR. J. McELLI GOTT:** I am almost certain
14 Dr. Havens said yesterday
15 that a half tank loss of containment is a credible 15:00
16 possibility. However way it was stated it is that are
17 you going to take account of that possibility in a QRA,
18 because that will effect both emergency planning, you
19 know? This whole problem here is that you are going to
20 do the QRA which is going to prove -- and I have no 15:00
21 doubt that you are capable of doing that, you are going
22 to prove that you can get the ships in and out. But
23 nowhere are you going to take account of an accident on
24 the tanker itself.

25 **MR. COUGHLAN:** I will answer that question 15:01
26 by saying to you that my
27 concerns are navigational safety and if I can get that
28 ship in without an accident that means that there is
29 going to be no loss of containment. Do you accept that

1 point?

2 **MR. J. McELLI GOTT:** I do.

3 **MR. COUGHLAN:** That's my expertise and
4 that's my remit. I can't
5 really consider the issue of gas. I know where you are 15:01
6 coming from and I think that the answer to this may lie
7 in the planning in the future, for the emergency
8 services. Each competent authority, of which we are
9 one, has to plan from within its own remit. If there
10 are issues like fire and noxious substances getting out 15:01
11 that is a question for the fire services on each side
12 of the river. I think that there should be a concerted
13 joint planning function to cover this.

14 **MR. J. McELLI GOTT:** I agree completely
15 with you there. But I once 15:02
16 again point out now, and I want to bring it to the
17 Inspector's attention, that there is a deficit here in
18 who is going to deal with an LNG accident on a ship.
19 We are not accounting for that. If there is an
20 accident there should be an exclusion zone. It is for 15:02
21 harm to people. The Sandia Report talks about one mile
22 should half a tank spill, and that's touching the coast
23 on both sides.

24 **MR. O' NEI LL:** Again, this is a
25 mi si nterpretati on. 15:02
26 Dr. Havens was very, very clear. The first question I
27 asked him was did the Sandia Report recommend an
28 excl usi on zone. Remember we are talki ng about
29 excl usi on zones, not control zones, not safety zones,

1 exclusion zone. His answer was, no, it did not
2 recommend that. In terms of marine issues, there has
3 never been in the US and there is not in Europe an
4 exclusion zone.

5 **MR. J. McELLI GOTT:** Okay, yes. But he did say 15:03
6 that if there is an
7 accident people within a mile are in danger. So, if
8 they are being subjected to... (INTERJECTION)

9 **MR. O' NEI LL:** That's a different matter.

10 **MR. J. McELLI GOTT:** Okay, right, let's talk 15:03
11 about the different matter
12 so. The different matter is if there is an accident on
13 a ship where there is an LNG spill or an LNG accident
14 there are people in danger within a certain distance of
15 that ship and your QRA is not going to take account of 15:03
16 the possibilities of the way an LNG accident can occur.
17 You are going to prove that you can technically get the
18 ship in and out and all that but you are not accounting
19 for human error and an LNG spill on water.

20 15:03
21 Now, the land use planning criteria are only basing
22 their risk assessments on what happens on the land and
23 on the jetty. But as Koopman pointed out, there is
24 more chance of an accident when the ship is moving.
25 And it is coming right up through the estuary so there 15:04
26 are a lot of other places in danger. As you saw in
27 that clip yesterday, that was 44.9 m³ of a spill of LNG
28 on water and the tanks that are coming in, if there is
29 a full leak of a full ship that is 265 m³, which is

1 about 5,800 times more.

2 **MR. COUGHLAN:** Okay, well I have heard you
3 say that before. The issue
4 here is that -- I don't quite know what you mean by an
5 accident on a ship. Would you explain that to me 15:04
6 please?

7 **MR. J. McELLI GOTT:** An accident that will cause
8 an LNG leak.

9 **MR. COUGHLAN:** How do you think that might
10 happen? 15:04

11 **MR. J. McELLI GOTT:** He talked about two
12 different ways. One was
13 whether it was going happen -- what was the word? One
14 was through terrorism.

15 **MR. COUGHLAN:** We have dealt with the way 15:05
16 I am going to deal with
17 terrorism here.

18 **MR. J. McELLI GOTT:** Well, you have asked me
19 about it.

20 **MR. COUGHLAN:** And the other one was? 15:05

21 **MS. O'CONNOR:** Say a loss of structural
22 failure, the ship itself.

23 **MR. COUGHLAN:** Just a sudden loss of
24 failure, she breaks up?

25 **MS. O'CONNOR:** No, like any airplane 15:05
26 crash, they are highly
27 safety conscious but accidents still happen. I don't
28 think you should be planning to deal with a major
29 accident or emergency by saying it won't happen.

1 MR. COUGHLAN: I have not said that.

2 MS. O' CONNOR: Well, like saying how could
3 it happen.

4 MR. COUGHLAN: I have not said that
5 either. My point in saying 15:05
6 planning should be addressed jointly.

7 MS. O' CONNOR: And I agree. But I would
8 like somebody to clarify if
9 there is an LNG spill over water who calculates that
10 risk and decides the quantity of the risk and the 15:05
11 quantity of the consequence? Who is in charge of that?
12 Is it HSA or yourself?

13 MR. COUGHLAN: Can I just give you what
14 happens now, if there is an
15 accident on the water what happens now. If there is an 15:06
16 accident afloat we are the competent authority for all
17 things navigational and we interact straight away to
18 see can we get that ship into a more safe position, or
19 what can we do with it. If there is a risk of fire
20 explosion or a leakage then it become an issue for the 15:06
21 local authority fire services in the main. If people
22 have to be evacuated then the Gardaí are responsible
23 for that. It is a cumbersome thing, I know, but that's
24 actually what happens now. I understand what you are
25 saying and I understand that it is puzzling to you that 15:06
26 not one person deals with this, and I accept that. I
27 think that the way forward in this is joint planning.
28 That really is all I can say on it. That's as it is
29 now, I would prefer to see joint planning on this.

1 **MR. J. McELLI GOTT:** But who is going to take
2 care of the emergency
3 planning for an LNG accident on a ship coming up the
4 estuary? Don't we have to know what areas are going to
5 be effected before we make a planning decision, you 15:07
6 know, on the marine side?

7 **MR. COUGHLAN:** On the marine side. If we
8 do our risk assessment and
9 we can take the ship in safely we have obviated a lot
10 of risk because we know what we do in order to continue 15:07
11 to operate in a safe manner. If you are talking about
12 a structural failure, the only thing I can say there is
13 that these ships are top end of the line in terms of
14 safety, in terms of structure. Now, that's not to say
15 that something is not going to fail, I accept your 15:07
16 point. But I would think that these ships are built to
17 the best highest possible standard, and I am not an
18 expert in them, but they are certified by certification
19 societies as being fit for purpose and, in particular,
20 to be insurable. That's vital. Because there is a 15:08
21 huge investment in these things. I am really not the
22 guy to ask about this, about ships and ship structures,
23 I think there are other people over there who would be
24 more competent to deal with it than I am. I know what
25 to do with them. I don't particularly know how to 15:08
26 build them but I know what to do with them.

27 **MR. J. McELLI GOTT:** Maybe some of the Shannon
28 LNG experts there could
29 give an opinion on risks that an LNG tanker would face

1 while they are move that would have an effect on your
2 job.

3 **MR. COUGHLAN:** Let's be clear about this
4 now. The risks that an LNG
5 ship can take are 24-hours a day, when it is moving at 15:08
6 sea or close to the coast. That's the issue you should
7 ask them about. The fact that it is approaching a port
8 and people are onboard handling I make no difference to
9 the scenario outlined about a sudden structural
10 failure. I think that's pertinent to remember. 15:09

11 **MR. J. McELLI GOTT:** Then that goes back to the
12 idea that everything you
13 are doing in the QRA is based on the probability of an
14 accident but not dealing with any of the consequences
15 of an accident. 15:09

16 **MR. COUGHLAN:** If you look at it there is
17 no obligation on us to do
18 any of this, legally or any other way. Right. That's
19 the first point I make. The second point is we know
20 that we have to do things properly, we know we have to 15:09
21 do things safely.

22 **MR. J. McELLI GOTT:** That "we" is the Shannon
23 Foynes Port Company?

24 **MR. COUGHLAN:** Yes. And that's why we are
25 undertaking this process. 15:09

26 As I say, whatever comes out of it will be available
27 for people to see. All I can do is keep the ship safe.
28 That's all I can do. I can keep it out of danger, and
29 I will keep it out of danger. We are doing it every

1 day.

2 **MR. J. McELLI GOTT:** I am still now going back
3 to what Havens was on about
4 yesterday. Havens was on about we must take account of
5 the consequences of an accident when we are sitting 15: 09
6 terminals.

7 **MR. COUGHLAN:** He also said that they
8 don't do it in America.
9 That the rules are the same there, that the division of
10 labour is the same in the States as it is here. It 15: 10
11 doesn't make it right, but we are not the only people
12 in the world who have the same sort of set up.

13 **MR. J. McELLI GOTT:** And if it doesn't make it
14 right I want it done right
15 here. 15: 10

16 **MR. COUGHLAN:** Well, that's a matter for
17 the inspector to decide.

18 **MR. J. McELLI GOTT:** I want to tell the
19 Inspector I want it done
20 right here. Have you considered the possibility of 15: 10
21 ignition sources?

22 **MR. COUGHLAN:** No, I considered
23 navigational safety, as I
24 keep saying. I can't answer you any other way.

25 **INSPECTOR:** I have a questioner at the 15: 10
26 back.

27 **UNKNOWN SPEAKER:** Good afternoon everybody.
28 I would like to ask this
29 gentleman here a couple of questions. It has been

1 stated yesterday by Dr. Havens that when all
2 communities and all political parties and everything
3 else in America had granted access to LNG ships coming
4 in they were all denied by the Coast Guard. So,
5 obviously, there was a concern and apprehension about 15: 11
6 the safety of those coming into ports. So they were
7 all turned down.

8
9 I also want to just touch on, maybe, the pleasure
10 crafts in the Shannon. Now, a couple of years ago a 15: 11
11 big sailing ship came up and parked and docked in
12 Foynes and it attracted a good bit of attention and a
13 good bit of families that took their kids down to see
14 it. I do believe that if those ships, these LNG ships,
15 up and down from wherever, I do believe that they will 15: 12
16 discourage such trips by sailing ships and pleasure
17 boats in general. So, the thing is, with the publicity
18 that has gone out about this and the safety zones and
19 the safety concerns and everything else, I do believe
20 that it will be a very discouraging factor to the 15: 12
21 people involved in pleasure and scenic trips and
22 everything else, dolphin watches and you know trips to
23 Scattery Island and so forth. Those would be two of my
24 concerns, would you address them, please?

25 **MR. COUGHLAN:** I don't know if I can 15: 13
26 address them to your
27 satisfaction. I will certainly give you an opinion,
28 that's about all. When you look at the Coast Guard
29 denial of certain activities in the State I think you

1 have got to look at where they proposed to take place.
2 One of them was in Long Beach in California, which is
3 in the middle, to my knowledge -- i have been to Long
4 Beach many times but it is a long, long time ago -- it
5 is a very densely populated area in terms of industry 15: 13
6 and in terms of people. That's point 1. It is also a
7 fairly tight place to get in and out of, where they
8 were talking of putting the plant. Other places in the
9 States that they have denied has been Weavers Point.
10 They planned to build it in between two bridges, which 15: 13
11 there wasn't enough space for a ship to get in and get
12 out. And the Coast Guard rightfully denied it. That's
13 my only knowledge of the Coast Guard activity in
14 relation to LNG projects in the States.

15
16 In relation to your second question, and again it is
17 not definitive, my answer, it is only an opinion.
18 There is that much space in the estuary that the
19 presence of one of these ships, I don't think, will
20 discourage anything. That's my own honest opinion. 15: 14
21 You may differ and that's fine, and nothing I can say
22 can change your opinion. That's all I can say to you,
23 I am sorry.

24 **UNKNOWN SPEAKER:** I would just like to follow
25 up on what you said about 15: 14
26 the Coast Guard discouraged ships coming into densely
27 populated area. I don't believe there is any part of
28 the world that isn't populated now and everybody that
29 lives to a potential terminal, you know, their lives

1 are, even though they may not be as many, but those
2 lives are as important to those as a million people.
3 They are all human beings. We are all human beings. I
4 would just make that point.

5 **MR. COUGHLAN:** I accept your point of view 15: 14
6 entirely. I have no
7 quibble with that whatsoever.

8 **UNKNOWN SPEAKER:** Thank you very much.

9 **MR. COUGHLAN:** You are welcome.

10 **MR. KEARNEY:** Mr. Coughlan, just a quick 15: 15
11 question. Have Shannon
12 Development or Kerry County Council requested any
13 information from you in regard to the berth control
14 zones?

15 **MR. COUGHLAN:** No. 15: 15

16 **INSPECTOR:** Mr. Fox?

17 **MR. FOX:** Mr. Inspector, I noticed
18 that Mr. Coughlan said that
19 the QRA would be ready about mid March. If it is ready
20 mid March and, as I understand it, the deadline for the 15: 15
21 planning authority is the end of March that leaves a
22 very narrow window for people to look at the report,
23 Mr. Coughlan's report, and for people, maybe, to make
24 comment on it. That's number 1. No. 2: My employers,
25 the ESB, have asked me to place on record that they 15: 16
26 have some concerns about a queuing system for ships
27 coming into the river. The reason for this is at some
28 times, because of maintenance work on the jetty in
29 Money Point, it can happen that stocks of coal get very

1 low on land and then they want a priority for their
2 ships to come in to give us a supply of coal.

3 **MR. COUGHLAN:** Has he addressed that to
4 you or me?

5 **INSPECTOR:** I think it was a statement 15: 16
6 more than a question.

7 **MR. COUGHLAN:** Do you want me to comment
8 on it?

9 **INSPECTOR:** Not really, no. I would
10 like you to address the 15: 16
11 question about the queuing of ships, or the possible
12 queuing of ships?

13 **MR. COUGHLAN:** Okay. ESB take about 17
14 ships a year in, as far as
15 I know, that I can recollect. And, again, I would 15: 17
16 point out to you that I don't see this as a big, big
17 issue, it is only a matter of planning with people how
18 to move these ships and the sequence in which they
19 should be moved and I don't think there is anything
20 that can't be solved without sitting down and planning 15: 17
21 it properly. I would ask you to carry that back to
22 ESB, No. 1. No. 2, if they berthed ships 24-hours a
23 day you wouldn't be in this problem. I would like you
24 to take that back as well.

25 **MR. HEAPHY:** Just a question for 15: 17
26 Mr. Fox. I am a bit
27 puzzled as to what level that question from the ESB
28 came through Mr. Fox. Was that from local level or
29 from national level? And what authority have you to

1 ask questions on behalf of the ESB? You are
2 representing the Tarbert Development Association as far
3 as I know. Maybe you could fill me in on that one.

4 **MR. FOX:** Mr. Inspector, to clarify
5 something. I am here on 15: 18
6 behalf of Tarbert Development on one hat. I am here
7 because of I have a submission on my own on another.
8 And this morning my boss in Money Point asked me to
9 convey and get you to put on the record their concerns
10 about the queuing system. 15: 18

11 **MS. O'CONNOR:** What's his name, your boss?
12 **MR. FOX:** My bosses name is Michael
13 Kelly. He's the Manager of
14 the port and the docking facilities in Money Point.

15 **MR. HEAPHY:** If this is so important 15: 18
16 should the ESB not put in a
17 formal question? Would you not agree, Mr. Fox?

18 **MR. FOX:** I certainly would, but my
19 boss communicated --

20 **MR. COUGHLAN:** If I can throw some light 15: 18
21 on that. We are to meet
22 the ESB formally about this matter in the next week, if
23 that clarifies anything for anybody.

24 **MS. O'CONNOR:** You also said that you
25 would favour a VTS. 15: 18
26 **MR. COUGHLAN:** A Vessel Traffic Services
27 system. It is a combined
28 radio and radar controlled centre.

29 **MS. O'CONNOR:** In the future.

1 MR. COUGHLAN: Yes. By future I mean
2 before the start up of this
3 operation. If it is to start up.
4 MS. O'CONNOR: Right.
5 MR. J. McELLI GOTT: Just more or less a point 15:19
6 to the Inspector really.
7 Yesterday Shannon LNG were very insistent on pointing
8 out where they thought the remit of the Seveso II
9 Directive applied regarding whether it was the jetty or
10 whether it was the establishment, or you know. So, for 15:19
11 me it was almost like they wanted to know -- it was
12 almost, to me, as if there was areas where the Seveso
13 II Directive would be more stringent and areas beyond
14 that which would not be stringent. So, I would like to
15 say that we would like the estuary to be treated as if 15:19
16 it was under Seveso II because that would be in the
17 best interests on safety of the general public.
18 MR. COUGHLAN: Well, if you are to make
19 the whole estuary a Seveso
20 site it also is a candidate site for a Special Area of 15:20
21 Conservation, it is going to be a big problem.
22 MR. J. McELLI GOTT: There is a lot of the
23 estuary already a special
24 area of conservation.
25 MR. COUGHLAN: The whole estuary is. 15:20
26 MS. O'CONNOR: And a proposed national
27 heritage area, pNHA.
28 INSPECTOR: Do you have anymore
29 substantial questions for

1 Captain Coughlan?

2 **MR. J. McELLI GOTT:** I would like if the QRA
3 that was undertaken for the
4 Marine Risk Assessment would include a lot of what is
5 done on a land based QRA for LNG spills. 15: 20

6 **MR. COUGHLAN:** It is a navigational risk
7 assessment. That is all it
8 ever is going to be, and I can't make it anything else
9 because we have no expertise.

10 **MR. J. McELLI GOTT:** Okay. So, therefore, I 15: 21
11 would like the Inspector to
12 note that the QRA that is being undertaken at the
13 moment, regarding LNG spills and what would cause them,
14 is not being continued on the marine site and,
15 therefore, there is a deficit on risk identification 15: 21
16 and, therefore, assessment.

17 **MR. COUGHLAN:** Could I ask you also to
18 note something. That, in
19 my opinion, if we endeavour to keep the ship out of
20 danger we obviate the risk of a catastrophe. And that 15: 21
21 is the whole object of the exercise. Thank you.

22 **MR. J. McELLI GOTT:** I would also like them to
23 note that he said he only
24 deals with navigational issues and not with LNG
25 accident issues. 15: 21

26 **MR. COUGHLAN:** I am stopping now.

27 **MR. J. McELLI GOTT:** Okay.

28 **INSPECTOR:** Okay. Have we got
29 everybody? Thank you. You

1 didn't want to ask any questions?

2 **MR. O'NEILL:** No, thank you.

3 **INSPECTOR:** Thank you Captain
4 Coughlan. Now, I am going
5 to call on the applicants to resume their presentation 15: 22
6 which they were doing early this morning.

7 **MR. O'NEILL:** Thank you, Sir. I am going
8 to ask Mr. Blair MacIntyre
9 now to deal with marine issues from a safety point of
10 view. 15: 22

11 **MR. J. McELLI GOTT:** Mr. Inspector, there were
12 two speakers before that
13 and we would like probably to ask them questions
14 because they had spoken for so long and they have
15 raised a lot of issues. For example, you asked where 15: 22
16 was Eileen O'Connor this morning and if they have to
17 wait for another three or four hours to ask questions
18 again. It would nicer if we could question each one in
19 process and for them to keep their submissions short.

20 Mr. Coughlan's was perfect, he communicated all the 15: 22
21 time. But they seem to be reading long streams of
22 stuff and then we are all bored to death by the time it
23 goes around to asking questions.

24 **MR. O'NEILL:** I am sorry Mr. McElligott
25 feels he is under that 15: 23
26 difficulty. I did note he was missing for part of this
27 morning, perhaps he was bored senseless, as he
28 complains. But if he was here he would have noticed,
29 in fact, at your suggestion, we have skipped through

1 areas of the report. I suspected, and it may still
2 happen, that Mr. McElligott is going to complain that
3 we are skipping over areas of the report. I would have
4 thought that a better use of time would be achieved if
5 all the evidence in relation to health and safety, both 15: 23
6 the land based and marine based, was dealt with before
7 questions are asked. Because what we have noticed is
8 that witnesses or people who have delivered statements
9 are asked questions on matters entirely outside the
10 areas of which they have been discussed. Health and 15: 23
11 safety issues were raised in the modules dealing with
12 the need and site locations, site selection. I think
13 one has to at this stage focus on the actual module.
14 We are giving evidence in relation to that module and
15 the efficient way to deal with questions arising from 15: 24
16 that is to listen to the evidence and if there are
17 matters that are not answered ask questions. But don't
18 start asking questions before the submission is
19 completed.

20 **MR. J. McELLI GOTT:** Okay, Mr. Inspector, you 15: 24
21 did say in the document
22 that was sent out from An Bord Pleanála that documents
23 that were already submitted must be taken as read, and
24 evidence evening they had 37 pages in one document and
25 40 pages in another. 15: 24

26 **INSPECTOR:** Yes, I accept that, but I
27 did correct that at the end
28 of yesterdays proceedings and I think the applicants
29 have taken that on board in their first presentation

1 this morning and I would like to give them the
2 opportunity of continuing in that vain.

3 **MR. J. McELLI GOTT:** Just one other point is
4 that the half an hour was
5 to take Dr. Havens back to the airport, because he came 15: 24
6 out of his way to come over from America for nothing.
7 So, I was just rushing back from the airport and I was
8 only half an hour late. Thank you.

9 **MS. GRI FFIN:** And we can't afford to pay
10 a taxi to bring Dr. Havens 15: 24
11 to the airport.

12 **MS. O' CONNOR:** May I also say that I
13 wasn't here this morning
14 but I was told that you wished to ask me something so I
15 am here now. 15: 25

16 **INSPECTOR:** I will talk to you later
17 about that, it is just
18 something very minor.

19 **MR. O' NEI LL:** Mr. MacI ntyre please.

20
21 **MR. MACI NTYRE PRESENTED HIS SUBMI SSION AS FOLLOWS:**

22
23 **MR. MacI NTYRE:** Mr. Inspector, my name is
24 Bl ai r MacI ntyre. I will
25 not go through my CV, because we have done that part of 15: 26
26 it al ready. My pri nci ple poi nts of evi dence will
27 cover: Design of LNG shi p berthi ng; offl oadi ng and
28 associ ated faci li ti es; mari ne faci li ti es constructi on
29 acti vi ty; LNG shi ppi ng operati ons; safe navi gati on of

1 LNG ships in port areas; safety hazards and risks
2 associated with LNG shipping.

3
4 **Design of LNG Ship Berthing Offloading and Associated**
5 **Facilities.** The site layout of the proposed Shannon 15: 26
6 LNG terminal, reference EIS Volume 2, section 2.5.2.2.
7 I will not read further through this because it is
8 basically repetitive of many of the things already in
9 the EIS. So I would like to skip down one paragraph to
10 the ship manoeuvring simulation carried out at the 15: 27
11 National Maritime College of Ireland.

12
13 NMCI, Ringaskiddy, Co. Cork was used to test safe
14 berthing of LNG ships and to confirm the viability of
15 jetty location. Reference EIS. NMCI modelled the 15: 27
16 Shannon Estuary, including the entire navigation route
17 which LNG ships visiting the proposed Shannon LNG
18 terminal will take. Irish Hydrodata provided all the
19 tidal current data recordings which were also loaded
20 into the model enabling very accurate conditions to be 15: 27
21 simulated. Shannon LNG provided manoeuvring data and
22 ship handling characteristics for three different sizes
23 of LNG ships, including the largest ones which the
24 terminal is designed to accommodate. This was used
25 along with models of the large tugs which will be 15: 27
26 employed to assist the ships. The facility was used by
27 six of the current eight Shannon Estuary pilots to
28 simulate the arrival, berthing and departure of ships
29 under various environmental conditions of wind, tide

1 and current.

2
3 The initial simulation exercise spanning five days was
4 used to confirm the viability of the preferred jetty
5 location, to identify and refine handling techniques 15: 28
6 and to investigate the power and number of tugs
7 required. The exercise also included simulated
8 emergency situations such as a tug failure or a
9 complete power failure on board the ship.

10 15: 28
11 The design objectives of the jetty I will also skip
12 over because I think they are dealt with
13 comprehensively.

14
15 The next paragraph "LNG jetty", I will also skip over. 15: 28
16 I will take you to the section "the jetty head will
17 comprise".

18
19 The jetty head will comprise the unloading platform,
20 six mooring dolphins and four breasting dolphins. The 15: 29
21 mooring dolphin layout is based on the Oil Companies
22 International Marine Forum (OCIMF) standard industry
23 recommendations for angles of mooring lines. To
24 development the layout each size ship was positioned
25 against the jetty in simulation and the berth was 15: 29
26 designed symmetrically to accommodate ships berthed in
27 either direction. There will be a total of four
28 cryogenic arms, three for unloading LNG and one for
29 returning vapour to the ship. The platform will

1 include space for one additional LNG unloading arm.
2 Although not written here, I will add the point that
3 Captain Coughlan made, that instrumentation on the
4 jetty will include distance off and speed of approach
5 indicators which can be read from on board the ship by 15: 30
6 the captain and the pilot.
7

8 The trestle connecting the jetty head to the shore was
9 designed to include a roadway for operational and
10 maintenance access. The trestle will support the LNG 15: 30
11 cryogenic pipelines, utility and fire protection
12 systems and the seawater intake and discharge pipes for
13 the vaporisation system.
14

15 As determined by sea state and tidal high research 15: 30
16 carried out by Halcrow, the jetty platform level has
17 been set at +9m OD Malin Head to remain clear of
18 extreme water levels and waves over the predicted life
19 of the project.
20

21 The next section deals with the construction of the 15: 30
22 materials jetty and I propose that we skip over that.
23 "If constructed, the materials jetty" we skip over.
24 The next paragraph "in the LNG evaporation process", I
25 think we should skip, and also the next one on the 15: 31
26 seawater pump house, because they are rather
27 repetitious. I would lead you to 3.2, "marine
28 facilities construction activity". Equally, I would
29 like to skip through that because it is dealt, I think,

1 comprehensively and covered by others.

2
3 There is just one section in that on page 9, the second
4 paragraph, to record that the jetty construction
5 contractor will be required to liaise closely with 15: 31
6 Shannon Foynes Port Company Harbour Master and piloted
7 superintendent in relation the scheduling of
8 activities.

9
10 Support barges will be moored and anchored so as not to 15: 31
11 interfere with traffic in the navigation channel and in
12 accordance with guidelines established by the Harbour
13 Master.

14
15 I would now like to skip to 3.3, "LNG shipping 15: 32
16 operations".

17
18 Shannon Foynes Port Company (SFPC) is responsible for
19 all maritime activities in the estuary. The Harbour
20 Master and piloted superintendent has authority over 15: 32
21 all matters related to pilotage, direction to vessels
22 and movement of vessels.

23
24 The next section I propose to skip, as Captain Coughlan
25 has described it rather well. There is one, figure 6, 15: 32
26 which is "pilotage in the Shannon Estuary", that is
27 also represented in the EIS and shows the predicted
28 path of the ship.

29

1 I would now like to direct you, Mr. Inspector, to page
2 11, second paragraph, "follow on simulation exercises".

3
4 Follow on simulation exercises are planned at NMCI to
5 establish limiting operational parameters such as wind 15: 33
6 speed and direction and to identify the location of any
7 additional navigational aids required, such as buoys,
8 to mark shallow water areas to the east and west of the
9 berth. The simulations will include transit from the
10 pilot boarding station through the Béal Bar channel and 15: 33
11 into and out of emergency anchorages. At a later date
12 the full training programme will be prepared to qualify
13 Shannon pilots in the handling of LNG ships and this
14 will be undertaken in conjunction with tug masters and
15 the captains of LNG ships scheduled to deliver cargo to 15: 33
16 Shannon LNG.

17
18 LNG ships delivering cargo to Shannon LNG's terminal
19 will require tug support for all phases of arrival and
20 departure, for estuary channel navigation and for 15: 34
21 standby fire fighting cover duties during cargo
22 discharge operations. This is referenced in the EIS.
23 Although there are well established tug boat operations
24 in the Shannon Estuary, they are not adequate for the
25 proposed LNG trade and will have to be upgraded or 15: 34
26 supplemented by high powered tractor tugs equipped with
27 fire fighting capabilities. The number and final
28 specification of tugs required will be derived with
29 input including data from ship manoeuvring simulations

1 coupled with feedback from other established LNG
2 operations and by reference LNG industry standards.
3 Present indications are that four tugs will be
4 required. Each will be powered by twin diesel engines,
5 with an approximate total power of 5,500 horsepower, 15: 35
6 giving approximately 65 tonnes of bollard pull. It is
7 intended that at least two will be classed as escort
8 tugs, signifying that they are specifically designed
9 for assisting a vessel in providing control by steering
10 and braking, as necessary. They will also carry a fire 15: 35
11 fighting notation indicate that they are equipped with
12 high pressure, high capacity water jet monitors and a
13 water spray system to an international fire fighting
14 standard. Mooring boats and gangs will also be
15 contracted to provide services for arriving and 15: 35
16 departing ships.

17
18 The mooring equipment has been designed to hold all
19 sizes of ships in position in wind speeds of up to 60
20 knots in any direction, with a three-knot current 15: 35
21 parallel to the berth and a half knot current off the
22 berth without exceeding 55% of the breaking load of any
23 mooring line. It is therefore designing to restrain
24 ships in weather conditions far exceeding those under
25 which they would be allowed to enter the port. Thus 15: 36
26 providing a high margin of safety.

27
28 I would now like to skip ahead two three paragraphs to
29 page 12, the 4th paragraph.

1
2 During LNG unloading a pipeline from the shore storage
3 tank will return vapour to the ship's tanks via a
4 return vapour arm, making the entire transfer operation
5 a closed loop system with no venting to atmosphere. 15: 36
6 Throughout the cargo transfer operation close
7 communication will be maintained between persons
8 responsible on board ship and on shore supported by
9 automatic monitoring devices and continuous foot
10 patrols on deck. 15: 37
11
12 During the LNG unloading operation the vessel will
13 simultaneously load seawater into the ballast tanks to
14 provide stability when the cargo tanks are empty.
15 There will be no discharge of ballast while the vessel 15: 37
16 is within the Shannon Estuary.
17
18 The outward passage will, in most respects, be a
19 reversal of the inward passage, with one tug in
20 attendance escorting the vessel back down the estuary. 15: 37
21 The ship will have been at the berth for approximately
22 24 hours and in Irish waters for around 28 to 30 hours.
23
24 Shannon Foynes Port Company is charged with oil
25 pollution prevention and control in compliance with 15: 37
26 Irish national and international legislation and has
27 established a response team with local port users. The
28 team carries out annual exercises to ensure readiness
29 and swift reaction to any incident. Also, as required

1 by legislation, SFPC in cooperation with the local
2 authorities, the Irish Coast Guard and the port users
3 has developed a Marine Emergency Response Plan for the
4 entire Shannon Estuary. As a new port user, Shannon
5 LNG will join and cooperate fully with these
6 activities, including preparation of a Marine Emergency
7 Response Plan.

15: 38

8
9 I will now move to section 3.4: Safe Navigation of LNG
10 Ships in Port Areas.

15: 38

11
12 The principle objective of safe navigation of an LNG
13 ship in a port area is elimination of the risk of a
14 high energy event which could potentially result in
15 breaching the LNG cargo containment system. A typical
16 high energy event would be grounding at speed on a
17 pinnacle of rock or a collision involving another large
18 displacement vessel striking the side of an LNG vessel
19 in the cargo tank area. All LNG ships have a double
20 hull structure within which a separate cryogenic cargo
21 containment system is located. In this respect LNG
22 ships are naturally very robust, as illustrated in the
23 following figures 6 and 7.

15: 38

15: 39

24
25 Figure 6 shows a membrane tank ship with an outer hull
26 and inner hull and the cargo containment within side
27 that and a clear space between the hulls. In figure 7
28 a moss spherical type ship is shown with a very, very
29 robust side structure and bottom supporting the

15: 39

1 spherical tank. That is required because, of course,
2 there is no deck on the ship and all the strength must
3 be built into the sides and bottom of the ship, which
4 makes them extremely robust in terms of resistance to
5 collision damage.

15: 40

6
7 The next section "admiralty charts..." is well covered,
8 I think, within the EIS so I would skip one paragraph
9 to "elimination of the risk".

15: 40

10
11 Elimination of the risk of a high energy collision
12 involving an LNG ship is effected by having control
13 over the movement of the LNG ship and over the other
14 vessels capable of being party to such a collision. In
15 the Shannon Estuary control is exercised by the current
16 requirements for all vessels navigating within the
17 estuary to have a pilot on board and will be
18 supplemented by a moving safety or control zone
19 established around a loaded LNG ship in transit. The
20 pilots communicate with each other and, where
21 appropriate, with the Vessel Traffic Service Station on
22 shore and will adjust the speed and course of the
23 vessel they are controlling to ensure that a
24 predetermined distance is maintained between the LNG
25 ship and any other large vessel in transit at the same
26 time. By this arrangement other large vessels will not
27 enter the LNG ship safety zone and will not pose a risk
28 of collision. The size of the safety zone will be
29 determined by the Harbour Master, the determination

15: 40

15: 40

15: 41

1 being largely based upon local circumstances, including
2 the layout of the port, the type and frequency of
3 marine traffic it handles and the speed of transit.
4 Usually there are no strict safety zone regulations
5 placed on small vessels or leisure craft, which pose no 15: 41
6 threat to an LNG ship, other than the normal
7 navigational requirements to keep well clear of large
8 displacement vessels in transit.
9

10 The Shannon Estuary currently has an average of about 15: 41
11 six ship movements under pilotage per day, three inward
12 and three outward, the majority of vessels being of
13 around 40,000 deadweight tonnes or less. By
14 international port standards this is very light marine
15 traffic and there should be no difficulty or 15: 42
16 significant delay involved in vessels keeping clear of
17 an LNG ship's moving safety zone based on the initial
18 proposal of about one ship per week ultimately
19 increasing to an average of two per week.

20 15: 42
21 An LNG ship approaching the jetty will do so either
22 directly from the west, but more likely by turning in
23 the estuary to berth from the east with the bow of the
24 vessel heading west. This is illustrated in EIS Volume
25 4. This will result in the LNG ship turning no further 15: 42
26 upstream than approximately half a mile east of Ardmore
27 Point. The Tarbert-Killimor ferry route operates more
28 than one and a half miles or two and a half kilometres
29 further upstream and will be unaffected by any LNG

1 shipping activity. This is shown in the EIS Volume 4,
2 appendix 3A.

3
4 When approaching the jetty the LNG ships are virtually
5 immune to cargo leakage from typical damage such as 15: 43
6 could be inflicted by a tug both impact or by heavy
7 contact with the jetty structure. Only the outer hull
8 would be involved in these relatively low energy
9 events.

10 15: 43
11 The safety of an LNG G ship berthed at the jetty could
12 potentially put at risk by the navigation of other
13 large vessels if they passed close by at speed. There
14 is potential for the wash from a large displacement
15 vessel to overstrain moorings or for an allision 15: 43
16 (classed as a collision with a stationary vessel,
17 structure or object) if the passing vessel suffered
18 power and/or steering failure. The Shannon Estuary off
19 Ardmore Point, where the LNG jetty is located, is more
20 than one mile wide, allowing transit vessels to pass 15: 44
21 well clear of the berthed LNG ship and outside the
22 range of potential wash or allision damage. In any
23 event a large tug will be maintained on station acting
24 as a combined guard and fire fighting boat during any
25 period that an LNG ship is on the berth and would 15: 44
26 always be available to intervene and assist if a
27 passing vessel lost power and drifted towards the LNG
28 jetty.

1 Lloyd's Register was commissioned to carry out a review
2 of casualty data in 2004. The review included all
3 severe collision incidents worldwide during the
4 previous 15 years involving vessels greater than 50,000
5 deadweight tonnes. This was undertaken using Lloyd's
6 Register Fairplay's SeaWeb database, which contains
7 over 140,000 ships and forms the world's principle
8 source of maritime information. The report identified
9 154 individual vessel incidents, of which 17 involved
10 vessels of double bottom or full double bottom and
11 side skinned, i.e. double-hulled vessels. Of these 17
12 incidents ten occurred whilst the vessels were
13 stationary or travelling at reduced speed in the port,
14 in restricted waters or in a river channel and of the
15 ten incidents two resulted in pollution, although in
16 both cases the pollution involved spillage of fuel oil
17 but not cargo, and both incidents involved vessel of
18 single side skin and double bottom construction i.e.
19 not vessels having a full double hull such as fitted to
20 all LNG ships.

15: 44

15: 45

15: 45

15: 45

21
22 The report concluded that there had not been a
23 collision incident involving a large double sided
24 vessel in the previous 15 years which has resulted in
25 significant damage to the inner hull. In effect, the
26 report confirmed that there had not been any incident
27 in the previous 15 years involving a large double
28 hulled vessel of identical or similar construction to a
29 modern LNG ship in a port/navigation berthing situation

15: 46

1 which had resulted in penetration of the inner hull.
2 This report is available.

3
4 It should be noted that the source data for the report
5 included not only LNG carriers but also the full range 15: 46
6 of tankers, including LPG and chemical carriers, very
7 large crude carriers (VLCCs), ultra large crude
8 carriers (ULCCs) and certain large bulk carrier and
9 container vessels. None of these vessels are subjected
10 to the same regulatory controls or accorded with the 15: 46
11 same moving safety zone and tug escorts that are
12 provided for LNG ship transits in port areas.

13
14 Safety of LNG ship navigation within the Shannon
15 Estuary has been addressed in a preliminary Major 15: 47
16 Accident Hazard Assessment which was detailed in the
17 EIS and which I will discuss in more detail later.
18 This assessment was carried out at an early stage in
19 order to identify and address any potential major
20 hazards generated by the proposed shipping activity 15: 47
21 which may impact human beings or the environment. The
22 work was carried out in advance of the marine QRA
23 currently being undertaken by Shannon Foynes Port
24 Company. The QRA will provide the Harbour Master with
25 additional data on which to base his requirements for 15: 47
26 Shannon LNG's marine operations and will also give an
27 independent assessment of Shannon LNG's proposals.
28 This process is in line with SFPC's policy and with
29 industry recommendations such as promoted by SIGTTO.

1 Section 3.2 - Safety Hazards and Risks Associate With
2 LNG Shipping.

3
4 Safety considerations associated with marine
5 transportation of LNG differ from those associated with 15: 48
6 land based storage, handling and processing of LNG the
7 emphasis in marine transportation is on providing
8 secure marine cargo containments systems and protecting
9 them from the perils of the sea and navigational
10 incidents. This is referenced in the EIS. 15: 48

11
12 The International Maritime Organization (IMO) has
13 developed standards for the design, construction and
14 equipment of all classes of ships, including a code
15 covering "Ships Carrying Liquefied Gases in Bulk," with 15: 48
16 specific reference to LNG. The US Coast Guard has
17 developed additional requirements for LNG ships trading
18 to US ports and International Classification Societies,
19 such as Lloyds Register of Shipping and The American
20 Bureau of Shipping issue rules and regulations for the 15: 49
21 construction and routine survey of LNG ships. These
22 rules and regulations are designed to ensure the
23 structural strength and watertight integrity of the
24 hull, the safety and reliability of propulsion and
25 steering machinery and the safety and effectiveness of 15: 49
26 the systems installed to project cargo and crew.

27
28 Strict adherence to IMO, USCG and Classification
29 Society standards has enabled the marine industry to

1 compile an outstanding record of safe LNG shipping
2 operations spanning more than 45 years. Since 1962,
3 LNG has been transported worldwide by sea in regular
4 trade routes without a major release of cargo or a
5 major accident involving an LNG ship either at sea or 15: 49
6 in port. The SIGTTO records show that as of 31st
7 December, 2007 LNG ships have made more than 52,000
8 voyages worldwide and safely delivered more than 4
9 billion cubic metres of LNG.

10 15: 50
11 Actual grounding incidents and theoretical calculations
12 together suggest that, even from initial speeds of 12
13 knots, rupture of the cargo containment system is
14 non-credible under the port approach conditions. Final
15 approach to the proposed terminal will be undertaken at 15: 50
16 speed of approximately 5 knots or less and in waters
17 having a large under keel clearance.

18
19 Collisions giving rise to concern would have to involve
20 another large vessel travelling in the opposite or in a 15: 50
21 crossing direction. For another vessel to approach
22 within collision range, would imply failure of the Port
23 Authority and pilots to restrict the simultaneous
24 movement of over shipping in the vicinity of an LNG
25 ship in transit. The Review of Collision data referred 15: 51
26 to in the previous section demonstrates the minimum
27 risk of damage to an inner hull of an LNG ship under
28 port transit or berth conditions.

1 The successful risk management of LNG shipping and the
2 operation in LNG ports can be contributed to the
3 special construction features and unique operational
4 controls that have been applied to LNG shipping
5 movements within ports. These include: 15: 51

- 6
- 7 - Independent cargo containment systems located within
- 8 an outer double-hulled structure.
- 9 - Effective vessel traffic systems restricting other
- 10 vessel movements 15: 51
- 11 - The use of escort and guard vessels
- 12 - Provision of adequate tug power to control LNG
- 13 ships, even in a dead-ship condition.
- 14 - Strictly enforced operating conditions of wind force,
- 15 tidal currents and visibility, and 15: 51
- 16 - Strict training and qualification standards for crew
- 17 and pilots.

18

19 By building on established LNG shipping management
20 principles and controls Shannon LNG believe that the 15: 52
21 proposed LNG ships, during transit and at the berth,
22 will not be exposed to any operational risk with the
23 potential to breach the cargo containment system or
24 otherwise result in spillage of LNG. LNG ships will be
25 managed such that in the event of human error or 15: 52
26 mechanical failure resulting in a grounding, collision
27 or allision incident, the consequences will be limited
28 to a low energy impact having minimal possibility to
29 initiate release of cargo.

1
2 The liquid cargo and vapour handling equipment and pipe
3 work on board each LNG ship is fabricated from
4 cryogenic materials, primarily stainless steel, and
5 utilises very conservative ratings of pressure and 15: 52
6 stress. As far as practical, it is all of welded
7 construction to minimise areas of potential leakage
8 such as bolted flanges and connections. The pumps that
9 discharge the LNG cargo are electrically driven and
10 totally submerged at the bottom of each tank. There 15: 53
11 will be no pumping equipment on the deck of the
12 vessels.

13
14 LNG ships are fully self-sufficient in their fire
15 detection and fire fighting capability. All LNG ship 15: 53
16 crew members receive extensive training in dealing with
17 shipboard fires as is mandated under IMO Conventions,
18 including the Safety of Life At Sea (SOLAS) and
19 Standards of Training, Certification & Watchkeeping
20 (STCW). 15: 53

21
22 The IMO codes covering LNG ships requires them to have
23 fire detection and fire fighting equipment in excess of
24 that required by conventional oil ships. In addition
25 to the gas detection systems surrounding the cargo 15: 53
26 detainment, there are detectors in compressor rooms,
27 motor rooms, main engine room and accommodation areas.
28 Heater fire detectors are located at cargo tank domes
29 or covers at the cargo transfer manifold and in the

1 engine room and accomodati on spaces.

2
3 A preliminary major accident hazard assessment was
4 carried out for the shipping activity associated with
5 the proposed Shannon LNG terminal. This is referenced 15: 54
6 further.

7
8 This initial assessment was carried out in order to
9 identify and address at an early stage any major
10 hazards that may impact human beings or the 15: 54
11 environment. The assessment includes major hazard
12 identification potential impacts, prevention,
13 mitigation and residual impacts. Shannon Foynes Port
14 Company is currently undertaking a detailed QRA
15 covering all navigational aspects of shipping in the 15: 54
16 estuary.

17
18 The following items were identified as potential major
19 hazards associated with the LNG shipping operation:
20 Grounding, collision, fire, accidental release of fuel 15: 54
21 oil or cargo, deliberate release of fuel oil or cargo.
22 That refers to terrorism.

23
24 Each of the above hazards was evaluated to identify the
25 most significant potential impacts on human beings and 15: 55
26 the environment. Preventative measures in place or
27 proposed were evaluated for effectiveness against each
28 of the potential hazards and mitigation measures in
29 place or proposed to be taken in the event of an

1 incident were reviewed with the aim of reducing risk to
2 as low as reasonably practical (ALARP), thereby
3 identifying any residual impacts/
4

5 In addition, the consequences of a large release of LNG 15: 55
6 cargo, either accidental or deliberate, when addressed
7 together with extracts from a report ("The Sandia
8 Report"), released in December 2004 by the US
9 Department Of Energy Sandia National Laboratory, New
10 Mexico, US. The report is entitled "Guidance on Risk 15: 55
11 Analysis and Safety Implications of a Large Liquefied
12 Natural Gas (LNG) Spill Over Water". This report is
13 the most authoritative document currently publicly
14 available on the subject, although it is considered by
15 many within the industry and by some regulatory 15: 56
16 authorities to be overly conservative and further
17 research continues. At this time it is used by US
18 regulatory authorities in evaluating and mitigating
19 against worst case scenarios for new LNG projects.
20 However, the probability of a worst case scenario 15: 56
21 coming is extremely low and, therefore, the overall
22 level of risk remains low.

23
24 This is all documented in the EIS.
25

26 **Summary:**

27 The Major Accident Hazard Assessment considered
28 grounding, collision, fire and accidental or deliberate
29 release of cargo or fuel oil and arrived at the

1 following conclusions:

2
3 1. The risk of grounding, collision or allision is
4 minimal.

5 2. The risk of accidental release of cargo or fuel is 15: 57
6 minimal.

7 3. A deliberate terrorist attack on the ship could
8 result in release of cargo with fire.

9 4. Effective management safety and security practices
10 can mitigate the potential impacts of events to 15: 57
11 manageable levels. Risks from intentional events such
12 as terrorist attacks can be significantly reduce with
13 the appropriate security, planning, prevention and
14 mitigation.

15 5. The consequences of cargo release fire were 15: 57
16 evaluated against US Department of Energy Sandia
17 National Laboratory Report 2004 and demonstrated that:

18
19 - no shoreline areas would fall within the high
20 potential impact zone around the ship, even under a 15: 57
21 credible worst case terrorist attack scenario.

22
23 - Only three small shoreline areas would encroach
24 within the low potential impact area, even under a
25 credible worst case terrorist attack scenario. 15: 58

26
27 Mr. Inspector, I would now like to address some
28 responses to submissions made.

29

1 The first submission: Concern that LNG ships in the
2 estuary will pose risks to local communities, to
3 travellers on the roads of Clare and Kerry and on the
4 Tarbert-Killimor ferry. Also concern that the ferry
5 sailings will be delayed by LNG ships and there will be 15: 58
6 negative effects on the two existing ports in the
7 Shannon Estuary. There will also be an effect on all
8 leisure boats use the estuary.

9 this submission was by Bríd O'Brien, Kathy Sinnott, DB
10 Marine Research Associates and Killcolgan Residents 15: 58
11 Association.

12
13 Shannon LNG's response: Under all normal operations as
14 detailed in EIS Volume 4, appendix 3B the presence of
15 LNG ships either moving or berthed within the Shannon 15: 59
16 Estuary will present no risk to travellers on the roads
17 or ferries of Clare or Kerry. Even under a highly
18 unlikely credible worst case scenario, as describe in
19 the EIS, of a successful terrorist attack on the ship
20 resulting in the release of LNG and a pool fire there 15: 59
21 would be minimal risk to the public and only in three
22 specific small shoreline areas. As shown in the EIS
23 and described in my earlier written statement, LNG
24 ships manoeuvring in the estuary will never be nearer
25 than two and a half kilometres from the 15: 59
26 Tarbert-Killimor ferry and cause no disruption to its
27 operating schedule. When an LNG ship is in transit
28 there may be a small delay to another ship if it is
29 under pilotage at the same time in the same area, but

1 given the low level of shipping activity in the estuary
2 (referenced in the EIS volume 2) the overall impact
3 will be negligible, as will the impact on local
4 industry or other ports in the estuary which are many
5 kilometres upstream from the proposed LNG terminal. 16:00

6
7 The next submission. I have not seen any evidence of a
8 proposed exclusion zone around LNG tankers. Several
9 accidents have occurred involving LNG tankers. This
10 submission was by Catriona Griffin. 16:00

11
12 Response: There will not be any exclusion zone applied
13 around LNG ships but there will be a safety or control
14 zone. As described in the EIS, Volume 4, Appendix 3A
15 and Appendix 3B and earlier in my witness statement, 16:00
16 appropriate safety measures around LNG ships will be
17 established by the Harbour Master. The next extract is
18 from the EIS.

19
20 "Once clearance has been granted inward passage will 16:01
21 commence with any port safety and security measures as
22 defined by the Harbour Master in force around the
23 vessel. These measures, including any specific
24 restriction on other vessel movements, will be in place
25 for the passage to the LNG terminal". "On completion 16:01
26 of mooring, any measures in place around the vessel
27 during passage will be replaced by measures appropriate
28 to the cargo discharge phase of the operation".
29

1 EIS Volume 3, Appendix 3A presents an overview of the
2 LNG shipping safety and gives a listing of all
3 significant incidents which have occurred to date. The
4 introduction states: "Since the inception of LNG
5 maritime transportation there has been very few major 16:01
6 incidents involving LNG ships, none of which have
7 resulted in spills or loss of containment due to
8 breaching of cargo tanks."
9

10 The next submission: The most serious economic concern 16:02
11 is that the gas industry's own standard recommended
12 exclusion zone of two miles around an LNG tanker will
13 stop shipping - including the Tarbert-Killimor car
14 ferry - in the estuary every time an LNG tanker is in
15 the area (and Shannon LNG plan up to 125 tankers per 16:02
16 year) and prevent marine use of the rest of the
17 landbank if those safety standards are implemented.
18 The landbank will only be fit for other dirty projects,
19 which if assessed along with the LNG gasification
20 terminal would almost certainly be denied planning 16:02
21 permission.
22

23 This submission appears in various sections in the
24 Killochan Residents Association.
25

26 Response: The gas industry does not recommend an
27 exclusion zone of two miles around an LNG tanker. It
28 recommends that the dimensions and shape of any zone
29 should be determined in the context of the specific
16:02

1 conditions of a port. I have already stated that LNG
2 ship operations will not cause any disruption to the
3 operating schedule of the Tarbert-Killimor ferry and
4 there is no aspect of Shannon LNG shipping operations
5 that will prevent marine use of the rest of the 16: 03
6 landbank because there will be no exclusion zone. As
7 described in my testimony and in the EIS volume 4, the
8 movement of the LNG ships will not interfere in any
9 significant way with any other shipping in the estuary
10 given the low level of shipping activity, the safety 16: 03
11 measures to be applied by the Harbour Master, the
12 intended route of the LNG tankers and the width of the
13 waterway. In addition, once the LNG ship is moored
14 alongside the jetty there would be in prohibition of
15 any vessel mooring at an adjacent facility if that 16: 03
16 facility had been properly designed and the adjacent
17 vessel observed the necessary safety precautions
18 determined by the Harbour Master. LNG ships moor near
19 other berthed ship and vice versa in many harbours of
20 the world, including Boston, Barcelona, Yokohama and 16: 04
21 Osaka.

22
23 Submission: Is the limited exclusion zone proposed by
24 Shannon LNG around the tankers taking into account the
25 risk of an emission source as well as the risk of 16: 04
26 collision? This was submitted by the Killybeggs
27 Residents Association.

28
29 Response: The safety or control zone defined by the

1 Harbour Master will serve to restrict the intrusion of
2 ignition sources which may pose a threat to the LNG
3 ship.

4
5 Submission: "As a consulting engineer responsible for 16:04
6 a number of successful jetties and marine works, the
7 writer strongly objects to the project as proposed,
8 stating it to be inadequately planned. He officially
9 resents the project". This submission was by Dr. Peter
10 McCabe. 16:05

11
12 Response: The writer provides no basis for his
13 objection, either as to why he feels it is inadequately
14 planned or why he resents it. In the absence of
15 specific objections Shannon LNG cannot provide a 16:05
16 specific response.

17
18 Submission: A responsible person, during the
19 operational phase must ensure that a contingent plan
20 sufficient to deal with the eventuality of the 16:05
21 introduction of petrochemicals (from fuelling etc.) is
22 in place and made available to NPWS. Oil spills due to
23 increased ship traffic are a potential threat to
24 populations of many bird species in the outer Shannon
25 estuary. This submission was from The Department of 16:06
26 Environment, Heritage and Local Government.

27
28 Response: As described in the EIS, Volume 4, Appendix
29 3C, the risk of pollution from LNG shipping operations

1 is minimal.

2
3 "By building on established LNG
4 shipping management, principles and
5 controls Shannon LNG believes that the
6 proposed LNG ships during transit and
7 at the berth will not be exposed to any
8 operational risk with the potential to
9 breach the cargo containment system or
10 otherwise result in spillage of LNG. 16:06
11 LNG ships will be managed such that in
12 the event of human error or mechanical
13 failure resulting in a grounding,
14 collision or allision incident the
15 consequences will be limited to a low
16 energy impact having minimal
17 possibility to initiate release of
18 cargo or fuel oil. Thus, hazard risk 16:06
19 from the release of flammable vapour
20 and thermal radiation will also be
21 minimal. The risk of environmental
22 pollution will also be minimal."

23 EIS Volume 2, section 3.3 describes the pollution
24 prevention and control measures in place in the estuary 16:07
25 and with which Shannon LNG will be cooperating and
26 complying in full.

27 I think I have read through that before so I can skip
28 down. 16:07

29 Port operating procedures to be developed and approved
30 by the Harbour Master and administered by Shannon LNG's
31 Marine Superintendent and HSE Manager will address
32 pollution prevention and control from all sources and 16:07
33 will be made available to the NPWS. As recorded in EIS
34 Volume 4, Appendix 3C, Shannon LNG does not propose to
35 supply bunker fuel oil to ships visiting the terminal
36 and no bunkering facilities are being installed.

1 Therefore, there is no risk of oil release during a
2 bunkering operation. There will be no discharge of
3 ballast water from LNG ships while they are in the
4 Shannon Estuary (as referenced in the EIS).

16:08

5
6 Submission: The developer may require to consult with
7 the Marine Institute regarding dumping at sea in the
8 event of any dredging. No work should be commenced on
9 the foreshore before the appropriate foreshore
10 leases/licences have been obtained. This submission
11 was from the Department of Agriculture, Fisheries and
12 Food and also from the Killybegs Residents Association.

16:08

13
14 Response: Shannon LNG would say that no dredging work
15 is envisaged but the disposal of any excavated or spoil
16 material from marine works is addressed in EIS, Volume
17 2, Section 7.13.7.

16:08

18
19 "If suitable, the excavated material
20 and the spoil from pile installation
21 will be used in the earthworks or
22 landscaping ashore. If not suitable
23 for reuse the material will be disposed
24 of to landfill or at sea. One possible
25 sea disposal site will be to the east
26 of Scatterry Island.....

16:09

27 This location has been used by Shannon Foynes Port
28 Company and others for the disposal of dredge spoil.
29 The sea disposal option would require a dumping at sea
licence from the Department of Communications, Energy
and Natural Resources. The licence would be subject to
conditions to minimise environmental impact. Shannon

16:10

1 LNG is presently in the process of preparing
2 applications for shore release licences related to all
3 marine work.

4
5 The next **submi ssi on**: That no QRA has been done for the 16: 10
6 marine side of the operation, a submi ssi on from
7 Kil col gan Resi dents Associ ati on.

8
9 In **response**: The Shannon Foynes Port Company is
10 carrying out the QRA independently of Shannon LNG. 16: 10
11 Shannon LNG undertook a major hazard assessment of the
12 shi ppi ng acti vi ty i ncl udi ng appl i cati on of a
13 consequence analysi s consi deri ng a credi ble worst
14 terrorist attack scenari o based on Sandi a report
15 cri teri a whi ch are based on the assumpti on that no 16: 11
16 mi ti gati on measures are appl i ed. Thi s consi ders an LNG
17 spi ll of 50% capaci ty of one cargo tank of the standard
18 si zed LNG shi p. Thi s is reported i n EIS vol ume 4
19 appendi x 3C.

20 16: 11
21 The next **submi ssi on**: The si te is not suffi ci entl y
22 di stant from centres of popul ati on as per SIGTTO
23 gui del i nes and port cri teri a must sati sfy shi ps of
24 capaci ty up to 265, 000 cubi c metres, a submi ssi on from
25 Kil col gan Resi dents Associ ati on. 16: 11

26
27 My **response**: Havi ng been conti nuousl y i nvol ved i n the
28 acti vi ti es of the Soci ety of Internati onal Tanker and
29 Termi nal Operati ons (SIGTTO) si nce i ts foundati on i n

1 1979, and having been a director and vice president of
2 the society I am very familiar with its workings and
3 objectives. Industry organisations, including SIGTTO,
4 and the Oil Companies International Marine Forum
5 (OCIMF) which publishes advice and guidance on many 16: 12
6 aspects of oil and gas tanker safety and operational
7 best practice. The guidance is just that, it does not
8 have regulatory authority and does not substitute for
9 international, national or local rules and regulations
10 which govern shipping activities. This is especially 16: 12
11 true of safety distances related to radiant heat from
12 potential fires or vapour dispersion distances which
13 can only be calculated and defined by the regulatory
14 authority having jurisdiction over such matters for the
15 location in question. 16: 12

16
17 It is appropriate to note some extracts from general
18 text in SIGTTO publications:

19
20 "Criteria should not be understood as 16: 13
21 absolute values. These recommendations
22 are just basic guides to prompt special
23 inquiry into particular aspects.
24 Furthermore, the actual values still
25 depend on local conditions which have
26 to be covered individually port by
27 port."

28
29 Turning now to the SIGTTO publication "LNG Operations 16: 13
30 in Port Areas", page 17, section 4 and under the
31 heading of Terminal Site Selection it states as
32 follows:

33 "Invariably, and especially for

1 receiving terminals located in
2 developed port areas, the site
3 selection process is formed by many
4 considerations other than the risk
5 implications of tanker operations.
Therefore, compromising some or all of
the principal criteria for site
selections is often unavoidable."

16: 13

6 In other words, what SIGTTO recommends are not in any
7 way hard and fast criteria, often many items have been
8 varied, evaluated and if found necessary mitigation has
9 to be applied. However, it is very reassuring to
10 report that in the case of Shannon LNG's proposed
11 terminal site nothing has had to be compromised on the
12 marine design as the basics are ideal for an LNG
13 terminal. In my experience I have seen no location
14 having a better overall fit as an LNG receiving
15 terminal. The proposed site and marine facilities as
16 described in the EIS volume 2 sections etc. are in
17 every way compliant with SIGTTO guidelines.

16: 14

16: 14

18
19 The next **submissi on**: Windage has not been accounted
20 for because the specific gravity of LNG is a lot lower
21 than oil so the ship runs a lot higher in the water.
22 This was from the Killorgan Residents Association.

16: 14

23
24 In **response**: Windage of the LNG tankers has been taken
25 fully into account in the manoeuvring simulations
26 described in EIS volume 4. The simulation models
27 contain the windage coefficients of the various ship
28 sizes and the simulator can apply winds of varying
29 strengths and from any direction. The LNG ship mooring

16: 14

1 system as described in the EIS volume 4 appendix 3A
2 took into account the windage area of the LNG ships and
3 was designed for wind conditions far in excess of those
4 under which a ship would be allowed to enter port and
5 berth.

16: 15

6
7 The next **submi ssi on**: The US GAO report to Congress
8 states that the worst case scenario is a small hole in
9 an LNG carrier's containment. This is from Kilcolgan
10 Residents Associati on.

16: 15

11
12 In **response**: The GAO report concerns potential
13 terrorist attack on LNG ships and the consequence
14 assessment of a credible worst case scenario has been
15 carried out and reported in the EIS volume 4 appendix
16 3C.

16: 15

17
18 The next **submi ssi on** is an objecti on claiming that an
19 offshore locati on for a terminal would be safer than
20 the onshore one proposed, from the Kilcolgan Resi dents
21 Associ ati on.

16: 16

22
23 In **response**: There is no indication that the proposed
24 onshore terminal will not meet all the safety
25 requirements of the Irish HSA.

16: 16

26
27 The next **submi ssi on**: Concern over the impact of the
28 jetty construction and its locati on on siltati on and
29 sand bank movements towards the southern shore of

1 Co. Clare. This submission was from Clare County
2 Council.

3
4 In **response**: The construction and structure of the
5 jetty will only involve open steel piles which will 16:16
6 pose minimal obstruction to the existing tidal flow of
7 the estuary waters. There will, therefore, be no
8 influence to either the velocity or direction of the
9 existing tidal currents in the estuary and no influence
10 to conditions on the Co. Clare side of the estuary. 16:17

11
12 The next **submission**: Concern over the potential impact
13 of the proposed development and the associated shipping
14 movements on the SAC, this submission also from Clare
15 County Council. 16:17

16
17 In **response**: The increase of up to 125 ships per year
18 representing no more than 15% of the existing marine
19 traffic is not considered significant. 16:17

20
21 My colleagues Stiofán Creaven and Simon Berrow will
22 discuss this further.

23
24 The next **submission**: Concern over the effects of
25 proposed LNG shipping activity on the water régime 16:17
26 including any changes to temperature etc., a submission
27 also from Clare County Council.

28
29 The increase of up to 125 ships per year representing

1 no more than 15% of the existing marine traffic is not
2 considered significant. As stated in the EIS volume 4
3 appendix 11A-5 the ships will be coated with non-toxic
4 tin-free hull paints and will not discharge water
5 within the estuary. Operation of the LNG ships will 16: 18
6 have no effect on the temperature of the body of water
7 within the estuary.

8
9 Before concluding I would like to turn to some oral
10 submissions which we have heard and I would like to 16: 18
11 comment on them. Just give me one minute. I think we
12 heard from Catriona Griffin today that there was an
13 incident in Savannah where an LNG tanker left the berth
14 requiring it to be evacuated for 36 hours I think was
15 what was said. 16: 18

16
17 I am very familiar with this incident. It occurred in
18 March 2006. The ship was the Golar Freeze which was a
19 125,000 cubic metre ship. The berth at Elba Island in
20 Savannah is very close and at right angles to the main 16: 19
21 channel into the port. A chemical carrier passed the
22 bow of the LNG carrier at 14 knots, the bow wave from
23 the chemical carrier impacted the bow of the LNG ship
24 breaking some moorings and it moved 15 feet from the
25 berth of the bow. The emergency disconnect couplings 16: 19
26 of the terminal's offloading arm prevented any release
27 of either LNG or vapours and this was reported by the
28 US Coast Guards main safety branch. The dock was shut
29 down for 36 hours, i.e. the dock was shut down, the

1 facility was not evacuated; however, representatives
2 from the Coast Guard and the LNG engineer from the
3 Federal Energy Regulatory Commission investigated the
4 incident. Commercial ship traffic was not affected by
5 the shutdown. According to Georges Port authority:

16: 20

6 "We have seen no delays, it is business
7 as usual."

8
9 So in other words what happened here was that a ship
10 passed very close, affected the moorings of the LNG
11 ship, the system built into the discharge arms operated
12 correctly, stopped the discharge or cargo and
13 disconnected the arms so all of the automatic systems
14 worked perfectly and there was no release, no vapours
15 and no evacuation.

16: 20

16: 20

16 **MS. GRIFFIN:** Could I respond to that,
17 Mr. Inspector?

18 **MR. MacINTYRE:** Could I carry on?

19 **INSPECTOR:** Continue.

20 **MR. MacINTYRE:** Thank you. I would now
21 like to address some

16: 21

22 questions submitted yesterday by Mr. David Robinson.
23 The first question was: What is the worst case
24 scenario for a spill of LNG in water that a
25 Quantitative Risk Assessment (QRA) has been done by
26 either the port authority, LNG companies or independent
27 risk assessment?

16: 21

28
29 Shannon LNG has carried out a major accident hazard

1 assessment for the LNG shipping activity which includes
2 a consequence assessment of cargo release and fire
3 evaluated against US Department of Energy Sandia
4 National Laboratory Report 2004, Credible Worst Case
5 Scenario Criteria. This was consistent with the Sandia 16: 21
6 methodology and covered all areas while the ship was in
7 Irish waters and at the berth. The major hazard
8 assessment is located in EIS volume 3 appendix 3C.
9

10 A notation to his question: If a proper full 16: 22
11 independent Quantitative Risk Assessment were to be
12 done for a spill of LNG in water it would be for one
13 fifth of the cargo which equates to 50,000 cubic metres
14 of one tank of the five of the LNG carrier.

15 16: 22
16 In response: The consequence assessment which was
17 carried out by Shannon LNG employed the Sandia worst
18 case scenario of half of one tank of a 125,000 cubic
19 metre ship; in other words, 12,500 cubic metres, fully
20 in line with the Sandia recommendation. 16: 22

21
22 The next question: What would be the domino effect if
23 an LNG pool fire were to occur that resulted from a one
24 metre, five metre or twelve metre hole in the tank of
25 an LNG carrier? 16: 23

26
27 In response I would say there is no consensus of
28 agreement within the industry with respect to whether
29 or not a pool fire resulting from a hole in one tank

1 would lead to a domino effect loss of integrity of
2 other tanks. The Sandia Report stated:

3 "Cascading damage, multiple cargo tank
4 failures due to brittle fracture with
5 exposure to cryogenic liquid or fire
6 induced damage to foam insulation was
7 considered. Such releases were
8 evaluated and while possible under
9 certain conditions are not likely to
10 involve more than two or three tanks
11 for a single incident. Cascading
12 events were analysed and are not
13 expected to greatly increase not more
14 than 20 or 30% the overall fire size or
15 hazard ranges but will increase the
16 expected fire duration."

16: 23

16: 24

12 A subsequent question: Given that an LNG pool fire
13 burns at well 1,000 degrees Celsius and the LNG carrier
14 is moored with ropes made of polypropylene, which have
15 a low melting point, where would the burning LNG
16 carried be carried by wind and tide?

16: 24

18 In response: Not all LNG carriers employ synthetic
19 mooring lines. Many employ mooring wires, although
20 most wires do have nylon tails. During ship
21 manoeuvring simulation exercises in the National
22 Maritime College of Ireland (NMCI) at Ringaskiddy,
23 Shannon LNG simulated the effects of wind and tide on
24 an unrestricted and disabled LNG ship to determine the
25 direction of drift it might adopt from an initial
26 position on the berth. Different combinations of wind
27 and tide were used and the results indicated that a
28 disabled ship would in most cases drift in a north
29 north west direction, i.e. towards the centre of the

16: 24

16: 25

1 estuary. This is referenced in EIS volume 4 appendix
2 3C section 4.

3
4 In accordance with industry recommendations and the
5 requirements of most ports, all LNG ships will be 16: 25
6 required to rig steel fire wires at both ends of the
7 vessel while berthed. One end of each fire wire is
8 insured on board the ship while the other end is
9 suspended at a suitable distance above the water so
10 that it can be caught quickly and made fast on board 16: 25
11 the stand-by tug for emergency towage of the ship.

12
13 The next question: Is the deliberate ignition of any
14 gas cloud on water being considered by the LNG
15 companies or port authority? 16: 26

16
17 I cannot speak for the port authority, but in response
18 I would say no.

19
20 The next question says: Who will be responsible for 16: 26
21 ignition of the cloud and what domino effects are
22 expected from this cloud ignition? That is not
23 applicable. We have responded, no, that we would not
24 attempt to ignite it.

25 16: 26
26 A subsidiary question: Note, the Sandia Report 2004
27 makes a statement on page 46. This suggests that LNG
28 vapour dispersion analysis should be conducted using
29 site specific atmospheric conditions, location

1 topography and ship operations to assess adequately the
2 potential areas and level of hazards to public safety
3 and property. Risk mitigation measures such as
4 development of procedures to quickly ignite the
5 dispersion cloud and stem the leak should be considered 16: 27
6 if conditions exist that the cloud would impact
7 critical areas.

8
9 In response: Shannon LNG would say that as the Sandia
10 Report considered leaks from containment breaches of 16: 27
11 0.5 metres or greater inferring even larger holes in
12 both inner and outer hulls we would estimate at least
13 four times as large, it would seem to Shannon LNG that
14 the ability to effectively stem a leak appears remote.

15 16: 27
16 The next question: Are you aware of the GOA report of
17 the US Congress GOA 07-316, maritime security public
18 safety consequences of a terrorist attack on a tanker
19 carrying Liquefied Natural Gas. We need clarification
20 it says. 16: 28

21
22 In response: Yes, we are aware.

23 The next question in your risk assessment deliberations
24 have you taken into account of the relationship between
25 hull size and cascading tank failures. Hole size is an 16: 28
26 important parameter for modelling LNG spills because of
27 its relationship to the duration of the event. Larger
28 holes allow LNG to spill from the water more quickly
29 resulting in large LNG pools and shorter duration

1 fires. Conversely, smaller holes could create longer
2 duration fires. Cascading failure is important because
3 it increases the overall spill volume and duration of
4 the spill, page 11 of the above report.

16: 28

5
6 In response: Yes, hole size as per Sandia Report
7 criteria was considered in the consequence assessment
8 reported in the EIS volume 4 appendix 3C. Note my
9 previous response to question 3A for a comment on
10 cascading tank failure.

16: 29

11
12 The next question: In your risk assessment
13 deliberations did you take into account that waves and
14 wind will tend to tilt an LNG pool fire down wind
15 increasing the heat hazard zone in that direction, page 16: 29
16 12 of the above report.

17
18 In response: Yes, wind tilt is taken into account in
19 the Sandia criteria and in our application of it.
20 Sandia ignored waves and considered worst case flat 16: 29
21 calm conditions; therefore, waves have not been taken
22 into account as there is no accepted method of
23 modelling the effect of waves in a pool fire. However,
24 as stated in the GAO report it is generally recognised
25 that waves can inhibit the spread of an LNG pool 16: 30
26 keeping the pool size much smaller than it would be on
27 a smooth surface and thereby reducing the size of the
28 LNG pool fire.

1 I would now like to turn to a couple of questions or
2 unanswered ones of Captain Coughlan and one which you,
3 Mr. Inspector, requested regarding the impact of
4 something like a fishing boat or a trawler on an LNG
5 vessel. There was a study carried out by Germanish 16: 30
6 representatives in Germany some years ago. Some
7 details of it are copied in the SIGTTO information
8 paper 14 which is already in the record as it was
9 submitted in the Kilcolgan residents submission and
10 this estimated the displacement of ships and the speed 16: 31
11 they would have to be travelling at in order to
12 penetrate both the outer hull, inner hull and
13 containment system of an LNG ship.

14
15 If I give you some example here from this. This is the 16: 31
16 hull resistance of a 135,000 cubic metre LNG carrier,
17 that a ship of displacement of 20,000 tonnes would have
18 to hit the side of the ship at greater than 7.3 knots
19 to reach the inner hull of the ship. There are details
20 for larger sized ships as well. I think this indicates 16: 31
21 that any small vessel would not penetrate the hull.

22
23 I can relate to you my own personal experience of a new
24 LNG ship just being delivered from a shipyard in Japan.
25 It was of 135,000, about the same size, it was anchored 16: 32
26 outside the Port of Nagasaki on a fine morning, a
27 Japanese fishing boat, equivalent to a large
28 steel-hulled trawler returning from fishing, everybody
29 asleep on autopilot, steamed straight into the side at

1 right angles. It penetrated the outer hull of the LNG
2 ship and I would say that the deepest indentation was
3 probably in the order of one foot or 300 millimetres.
4 Given that the double hull structure is at least two
5 metres thick it got nowhere near the inner hull. I am 16: 32
6 very familiar because I had to supervise the repair.
7

8 Also there were comments on the number of whale
9 watching vessels and trips. In the EIS volume 2.3.3
10 Shannon LNG recorded that the level as we were 16: 33
11 investigating and found was approximately 500 trips per
12 annum out of two ports in Co. Clare so it's
13 approximately 500 trips per annum was what we got
14 there.

15 16: 33
16 Also a comment was made I think by Dr. Havens saying
17 that LNG ships were denied access to all ports in
18 America. I think following 9/11 the only port that was
19 restricted was Boston and that was related to the fact
20 that the planes which attacked the Twin Towers had 16: 34
21 originated from Boston so the only port that was
22 restricted was Boston.

23
24 Two other questions which were I think raised regarding
25 the HSA: Would a QRA of a leak from a ship with a 16: 34
26 capacity of 265,000 cubic metres and the consequences
27 of such a leak be needed for the Local Authority in
28 order for the Local Authority to produce an emergency
29 plan? It is our understanding that a leak from a ship

1 of that size within port areas is considered
2 non-credible. Given the statements which Captain
3 Coughlan made, given what Sandia also says about the
4 unlikelihood under port conditions of an accident
5 causing release of cargo and that is agreed in the 16: 35
6 reports of FERC, the Federal Energy Regulatory
7 Commission in the USA, they believe that the risk of
8 release of cargo due to accidental events in port areas
9 to be virtually non-credible. The only circumstance in
10 which these large releases could take place would be 16: 35
11 the terrorist attack scenario.

12
13 I think, Mr. Inspector, what Sandia says is spills on
14 water, it does not take into account where they occur,
15 how they occur, it looks at spills on water and it 16: 36
16 clearly says that in applying their criteria you have
17 to look at port specific conditions and as I think was
18 said earlier today there is absolutely no doubt that in
19 the wide oceans of the world the ships proceeding at
20 high speed sometimes on crossing courses then it is 16: 36
21 credible. When you come into the controls in ports
22 where ships are moving at slow speed, pilots on board,
23 escort tugs, control zone around the ships, the
24 collision event which could result in the half of a
25 full tank release of cargo is non-credible unless you 16: 36
26 bring in the terrorist attack and Captain Coughlan has
27 said that obviously if there was any terrorist threat
28 of an elevated level then the ship would not be allowed
29 into the port. He did not add, as I would, that if the

1 ship was already in it would be asked to leave
2 immediately.

3
4 One further question was: Is it possible to moor
5 another ship within the contour lines? This was 16: 37
6 referring to the shore contour lines from the QRA. As
7 Captain Coughlan said we would agree that any other
8 facility that was coming there, the position of the
9 berth would be a certain distance from the LNG berth to
10 maintain normal manoeuvring room for large ships and 16: 37
11 that that would possibly take it outside the edge of
12 the contour line, but there is no restriction of
13 industrial activity that we are aware of within the
14 contour line. Certainly other ports in the world the
15 division that I am familiar with is made on the basis 16: 38
16 of safety of manoeuvring and berthing of the two ships.
17 It is not based on QRA criteria.

18
19 I think these are all the questions that I had to deal
20 with and, therefore, in conclusion, Mr. Inspector, it 16: 38
21 is my view that the international regulations governing
22 the construction, operation and maintenance of LNG
23 ships, coupled with the regulations and instructions
24 that will be applied by the Shannon Estuary Harbour
25 Master and Pilot Superintendent, will ensure that the 16: 38
26 impact of the shipping activity will result in minimal
27 risk to human beings or the environment and have
28 minimal impact on other shipping activities. Thank
29 you.

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END OF SUBMISSION OF MR. MACINTYRE

INSPECTOR: Thank you, Mr. MacIntyre.
It is 4:35, I think maybe 16:39
we will take a five minute break at this stage.

(SHORT ADJOURNMENT)

THE HEARING RESUMED AFTER A SHORT ADJOURNMENT AS
FOLLOWS.

INSPECTOR: Okay, it is ten to five so 16:52
maybe we could resume our
seats please. Mr. O'Neill, would you like to present
your next speaker?

MR. O'NEILL: The next expert retained on 16:53
behalf of Shannon LNG who
is going to make a presentation to the hearing is
Dr. Franks and he is going to deal with the
Quantitative Risk Assessment carried out.

1 MR. ANDREW FRANKS ADDRESSED THE ORAL HEARING AS FOLLOWS

2
3 MR. FRANKS:

Good afternoon,

4 Mr. Inspector. Apologies
5 for not introducing myself earlier when I addressed
6 you. As counsel said my name is Andrew Paul Franks.
7 I am going to try and précis my statement for you as
8 much as I can in line with your guidance.

16: 54

9
10 Starting with section 1 on qualifications and
11 experience. I hold a Bachelor of Science Honours
12 degree and Doctorate of Philosophy in Chemistry from
13 Imperial College in London. Following successful
14 completion of UK Engineering Council examinations and
15 the design project for Institute of Chemical Engineers
16 and submission of my training and experience report,
17 I am also a Chartered Engineer with the UK Engineering
18 Council and a member of the Institution of Chemical
19 Engineers.

16: 54

16: 54

20
21 I am a Technical Director with Environmental Resources
22 Management Ltd. I am an employee with that company.
23 My main area of expertise is in the risk assessment,
24 particularly the Quantitative Risk Assessment (QRA) of
25 onshore major accident hazard facilities. I have been
26 involved in the assessment of major hazards for over 19
27 years. My work has included involvement in risk
28 assessment studies of a wide range of major accident
29 hazard facilities, including those handling LNG.

16: 54

16: 55

1 I have also provided advice to regulators such as the
2 UK Health and Safety Executive on matters relating to
3 risk assessment of major accident hazards for the
4 purposes of giving land use planning advice to local
5 authorities.

16:55

6
7 I am going to skip through the next couple of
8 paragraphs, Sir. Suffice it to say that I started out
9 with a couple of years in the chemical industry in
10 development. I moved to what was the major hazards and
11 transport group in the Safety and Reliability
12 Directorate in the UK Atomic Energy Authority.
13 Subsequently, I moved to the Health and Safety
14 Executive in 1993 where I was a specialist inspector in
15 the Major Hazards Assessment Unit. Just to go through
16 this paragraph.

16:55

16:56

17
18 Here my duties included risk assessment of a variety of
19 onshore major accident hazard sites for the purposes of
20 giving land use planning advice to local authorities in
21 the UK. I was also involved in managing research
22 projects and assessing the contents of safety reports
23 as required by the Seveso Directive. This included
24 assessment of safety reports for a variety of natural
25 gas processing and storage establishments including LNG
26 peak shaving facilities.

16:56

16:56

27
28 As regards the next paragraph, Mr. Inspector, suffice
29 it to say that I moved out of the HSE in 1997, worked

1 for a couple of different consultancy firms where again
2 I continued to be active in the major hazards risk
3 assessment area in terms of conducting QRAs, giving
4 advice to regulators, providing lectures on MSc courses
5 and conducting research projects for the HSE.

16: 57

6
7 The next paragraph on page 3 now, the second paragraph
8 down starting "my experience". My experience includes
9 managing the production of the Seveso pre-construction
10 safety report for the Dragon LNG Terminal in the UK.

16: 57

11 I have also acted as technical advisor and reviewer for
12 risk assessments of LNG import terminals in the US.

13 I was Project Manager for the safety and QRA studies
14 performed for the proposed Teesside LNG import terminal
15 in the northeast of England. Just to clarify, Sir,
16 that's not the gas port that we have heard about on
17 Teesside already, this is an LNG import terminal
18 similar to the one that we are discussing at the
19 moment.

16: 57

20
21 We then have some details about ERM in the next couple
22 of paragraphs which I won't bother to read, Sir.

16: 57

23 Moving on towards the bottom of the page: The purpose
24 of my evidence is to provide an overview of the
25 Quantitative Risk Assessment of the proposed terminal
26 and the results obtained. My principal points of
27 evidence will cover the methodology used in the QRA;
28 the risk results obtained; the assessment of how the
29 risk results compare with the HSA's criteria; responses

16: 58

1 to various submissions; and finally my conclusions.

2
3 Section 2: ERM's involvement in the project,
4 introduction. ERM was commissioned by Shannon LNG to
5 perform Quantitative Risk Assessment studies of the 16:58
6 proposed terminal. This resulted in production of the
7 QRA report that was submitted to the Health and Safety
8 Authority at the time the planning application was made
9 to the Board. I was the ERM Project Director for the
10 work with overall responsibility for technical 16:59
11 direction in terms of methodology and assumptions used
12 and technical quality of the final report of which
13 I was the principal author. I was involved in
14 discussions regarding the work with Shannon LNG and
15 with the HSA representative. I was also the principal 16:59
16 author of appendix 3E of the EIS that presents a
17 summary of the QRA.

18
19 This brief presents a summary of the QRA and appendix 3
20 of the EIS. The QRA is described in considerably 16:59
21 greater detail in the ERM QRA report that was submitted
22 to the HSA.

23
24 Section 2.1.1 explains some of the technical
25 terminology that were used in risk assessment. I don't 16:59
26 propose to read it out, it is there if people think it
27 would be useful and they are not familiar with these
28 terms.

1 There is just one point I would like to clarify with
2 regard to the paragraphs on page 5, Sir, to do with
3 risk assessment and Quantitative Risk Assessment.
4 I think we need to be clear that risk assessment
5 considers both the consequences and likelihood of 17:00
6 events. It doesn't just consider the likelihood on its
7 own, the consequence analysis is also a significant
8 part of the assessment. Having said that, I will move
9 on to page 7 starting to read now section 2.2 on
10 methodology. 17:00

11
12 The methodology used is summarised in appendix 3E of
13 the EIS. The HSA has listed a number of reliable
14 sources of information about QRA methodology. The
15 Dutch Purple Book, the US Centre for Chemical Process 17:00
16 Safety and the UK Health and Safety Executive. These
17 reliable sources of information are referred to in the
18 Health and Safety Authority's document concerning the
19 Kilkenny Grassland Fertiliser's document that was
20 discussed this morning when Mr. Conneely was with us. 17:01
21 As Mr. Conneely himself made clear and I just want to
22 reiterate although the HSA document referred to
23 concerns a specific fertiliser facility, appendix 2 of
24 that document sets out the HSA's policy and technical
25 approach to QRA for land use planning in general. 17:01
26 Appendix 2 is not specific to any major hazard
27 installation or dangerous substance.

28
29 In determining which of the sources listed by the HSA

1 would be suitable for this study, it was noted that the
2 HSA considers the risk of people receiving a dangerous
3 dose when considering land use planning advice as
4 distinct from a fatality. A dangerous dose corresponds
5 to approximately a 1% chance of fatality. Of the 17:02
6 sources listed, only the UK Health and Safety Executive
7 approach uses dangerous dose and hence the UK Health
8 and Safety Executive approach has been adopted. In
9 addition, a series of meetings were held with the HSA
10 at which the methodology was presented and discussed in 17:02
11 detail.

12
13 When performing a risk assessment it is important to
14 consider the following questions: Risk from what, risk
15 of what and risk to what or to who. The ERM study has 17:02
16 considered the risk from the proposed LNG terminal,
17 including the unloading of LNG from ships, the storage
18 of LNG in tanks and the process of turning the LNG back
19 into natural gas.

20 17:03
21 In order to provide a complete picture of the risk the
22 studies has also addressed the risks from equipment
23 associated with the connection between the terminal and
24 the new pipeline, the so called above ground
25 installation or AGI, and the new pipeline itself, even 17:03
26 though these do not form part of the planning
27 application for the terminal. The studies have focused
28 on the risk from potential major accidents at the
29 terminal, AGI and pipeline as opposed to day to day

1 occupational accidents like slips, trips and falls. In
2 line with the HSA's approach the study has calculated
3 the risk of people receiving a dangerous dose. The
4 assessment considers the risk to people in the vicinity
5 of the proposed facilities who might be affected by
6 major accidents. 17:03

7
8 Section 2.2.1, potential major accidents and their
9 likelihood. The Health and Safety Executive approach
10 defines the major accident scenarios to be addressed in 17:04
11 the QRA, together with the associated likelihood or
12 frequency. In broad terms the major accident hazards
13 associated with this type of installation involve
14 leakage of LNG or natural gas from the equipment that
15 is meant to contain it. Leaks of various sizes have 17:04
16 been considered from small to very large. Credit has
17 been given where appropriate for those systems that
18 Shannon intends to put in place to detect leaks to
19 minimise the amount of material that leaks out and to
20 handle the material that may escape. These measures 17:04
21 were described at length by both Mr. Bowdoin and
22 Mr. Vinecombe yesterday. The QRA also addresses the
23 local possibility scenarios located with failure of the
24 safety systems. A summary list of the major accident
25 scenarios considered was presented in table 1 of 17:04
26 appendix 3E of the EIS and is reproduced in table 2.1
27 below. Table 2.1 also summarises the measures that
28 will be provided at the terminal to prevent major
29 accidents or mitigate their consequences. Table 2.1 is

1 there on page 9, I won't go through it since it is
2 copied straight out of the EIS.

3
4 The bottom of page 9 section 2.2.2, major accident
5 consequences. The only thing I will say on that 17:05
6 paragraph is that we used the commercially available
7 DNV PHAST software as recognised by the HSA as being
8 suitable for the calculation of consequences of
9 potential major accidents.

10 17:05
11 Going over the page, we used ERM's Viewrisk software to
12 calculate risks. This is software that has been
13 developed under joint funding with the UK Health and
14 Safety Executive.

15 17:05
16 Section 2.2.4 deals with the assessment of results.
17 The first part of this section goes through risk
18 criteria as have been established by the HSA and since
19 Mr. Conneely explained these this morning all I will do
20 is highlight the second bullet point in this section 17:06
21 which is that the individual risk of dangerous dose or
22 worse should not exceed one in a million per year at
23 the nearest residential property and then below that we
24 have the three bullets explaining the zone 1, 2 and 3
25 risk levels that Mr. Conneely talked to us about this 17:06
26 morning.

27
28 Going on to page 11 we see there in table 2.2
29 acceptable land uses within risk zones. This is a

1 direct copy from the HSA document. It was presented by
2 Mr. Conneely this morning so I won't go through it
3 again now.

4
5 The paragraph below the table: The individual risk of 17:06
6 dangerous dose for a person at the nearest residential
7 property has been calculated to be 3 in ten million per
8 year. This is below the criterion value set by the
9 HSA. The individual risk of dangerous dose contours
10 for hypothetical house residents are displayed in 17:07
11 figure 2.1 which is over the page on page 12. This is
12 the same figure that Mr. Conneely showed us this
13 morning only unfortunately when he only showed it his
14 power point it had become stretched so this is the
15 figure as it appears in the QRA report. We can see 17:07
16 there the red, blue and green lines as Mr. Conneely
17 explained denoting the boundaries of the different
18 zones.

19
20 Hence the HSA's zone 1 referred to in table 2.2 would 17:07
21 be the area encompassed by the red lines. Zone 2 would
22 be the region between the red and blue lines and zone 3
23 would be the area between the blue and green lines. As
24 can be seen from figure 2.1 land use within the zones
25 is predominantly agricultural. There are no land uses 17:08
26 that would fall in the 'advise against' category as
27 listed in table 2.2.

28
29 At the time of writing the HSA was still in the process

1 of developing criteria for societal risk. The societal
2 risk results for the Shannon LNG facilities have,
3 therefore, been compared with criteria used in a number
4 of countries around the world including the
5 Netherlands, the UK and Hong Kong. It was found that 17:08
6 the societal risk results met all of these criteria.

7
8 The HSA conducted their own independent review of the
9 ERM QRA report as we heard this morning and
10 subsequently responded to An Bord Pleanála that it did 17:08
11 not advise against the granting of planning permission
12 in the context of major accident hazards. Clearly we
13 heard from Mr. Conneely this morning that they are
14 looking at new information that has been provided to
15 them. It is our understanding that this is the advice 17:09
16 that they are giving until such time as it may or may
17 not be changed. I have simply appended the letter
18 forwarded on from the Board to the back of my
19 statement.

20 17:09
21 I would like to go on now to section 3 and deal with
22 responses to submissions to An Bord Pleanála. A number
23 of safety related concerns has been expressed in the
24 submissions made to the Board. In several instances
25 the same concern was raised in a number of submissions. 17:09
26 I understand that the QRA has been reviewed by the
27 Health and Safety Authority. In addition, I have read
28 the submission made to the Board by the HSA on
29 9 January 2008. I am advised that the HSA is the

1 competent authority designated under the Seveso II
2 Directive while the board is a planning authority
3 within the meaning of article 12 of that Directive.
4 Notwithstanding the jurisdiction of the HSA as the
5 competent authority for the purposes of the Seveso II 17: 10
6 Directive, many submissions have been received by the
7 Board in relation to the QRA. Whilst the Board is the
8 planning authority as opposed to the competent
9 authority for the purposes of the Seveso II Directive,
10 in order to assist the Board in all its deliberations 17: 10
11 the developer has provided responses to those
12 submissions in relation to the QRA.

13
14 Section 3.1. There are a number of submissions to the
15 effect that there has been insufficient QRA, that the 17: 10
16 QRA does not fully acknowledge the threat to residents
17 of a major accident in submissions 2, 3, 4, 15 and 34.
18 The response is that the QRA of the terminal has been
19 comprehensive, addressing the facility from the
20 offloading of LNG through the unloading arms through 17: 11
21 storage in the tanks, regasification, handling of
22 boil-off gas and export of high pressure gas by
23 pipeline. The major accident hazards considered were
24 as listed in appendix 3E table 1 of the EIS. The
25 methodology and data used have been obtained from 17: 11
26 authoritative sources, hence the QRA of the terminal is
27 sufficient.

28
29 The next submission in 3.2. A number of submissions

1 highlighted the 12.4 kilometre vapour cloud range that
2 is mentioned in the report. The maximum range for an
3 ignited vapour cloud is 12.4 kilometres. One
4 submission states that this was buried in the QRA. The
5 QRA gives the maximum distance to lower flammable of 17:12
6 12.4 kilometres, but does not state how far the cloud
7 would travel beyond this distance before it meets the
8 upper flammable limit. There was also another comment
9 that an early warning system should be implemented
10 within a 12.4 kilometre radius, together with provision 17:12
11 of information to residents on how to react, these
12 being made in numbers 3, 14, 54, item 3 and item 41.

13
14 Response: The zones defined by the HSA for the
15 purposes of giving land use planning advice are based 17:12
16 on an assessment of the risk arising from a whole range
17 of potential accidents of different sizes rather than a
18 single hazard range associated with a particular event.
19 The zones calculated by ERM are shown in figure 2.1
20 where it can be seen that the extent of the zones is 17:12
21 much less than 12.4 kilometres. The calculated
22 potential maximum range to the lower flammable limit of
23 a cloud of LNG vapour is 12.4 kilometres. This is
24 clearly stated in section 3.2.2 of the QRA report.
25 This potential maximum range relates to the following 17:13
26 chain of events:

27
28 Firstly, a failure of a full containment storage tank
29 such that both the outer reinforced concrete and inner

1 nickel steel vessels are severely damaged
2 simultaneously resulting in a rapid loss of the entire
3 tank contents. This has a predicted frequency of once
4 in 5 million years and is, therefore, highly
5 improbable.

17: 13

6
7 Next: In spite of the energy required to do this kind
8 of damage to the tank, the failure occurs without
9 igniting the tank contents;

17: 13

10
11 The failure occurs while the tank is full; the failure
12 occurs during the worst weather conditions from the
13 point of view of dispersion of the vapour, that is
14 stable low wind speed weather conditions; also that the
15 cloud grows to the maximum range without being ignited,
16 that is in travelling that distance the cloud does not
17 encounter an ignition source such as a car engine,
18 cigarette, fire and so on that would otherwise cause it
19 to catch fire, then ignites when it gets to its fullest
20 extent.

17: 14

17: 14

21
22 The comment in submission 54 item 3 regarding the
23 distance to the upper flammable limit reflects a
24 misunderstanding of the science involved. For any
25 given LNG vapour cloud the distance to the upper
26 flammable limit is always less than the distance to the
27 lower flammable limit.

17: 14

28
29 The Seveso II legislation requires the operator of a

1 major accident hazard establishment to provide
2 information to people on the recommendation action to
3 take in the event of a major accident. The information
4 has to be provide to all those who would habitually be
5 present within a specified area. The operator has to 17: 15
6 distribute this information prior to the facility
7 becoming operational .
8

9 The specified area is defined in Statutory Instrument
10 74 of 2006, the regulations that implement the Seveso 17: 15
11 II Directive is defined as:

12 "That area which is likely to be
13 affected by a major accident at the
14 establishment."

15 The specified area is determined by the operator of the 17: 15
16 establishment in agreement with the HSA. If agreement
17 cannot be reached then the specified area is set by the
18 HSA. The specified area is distinct from the land use
19 planning zones described above in section 2.2.4.

20 17: 15
21 The HSA has published guidance on the HSA's approach to
22 setting the specified area. The HSA's approach is to
23 set the specified area on the basis of the analysis of
24 the consequences of a selected event. The events
25 considered are "credible major accidents". 17: 16
26

27 The HSA guidance states:

28 "The HSA has decided to take a
29 consequence based approach using end
points that would warn those habitually

1 in the area who would be potentially
2 able to suffer harm even though that
risk could be extremely low.

3 At the same time the authority
4 recognises that there is a need not to
set an impractically large area."

5
6 In view of the HSA's focus on credible major accidents
7 and the recognised need not to set an Impractically
8 large area, it is my opinion that the potential maximum
9 range of 12.4 kilometres would not form a sound basis
10 for the specified area because the event to which it 17:16
11 relates is not credible but highly improbable as
12 described above. Should planning permission be granted
13 it will be necessary for Shannon LNG to enter into a
14 dialogue with the HSA in order to reach agreement on a
15 sound basis for the setting of the specified area. 17:17

16
17 I then go on to give a discussion of the emergency plan
18 requirements that will also be on both Shannon LNG and
19 the local competent authority, but since Mr. Conneely
20 touched on these this morning I won't read that out. 17:17
21 Suffice it to say that these plans have to be in place
22 before the facility comes operational, assuming that
23 permission is granted.

24
25 I just want to highlight, though, the local competent 17:17
26 authority that puts together the external emergency
27 plan is required to consult with a number of bodies and
28 groups during preparation of that plan including
29 members of the public.

1
2 Moving on to No. 3.3. Submission: The Shannon LNG
3 model has been based on HSA safety guidelines, but
4 there is no similar industry in Ireland to compare
5 with. Use of the HSA document in Grassland Fertilisers 17:18
6 Kilkenny is inappropriate because the chemicals handled
7 are different. These were in submissions 3, 54 and
8 item 7(e).
9

10 I think Mr. Conneely actually dealt with the second of 17:18
11 those points regarding the Kilkenny Grassland
12 Fertilisers document. I will just try and deal with
13 the first which is that the HSA's criteria are stated
14 in terms of absolute numerical values of individual
15 risks and are therefore independent of the 17:18
16 establishment under consideration. The criteria do not
17 rely on a comparison between one facility and another.
18

19 Moving on to 3.4. Submission: Require assurances that
20 international best practice will be applied in the area 17:18
21 of safety. This was highlighted in a number of
22 submissions, the numbers of which are listed there.
23 Mr. Bowdoin and Mr. Vinecombe have covered design of
24 the facility at some length so I won't cover that just
25 to note that in response Shannon LNG has indicated that 17:19
26 the European standard 1473 of 2007 will be applied to
27 the design. This is a standard that addresses safety
28 and environmental requirements as well as engineering
29 aspects of the various systems and components that will

1 make up the plant.

2
3 As we have already heard the terminal will fall within
4 the scope of the Seveso II Directive. I then go on to
5 outline some of the requirements that would be placed 17: 19
6 on Shannon LNG as a result of that, but since many of
7 these were covered again by Mr. Conneely this morning
8 I won't go through them all. Suffice it to say or just
9 to re-emphasise that Shannon LNG would be required to
10 submit a pre-construction safety report for submission 17: 20
11 to the HSA several months before starting construction
12 and as Mr. Conneely remarked they would not be
13 permitted to start construction until the HSA were
14 satisfied with that report. Similarly, there is also a
15 pre-operation safety report that is submitted to the 17: 20
16 HSA several months before starting operation and
17 similarly operation could not start until HSA had
18 communicated its satisfaction with that report.

19
20 I give some information at the bottom of page 18 about 17: 20
21 what safety reports are required to contain, I won't go
22 through that. I will just move on over the page to
23 No. 3.5. There are a number of submissions that
24 indicated views such as that the terminal is not fully
25 guaranteed safe, that there is a threat of a major 17: 21
26 accident or that no matter how low the risk, there is
27 still a risk, that there is a high probability of a
28 major accident or that no matter how good the track
29 record an accident can still happen. In response

1 I would just like to say that the risk of a major
2 accident at the proposed terminal is very low. The
3 term 'fully guaranteed safe' cannot be applied to any
4 operation which presents a hazard. Some everyday
5 examples including driving, flying, boiling the kettle 17: 21
6 as well as oil refining, pharmaceutical manufacture or
7 airports' operations. Thus, the correct criterion is
8 not one of 'no risk' or 'fully guaranteed safe' as this
9 level of assurance does not exist for any activity.
10 Instead, the correct criterion for evaluation is 17: 21
11 whether or not the activity in question has a
12 sufficiently low level of risk that it can be deemed
13 acceptable. The rationale behind the HSA risk criteria
14 is to ensure that the risk from new facilities are very
15 low relative to those experienced by people in everyday 17: 22
16 life. The QRA performed demonstrates that the Shannon
17 LNG meets the HSA criteria as stated in appendix 3 of
18 the EIS.

19
20 No. 3.6 relates to sterilisation of land and impact on 17: 22
21 future development. Again this is something that came
22 up with Mr. Conneely this morning and I think he
23 answered it. All I will say is that the land use
24 planning zones that are defined by HSA don't constitute
25 sterilisation zones, they are land use planning advice 17: 22
26 zones. It's not that all future development is
27 excluded from those zones.

28
29 No. 3.7, a submission by the Kilcolgan Residents

1 Association. The submission states that one obvious
2 and questionable claim in the QRA undertaken by the
3 developer can be seen where only one of the four LNG
4 tanks is covered by the inner zone contour. That is
5 shown in figure 2.1 in my statement. This means using 17: 23
6 the criteria that I will put in table 2.2 that it would
7 be acceptable to build residential houses up against
8 the remaining three LNG storage tanks even if the first
9 tank leaks. This does not make sense and can only lead
10 to the conclusion that the contours have been 17: 23
11 unrealistically tightened so as not to encompass
12 current residential areas.

13
14 Response: A contour a line drawn to join together the
15 points where the risk calculation shows that the risk 17: 23
16 is the same. The contours reflect the results of the
17 risk calculation and the risk levels that the HSA uses
18 to set land use planning zones. They have not been
19 unrealistically tightened. The location of the zone 1
20 contour, the red line in figure 2.1, coincides with the 17: 24
21 location of the impoundment basin used to collect any
22 accidental releases from equipment, not the tanks per
23 se. The likelihood of leaks from the full containment
24 tanks is so low that they do not give rise to risk
25 levels at the zone 1 level. The contours have not been 17: 24
26 drawn to reflect pragmatic considerations such as who
27 owns which piece of land.

28 **MR. McELLI GOTT:** Mr. Inspector, can I ask a
29 question on that.

1 MR. FRANKS: I would like to finish, if
2 I may.

3 INSPECTOR: Press on.

4 MR. McELLI GOTT: It's a very important
5 question just on that 17: 24
6 speci fi c poi nt.

7 INSPECTOR: If you need clari fi cation
8 maybe you can deal wi th i t.

9 MR. McELLI GOTT: You say there is an
10 impoundment area basi n used 17: 24
11 to collect any accidental releases so that covers the
12 zone 1 area, but you have two contours, one is in the
13 lower part on page 12, but the other bit is near where
14 the ship is and there is no impoundment area around the
15 ship so how can the red contour change just where the 17: 25
16 ship is.

17 MR. FRANKS: Mr. Inspector, I am happy
18 to explain that. I was
19 only dealing with the red contour around the
20 impoundment basin because the question related to that 17: 25
21 contour. The red contour around the jetty is
22 associated with releases from the unloading operation.
23 I hope that clari fi es.

24 MR. McELLI GOTT: No, it actually doesn't
25 because the argument for 17: 25
26 one does not stand up for the other. If you are
27 standing on the jetty -- from the ship there where the
28 red contour is, at the jetty, what risk of death is
29 going to change if you go another to or three feet

1 beyond that red point, whether you are in the blue area
2 or just right on the red dot, there is nothing that
3 changes that, you are dead if you are out there anyway
4 because there is no impoundment and it will go around
5 in a big flame so it depends on wind direction and 17:26
6 everything like what Dr. Havens was showing in his
7 video. That's on water, we saw that it goes in the
8 direction of the wind so where around that red contour
9 around the jetty, if there is a spill and that touches
10 the water, that you can say that you are safer one foot 17:26
11 after that red zone, do you see what I am getting at?
12 **MR. FRANKS:** Not entirely. Just to try
13 and explain. The spills in
14 the process area, this is on the land side now, that go
15 into the impoundment basin has been modelled as being 17:26
16 confined by that impoundment basin so that's the red
17 zone that we are talking about near the tanks that was
18 the subject of the question. The other red zone that
19 Mr. McElligott has highlighted is at the jetty and this
20 is around the unloading arms that are used to convey 17:26
21 the LNG from the ship on to the land. Now at that
22 location the spills have been modelled as falling on to
23 the water and being completely unconfined and they are
24 subject to the variation of wind direction and wind
25 speed and all of that is modelled in the QRA producing 17:27
26 the risk contours that you can see. Just to remind you
27 these are not risk of death contours, these are the
28 risk of receiving a dangerous dose.
29 **MR. McELLI GOTT:** Could one of the LNG

1 experts answer that
2 questi on.

3 **MR. FRANKS:** Could you repeat the
4 questi on?

5 **MR. McELLI GOTT:** What I am trying to say is 17: 27
6 the risks around the jetty
7 area, if there is a spill, how can you determine that
8 the risk of injury is any way different between the red
9 contour and the blue contour, for example what we saw
10 on the video yesterday, how can that change. If you 17: 28
11 are around there anyway you are either frozen or you
12 are dead, I don't understand how that -- okay, the land
13 based one you used the argument of an impoundment area,
14 but up there at the jetty there is no impoundment area
15 and for 50 cubic metres you saw how big an explosion 17: 28
16 there was, I don't understand how you can calculate the
17 risk there?

18 **MR. FRANKS:** The process involves first
19 of all calculating the
20 leakage out of the unloading arms should an accident 17: 28
21 occur. We then look at the spreading of the pool on
22 the water, how far it spreads, we look at the size of
23 the fire if it ignites and we look at the effects that
24 that could have in terms of the likelihood of receiving
25 a dangerous dose all around that fire. Now, in terms 17: 28
26 of the way the contours are drawn, clearly the amount
27 of heat that you receive from the fire, like the one we
28 saw in the video, depends on how close you are. If you
29 are close then you may well be within the range to get

1 a dangerous dose and once you get beyond a certain
2 point you will be outside the range to get a dangerous
3 dose and therefore the risk falls off as a function of
4 distance and that's why you go from the red to the blue
5 to the green contours. These aren't stepped down from 17: 29
6 one to the other, the risk falls off as a kind of curve
7 and these contours are just drawn at those locations
8 where the correct risk value occurs.

9 **MR. McELLI GOTT:** May I ask again could one
10 of your LNG experts explain 17: 29
11 the logic you just applied there, you are doing the
12 probabilities, but I would like to see one of the LNG
13 experts explain that from Shannon LNG, there is a
14 difference.

15 **INSPECTOR:** Do you understand there are 17: 29
16 two centres of higher risk?

17 **MR. McELLI GOTT:** Yes.

18 **INSPECTOR:** Marked by the red and as
19 you get away from them the
20 level of risk declines. 17: 30

21 **MR. McELLI GOTT:** Yes, but if you look even
22 at that contour the ship is
23 longer, the ship goes in from the red to the blue so if
24 you are standing on the ship ... (INTERJECTION)

25 **INSPECTOR:** You are talking about the 17: 30
26 unloading arms which are at
27 the centre of the ship or directly in line with the
28 jetty and that's where the highest area of risk is and
29 that's why the circle is centred at that point.

1 MR. McELLI GOTT: Yes, but if there is a
2 vapour leak you cannot
3 predict where it is going to go so I can't understand
4 how it is that small, that's my problem.

5 MR. FRANKS: That's exactly what we do, 17: 30
6 Mr. Inspector, we predict
7 the size of the leak, the spread of the leak, the size
8 of the fire, we model all of these consequences within
9 the QRA for different sizes of events as well.

10 INSPECTOR: You take into account 17: 31
11 things like wind?

12 MR. FRANKS: And wind direction yes.

13 INSPECTOR: You are not happy with
14 that?

15 MR. McELLI GOTT: Not at all. 17: 31

16 INSPECTOR: I think we will just have
17 to leave it.

18 MR. FRANKS: Perhaps I will carry on
19 with this statement, Sir.

20 There was another submission again from Kilcolgan 17: 31
21 Residents Association where it was stated that
22 misapplication of risk assessment recently has become
23 popular on the international front to apply risk
24 assessment to justify otherwise poor decisions not
25 necessarily in the best interests of the public or the 17: 31
26 country. Risk assessment can be a very unwise tool to
27 force the will of a powerful few on the uninformed
28 public. One factor signalling some poor applications
29 of risk assessment is the comparison to other risks

1 that in a technical reality are not really related
2 especially as to consequences. Some consequences are
3 so great that no matter what the probability of the
4 risks it cannot be justified, especially if economic
5 benefit to the decision makers is actually driving the 17: 32
6 poor application of this tool. There are further
7 comments made in the submission about who is liable if
8 the risk assessment turns out to be wrong and so on and
9 so forth.

10
11 In response I would like to say that there has been no
12 misapplication of risk assessment in this case. The
13 submission of the QRA was required by the HSA;
14 therefore, demonstrating the HSA considered the
15 application of QRA to be appropriate in this context. 17: 32
16 QRA has been applied to onshore major accident hazard
17 establishments for over 20 years. The QRA data has
18 used data and methods obtained from recognised
19 authoritative sources. The QRA has used models that
20 are widely accepted as industry standard and are 17: 32
21 considered to be suitable for this purpose. The QRA
22 report has been subject to independent scrutiny by the
23 HSA who accept it demonstrates that the HSA criteria at
24 such establishments are met at least until we hear
25 otherwise from Mr. Conneely. 17: 33

26
27 The QRA results have been compared with risk criteria
28 established by the HSA and establishing these criteria
29 the HSA has taken the view that the risk from hazards

1 with potentially major consequences can be considered
2 acceptable if the likelihood of these consequences
3 being realised is very low. Just to note finally that
4 neither ERM nor Shannon LNG is the decision maker in
5 this process.

17: 33

6
7 The next submission No. 3.9 was that pipeline accidents
8 have not been included in the QRA again by the
9 Kilcolgan Residents Association. I think I have
10 already dealt with this in what I said about the scope
11 of the work we did initially, but just to re-emphasise
12 that an initial assessment of the risk from the
13 pipeline has been conducted as described in section
14 6.4.3 of the QRA report. We have also covered what is
15 called the Above Ground Installation which is the
16 equipment associated with the terminus of the pipeline
17 within the site boundary and part of the pipeline that
18 is within the site boundary and that's described in
19 section 6.4.2 of the QRA report.

17: 33

17: 34

20
21 Another submission 3.10 that the flight path of
22 aircraft and the dangers from Shannon airport, again
23 raised by the Kilcolgan Residents Association, their
24 item No. 69. The Irish Aviation Authority has
25 indicated in a written letter to Arup that it has no
26 observations to make on Shannon LNG's proposals. This
27 implies that the risk from aircraft crashes on to the
28 proposed terminal are not significant. The next
29 submission, 3.11: What's the thermal flux level that

17: 34

17: 34

1 An Bord Pleanála would determine as acceptable, is it
2 1.5 kW/m².

3
4 The response: The HSA judges the acceptability of
5 proposed major accident hazard establishment in terms 17: 35
6 of the risk of an individual receiving a dangerous dose
7 rather than a distance to a specified level of thermal
8 flux. Dangerous dose for a thermal radiation is 1,000
9 thermal dose units as specified in the HSA document.

10 17: 35
11 Just to mention that thermal dose is a function both of
12 the thermal radiation flux and also the time for which
13 a person is exposed. Dangerous dose equates to a 1%
14 chance of fatality. The HSA specifies an exposure
15 duration of 75 seconds from which it can be calculated 17: 35
16 that the thermal flux required to give a dangerous dose
17 is 7 kW/m².

18
19 The next submission also by Killorgan Residents
20 Association that An Bord Pleanála should take account 17: 36
21 of the Buncefield report. Our response: Consideration
22 of the Buncefield report in the context of land use
23 planning should take into account the significant
24 difference between the Buncefield site and the proposed
25 Shannon LNG facility as well as the differences between 17: 36
26 the dangerous substances handled at the two
27 establishments. The incident occurred in December 2005
28 at the Hertfordshire Oil Storage Ltd. petroleum storage
29 depot near Buncefield in the UK and involved an

1 explosion and major fire. The explosion caused
2 extensive damage to nearby buildings; the subsequent
3 fires involved over 20 large storage tanks containing
4 petroleum products.

17:36

5
6 The Buncefield depot stored petroleum products in
7 conventional single containment tanks located within
8 bunds. The proposed Shannon LNG will store LNG in full
9 containment tanks where the outer concrete tank is
10 designed to contain any accidental spillage from the
11 inner nickel steel tank. The two establishments are,
12 therefore, very different in terms of the substances
13 handled and the tanks used for storage.

17:37

14
15 The incident involved prolonged overflow of the storage
16 tank that was being filled with petroleum at relatively
17 high rates from a pipeline. The overflowing liquid
18 cascaded down the outside of the tank causing the
19 liquid to break into droplets and evaporate. The
20 resulting vapour formed a dense low lying cloud that
21 spread off site and eventually ignited.

17:37

17:37

22
23 With regard to the proposed Shannon LNG Terminal, in
24 the unlikely event that the inner tank was overfilled
25 liquid would overflow into the outer concrete tank and
26 be contained preventing formation of a vapour cloud.
27 The two establishments are, therefore, very different
28 in terms of the consequences of overfilling a tank.

17:37

1 The overflowing of the tank at Buncefield went
2 undetected for around 30 minutes before being observed
3 by personnel. The Buncefield storage facilities were
4 not provided with flammable gas detectors that might
5 have given early warning of a problem. The Shannon LNG 17: 38
6 terminal will be provided with flammable gas and low
7 temperature detectors to monitor for potentially
8 hazardous conditions arising from LNG spills or gas
9 leaks.

10
11 When the cloud produced at Buncefield ignited an
12 explosion occurred. The mechanism of the explosion at
13 Buncefield is not yet fully understood. Initial
14 reports have suggested possible mechanisms to explain
15 the observations, but no definitive conclusions have 17: 38
16 been reached. More research is required before a
17 definitive answer can be provided.

18
19 The Buncefield event also caused the Health and Safety
20 Executive to revisit its policy for giving land use 17: 39
21 planning advice to local authorities concerning
22 proposals for development in a vicinity of large
23 petroleum storage sites. The changes included a
24 revision of the type of development that the Executive
25 would advise against in the innermost land use planning 17: 39
26 zone. Under its previous policy the Executive would
27 not have advised against small housing developments,
28 retail developments or offices in the innermost zone.
29 Under the revised policy the Executive would advise

1 against all housing, retail or office development in
2 the innermost zone; hence the revised Health and Safety
3 Executive policy is now more like the policy already
4 applied in Ireland by the HSA where HSA policy is
5 already to advise against residential, office and 17: 39
6 retail developments in the innermost zone and reference
7 to table 2.2.

8
9 3.13. Submission: Information and statistics on
10 accidents and hazardous incidents at existing LNG 17: 40
11 plants around the world should be made available so
12 that the risks from the processes planned for this site
13 can be assessed and the safe distance from the plant to
14 the existing dwellings can be determined. This was
15 raised in submission 49 which I think was from An 17: 40
16 Tai sce.

17
18 Response: As described in appendix 3E of the EIS, the
19 QRA performed by ERM considers the likelihood of
20 potential major accidents at the terminal and their 17: 40
21 consequences. This information has then been used to
22 calculate risks. The risk results have then been
23 compared with acceptability criteria established by the
24 HSA. It has been shown that the HSA's criteria are
25 met. 17: 40

26
27 No. 3.14. Submission: It is unclear how the minimum
28 safety distances required under the EC (Control of
29 Major Accident Hazards Involving Dangerous Substances

1 Regulations 2006) will impact on the surrounding
2 properties and land use and marine use in the
3 administrative area of Clare. Just to note that those
4 regulations referred to are the Irish implementation of
5 the Seveso II Directive. This was raised in submission 17: 41
6 55. The response is: That the HSA advises Local
7 Authorities on proposals for the development in the
8 vicinity of major accident hazard establishments using
9 the framework presented in table 2.2. The zones
10 referred to this table have been calculated by ERM and 17: 41
11 are shown in figure 2.1. These zones do not impinge on
12 land in the administrative area of Clare and therefore
13 there should be no impact on land use in Clare.

14
15 Before I conclude, Mr. Inspector, there were a couple 17: 41
16 of questions which have come up throughout sessions
17 this week that I think I should try and cover. First
18 I just want to address a couple of the questions that
19 were brought up by Mr. Robinson in his statement. My
20 colleagues will deal with some of the other questions. 17: 42

21
22 Firstly, Mr. Robinson's question 6(a): Do you agree
23 with HSE confirmation that LNG has two properties that
24 are not fully understood as follows:

25 (a) Rapid Phase Transition. This is a phenomenon when 17: 42
26 LNG is filled and mixed with water causing flameless
27 explosions that have been observed to damage
28 surrounding structures. Computer modelling predicts
29 larger explosions than are predicted using physical

1 test spills of smaller quantities of LNG on to water.

2
3 There was an attachment to Mr. Robinson's statement
4 from the Society of Petroleum Engineers web article on
5 the latest developments in Rapid Phase Transition 17: 42
6 modelling. The second part of question 6 will be dealt
7 with by one of my colleagues.

8
9 Response: In order to give a position on the HSE
10 confirmation referred to, it would be necessary to see 17: 43
11 the HSE document from which the information is taken so
12 as to place it in its proper context. The Rapid Phase
13 Transition phenomenon is not unknown and is referred to
14 in the ERM QRA report in section 1.2.4 which states --
15 in fact, I won't read it out, Sir. Suffice it to say 17: 43
16 that we recognise that it happens, it's a known
17 phenomenon, but simply just to refer you to the bottom
18 part of that quotation from the report where we say
19 that:

20 "Rapid phase changes have not resulted 17: 43
21 in any known major incidents involving
22 LNG. In view of this and the fact that
23 the jetty structure for the proposed
24 facility is relatively open, not
involving any solid walls against the
side of the ship, RPTs have not been
modelled in the QRA."

25
26 The paper attached by Mr. Robinson describes a series
27 of occasions when RPTs have been observed, some of
28 which are accidents and some of which were experiments.
29 None of the reported accidents caused more than minor

1 Localised damage supporting the view taken in the QRA.
2 None of the accidental RPTs described resulted in
3 escalation to give further leakage of LNG. The paper
4 goes on to give a brief description of two models that
5 have been developed to analyse the RPT phenomenon. The 17: 44
6 first model, the one highlighted by Mr. Robinson, is
7 reported to "give values of energy orders of magnitude
8 greater than those observed in large scale
9 experiments". Discrepancies between the predictions of
10 models and experimental observations indicate that the 17: 44
11 model is giving incorrect predictions and therefore
12 requires further development, not that there is some
13 hitherto unobserved phenomenon waiting to be
14 discovered. For this reason the paper describes this
15 particular model as unsuitable for use in RPT risk 17: 44
16 assessments.

17
18 Mr. Robinson in question 8 on his statement also said
19 that: In our case in Milford Haven the HSE have used 5
20 kW/m² as safe for the public. The HSE quote an 17: 45
21 OFFSHORE report (Human Vulnerability to thermal
22 radiation offshore) as evidence that this level of
23 thermal radiation is safe for the public. He then goes
24 on to say people offshore have protection from clothing
25 and safe refuges and so on and why should this apply to 17: 45
26 the public.

27
28 Just in response: First I would like to say it's long
29 established HSE, that's the Health and Safety

1 Executive, policy to use the dangerous dose criterion
2 for land use planning assessments and in such cases the
3 HSE doesn't use a thermal radiation flux of 5 kW/m².
4 The report referred to by Mr. Robinson discusses a
5 range of sources of information on the effects of 17: 45
6 thermal radiation and gives a value of 1000 thermal
7 dose units as equivalent to about one to five
8 likelihood of fatality. This is consistent with the
9 dangerous dose the HSE and the HSA uses in land use
10 planning assessments. 17: 46

11
12 Furthermore, this report is drawn on sources that were
13 originally written in the concepts of onshore major
14 hazards, specifically the references to Hymes, Hymes,
15 Boydell and Prescott (1994); Hymes, Boydell and 17: 46
16 Prescott 1996 and Rew 96. In other words, the long
17 standing thermal radiation dose criterion employed by
18 the HSE in land use planning assessments were used to
19 establish criterion for workers off shore and not the
20 other way around. Although the report discusses a 17: 46
21 range of thermal radiation flux values and their
22 effects, including 5 kW/m² it doesn't propose the use
23 of 5kW/m² as a criterion.

24
25 There was also a comment on the back page of 17: 46
26 Mr. Robinson's statement where he says that finally
27 I have heard it said that the probability of LNG
28 accidents are so remote that it's not worth worrying
29 about. I am not sure where Mr. Robinson heard the

1 comment, but I would just like to say that neither
2 appendix 3 of the EIS summarised in the QRA, nor the
3 QRA report itself, or to my knowledge any statement by
4 Shannon LNG makes such a comment. The conclusion of
5 the QRA is that the proposed establishment will meet 17: 47
6 the risk criteria established by the HSA.

7
8 There were also some questions that came up in the
9 session with Mr. Conneely this morning. Some of these
10 I will try and clarify, some of them will be covered by 17: 47
11 colleagues. There was one issue over the pipeline and
12 the extent to which it is covered by the QRA. I hope
13 I have addressed that now. If you think further
14 clarification is required I would be happy to provide
15 that. 17: 47

16
17 There was also some discussion about the electrical
18 power lines and whether they should be over ground or
19 under ground and what the effect would be on the QRA.
20 In my view, Mr. Inspector, I think the effects on the 17: 48
21 QRA would be very small indeed and not really
22 measurable.

23
24 There was also something raised about an error in the
25 QRA regarding the occurrence of the hole and this 17: 48
26 referred to a table of data in the back of the QRA
27 report where a value of 5 times ten to the minus 8 for
28 a storage tank failure couldn't be found, I think it
29 was Dr. Koopman if I remember correctly, and therefore

1 the conclusion was formed that we haven't actually used
2 that value in the QRA and there, therefore, had been an
3 error. In fact the five times 10 to the minus 8 value
4 is there in the table, it's in a different column to
5 the one referred to. I should say that's not an error 17: 49
6 on Dr. Koopman's part, that's an error on our part in
7 terms of when we cut and paste the data into the tables
8 from the spreadsheets and I apologise for the
9 confusion, but just to reiterate there is no error in
10 the QRA, the five to the minus eight value that has 17: 49
11 been referred to is actually used.

12
13 We have discussed the issue of these red lines and
14 their location.

15 17: 49
16 Finally to address my conclusion, Mr. Inspector.
17 Shannon LNG was required to submit a QRA report to the
18 HSA. This requirement arises from the Seveso II
19 Directive. Under this legislation the HSA as the
20 central competent authority provides land use planning 17: 49
21 advice to local authorities or the Board in respect of
22 applications for new major accident hazard
23 establishments or developments in the vicinity of
24 existing major accident hazard facilities. As
25 described in appendix 3E of the EIS a QRA of the 17: 50
26 proposed Shannon LNG Terminal has been performed by
27 ERM. The QRA of the terminal has been comprehensive,
28 addressing the facility from the offloading of LNG
29 through the unloading arms, storage tanks,

1 regasi fication, handling of boil-off gas and export of
2 high pressure gas by pipeline. The major accident
3 hazards considered were listed in table 3E, table 1 of
4 the EIS, and the QRA has used data and methods obtained
5 from recognised authoritative sources. The QRA has 17:50
6 used models that are widely accepted as industry
7 standard and are considered to be suitable for the
8 purpose. The results of the QRA show that the criteria
9 set by the HSA will be met by the proposed terminal and
10 the QRA report has been subject to independent scrutiny 17:50
11 by the HSA who accept that it demonstrates that the
12 HSE's criteria for such establishments are met. At
13 least we understand following this morning that that's
14 their view of the current time subject to consideration
15 of the information that has been provided to them by 17:51
16 Kilcolgan Residents Association.

17
18 I conclude that QRA demonstrates that the applicable
19 risk criteria established by the HSA will be met by the
20 proposed terminal. Thank you, Mr. Inspector. 17:51

21
22 **END OF SUBMISSION BY MR. FRANKS**

23
24 **INSPECTOR:** Thank you. It's now 5:50
25 so I think we will break 17:51
26 for today. How many more speakers do you have
27 tomorrow?

28 **MR. O'NEILL:** I have one more speaker
29 tomorrow, Dr. Raj. His

1 address is estimated to last about 40/45 minutes.

2 **INSPECTOR:** Then we will break for
3 today so we will see
4 everybody again tomorrow morning at 10 o'clock.

5 **MR. McELLI GOTT:** Sorry, I just want to say 17: 51
6 one question. You dealt
7 with the pipeline, but you never dealt with where the
8 pipeline attaches on to the system, the tank or
9 whatever, where you are pumping into the pipeline. You
10 dealt with risk along the pipeline as if it's a 17: 51
11 pipeline in general, but you never actually dealt with
12 where the pipeline connects on to the storage tanks or
13 vaporisation process.

14 **MR. FRANKS:** Actually, Sir, we did.
15 Just to explain: There are 17: 52
16 a number of pipes or as people have been calling them
17 pipelines on the terminal. There is the pipe from the
18 jetty to the storage tanks, this is the one that
19 Mr. Conneely referred to as being pipe in pipe
20 technology this morning. That is covered in the QRA. 17: 52
21 There are pipes from the tanks to the process equipment
22 that vaporises the LNG back to gas, that is in the QRA.
23 There are then gas pipes on the ground between the
24 vaporisation equipment and the AGI which as I said is
25 the terminus of the pipeline and the equipment there, 17: 52
26 that's all in the QRA and then there is the length of
27 pipe, gas pipeline, that would take the gas off to the
28 BGE connection that is in the establishment, that is in
29 the QRA. Just to be clear, all of that is in the QRA.

1 **INSPECTOR:** Well, just on that point
2 you were answering my
3 question about under grounding of the pipeline and the
4 ESB lines, the electricity lines, did you include an
5 overhead electricity lines in the QRA? 17: 53

6 **MR. FRANKS:** The way that ignition
7 sources are modelled in the
8 QRA is described in the QRA report, but what it does is
9 take an average density of ignition sources for
10 different typical land uses so it's kind of an average 17: 53
11 ignition source density for urban areas, rural areas or
12 industrial areas and clearly for this facility the
13 average is relevant for the rural type locations so
14 this doesn't sort of pick out lots of individual
15 ignition sources. The average value is stated within 17: 53
16 the HSE methodology as typical for rural land use.

17 **INSPECTOR:** So that would be any
18 typical rural land use with
19 the pylons?

20 **MR. FRANKS:** It covers all of the 17: 54
21 different sources. What
22 they did to come up with the density was review all of
23 the types of sources that typically occur in rural
24 areas like power cables, like vehicles, just general
25 activities by people and the presence of low density 17: 54
26 population to come up with that value.

27 **INSPECTOR:** Okay.

28 **MR. FRANKS:** That's a recognised
29 published HSE methodology,

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Mr. Inspector.

INSPECTOR: It's an index rather than a reflection of the actual?

MR. FRANKS: It's an average, yes.

INSPECTOR: Thank you. Okay, see everybody again tomorrow morning at 10 o'clock. Thank you. 17:54

MR. O'NEILL: Sir, I can make available, certain of the responses that Dr. Franks gave to the additional questions are contained in the written sheet, some of them are slightly technical. (SAME HANDED) 17:55

INSPECTOR: That would be helpful.

THE HEARING WAS ADJOURNED TO FRIDAY, 25TH JANUARY 2008 17:55
AT 10:00 A.M.

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