RESUMED **[2.31 pm]**

COMMISSIONER: We'll reconvene at 1430 and I welcome Mr Gustavo Caruso, the special coordinator, Nuclear Safety Action Team, International Atomic Energy Agency. Counsel.

MR DOYLE: Mr Caruso was appointed the special coordinator of Nuclear Safety Action Team at the International Atomic Energy Agency in 2011. In this role, he was tasked with implementing the IAEA nuclear safety action plan, which was created in the wake of the Fukushima Daiichi accident, with a view to strengthening nuclear safety framework around the world. Prior to this, he was head of the Regulatory Activity Section of the Department of Nuclear Safety and Security at the IAEA. Mr Caruso also has extensive experience in the field of nuclear safety and regulation in Argentina having previously served as executive manager of the National Nuclear Reactor Regulatory Body.

COMMISSIONER: Mr Caruso, thank you very much for joining us. The lessons learned from Fukushima are an important consideration as this Commission thinks about the possibility of expanding the nuclear industry in South Australia. The IAEA has released a report, I think in August, about the accident describing what happened and the causes, and we'll certainly get to that in a moment, but I'd just like to start with - for you to briefly explain the role of the IAEA, who constitutes its body, where is it headquartered, and then we'll talk about - I know that there were a series of actions straight after the accident, and perhaps you can walk us through some of those, but perhaps start firstly with the purpose and the composition of the IAEA.

MR CARUSO: You mean not consider the accident in general.

COMMISSIONER: We'll get to the accident in a minute, but I'm just introducing who the IAEA is.

MR CARUSO: Okay. The International Atomic Energy Agency is constituted according to statutory functions. They hope to continue to the atom for peace and the development of nuclear in many different disciplines, not only nuclear power, also basically protecting the people and environment from (indistinct) contributing to nuclear development (indistinct) and secure and safe manner, to community to help countries to go with the application if nuclear power, the application of nuclear technologies, application nuclear (indistinct) in order to improve life and quality of life.

This is an organisation that is around 2,600 people in general, is composed by the Director General and five (indistinct) in different areas: in nuclear safety and security is one; the other area is nuclear energy; the other area is nuclear

applications where we put together all the applications of nuclear, nothing related with nuclear power but relating to the (indistinct) nuclear can contribute to the quality of life. It's not in nuclear applications. Then technical department. The technical department is where the (indistinct) report to member states for developing anything related with our work, statutory functions and the scope (indistinct)

The Department of Management where we have basically management of Agency and our Office of Legal Affairs that we are keeping there. It means that we have a very broad scope and approach in all nuclear activities and (indistinct) is composed by the Board of all governors and the Board basically belongs to a number of countries. Not all countries can be a member of the Board, but it's a Board of countries that are nominated to provide us the - well, where we provide basically all sorts of our activities.

COMMISSIONER: Okay.

MR CARUSO: Just (indistinct)

COMMISSIONER: That's a very good intro.

MR CARUSO: Yes, but these (indistinct) but of course there are legal terms that I'm not using here, but (indistinct) was 1957. It means that from all these years this current approach based on all (indistinct)

COMMISSIONER: Thank you. If we could move to the actions taken by the IAEA directly after the Fukushima accident, could you just very broadly walk us through what happened?

MR CARUSO: I think this is something that we need to reference here, because in the Agency we have different statutory functions according to the topics. An example is for nuclear (indistinct) we have a kind of (indistinct) approach, then we check and normally find the non-proliferation and these particular topics that we call all together (indistinct) department. It means that when Fukushima happened, the - we cannot take any responsibility. One example is explaining to the members what is going on. We cannot do that. What we can do, I mean, basically based on our assessment and prognosis, but we can explain the very fine information coming with a work official contact point, in this case, Japan.

Then our role when (indistinct) happen is to confirm the (indistinct) information to verify the information and to put together to disseminate to member state. Our speed was the (indistinct) disseminate, share information was (indistinct) obviously by the host country where the accident happened. It means that if we receive information we can pass information. If we don’t, we

can't. This is the (indistinct) topic. Then this was our role. I have to mention that now the role is different. I hope not, but if a new accident happened in the future (indistinct) based on the action plan of nuclear safety provided by the (indistinct) is now, yes, we will produce a kind of assessment and prognosis when (indistinct) happened, of course together with the host country in a very harmonised and (indistinct) way that we are discussing and we are implementing, but now we can explain.

COMMISSIONER: Okay. We might move directly now to talk about the Director General's report of the Fukushima accident and perhaps - we've got some slides, I understand - and perhaps we could walk through the process of how that report was established and then we might go into its contents.

MR CARUSO: Okay. Well, to be short, we initiated the action plan nuclear safety in 2011, and then one year after the action plan implementation the Director General decided that the Agency, based on what we are learning, we should start to prepare a report in 2012. In September 2012 the Director General announced that the Agency should organise to prepare (indistinct) a technical - comprehensive technical, factual, clear report to be understood about not only by the technical people but also by the educated public. It means that from 2012, September, until August 2015 was the time that we did all the report. This report involve a number of experts, high-level experts, around 180 experts around the world for – belongs to 42 member states, member states with and without nuclear power.

This is very important for us because to show the transparency, and even countries that will never have a nuclear program because they are not nuclear-powered countries, they already decided not to be (indistinct) and also strong nuclear power countries. It means that this was a composition very ingenuous among similar countries involving all regions in the world. Again, countries that when we highlighted and we detected nuclear can provide good advice, of course we don't need any experts from those places. This is basically what's the composition.

We have this slide, the slide number 2. We make the very complicated structure in order to have a very high level of quality management, because the quality for me was (indistinct) was very important topic in order to be sure that what we are going to provide to member states is exactly what (indistinct) factual, technically correct and comprehensive. Then we created these working groups, five working groups that (indistinct) nominated different co-chairs all around the world. They say it belongs to different regions in the world, these co-chairs.

Also we started two important things. One is what you call an international technical advisory group. This group is composed by around more than 20

members from different national organisations, even sister organisation and also high level recognised safety groups like the International Nuclear Safety Advisory Group or the International Commission of Radiological Protection or different other groups. They provide the advice from that point of view – and an internal group that we call the internal assurance group in order to be – high level people (indistinct) and directors to provide us some comments or review in the meantime that they are producing from the initial draft of the approval. This is (indistinct) the structure.

To get information we went to Japan. We organised around 11 missions to Japan, different areas. I have to mention that the difference between this report and the other report is that this report is based on the real measurements when we talk about doses. This report, because it was done some years after, together with the Japanese permanent mission (indistinct) use as a focal point, we contacted all Japanese institutions that would receive real data. It means that we could authoritatively get conclusions with a very strong basis. This is the real difference with other reports, not because the other reports are not correct. If they wanted to make a report at the initial part of the accident the only option is to use models instead of real data. Then the models of course, as you know, are conservative and can induce some kind of conclusion that probably using real data is not the same.

COMMISSIONER: Mr Caruso - - -

MR CARUSO: Just one more comment. I think it's important. We collected around 1000 references around the world and we used 371 references in the entire document. That's to give an idea of the size of the investigation.

COMMISSIONER: Mr Caruso, could we move to the first category of lessons learned that are noted in the director-general's report and the topic of safety assessments. You've prepared a slide – I think it's slide 3 – which deals with the insufficient consideration of beyond design basis accidents. What was it about Fukushima that resulted in the conclusion of the director-general on that topic?

MR CARUSO: Well, in this letter that you are referring to is when we analysed why the accident happened, this is one topic out of 20 (indistinct)

COMMISSIONER: Yes.

MR CARUSO: This topic is that normally nuclear plants are designed against some accident. We call design basis accident. Of course, the plant needs to be prepared for accidents that are beyond the design basis. Then one of the problems in Japan was that the analysis of the beyond design basis were not in that (indistinct) established. This is one thing. It means that when an accident

happens and you don't have the normal possibilities to face with a nuclear system, you have to use what we call accident management. It means how to manage the accident with the conditions that you have in the plant. This is something that was also a key point to take into account as a lesson, because now – and before, we say, not now, but the beyond design basis accidents is something that normally has a very, very low (indistinct)

One of the, let's say, considerations after Fukushima is that the reactors should be prepared for accident beyond this design basis (indistinct) but there is some mitigation elements that, because of the design, because the different national situations probably needs to be standard.

MR DOYLE: Taking the example of Fukushima, what steps might have been taken in advance of the accident had there been a more thorough consideration of a beyond design basis accident? What are the steps that might have been available to the operator to limit the damage that was caused by the tsunami to the reactors cores?

MR CARUSO: One of the main problems when the tsunami arrives, normally in nuclear safety we consider that we have electricity power to manage the cooler reactor, to do all the activities in the plant. The situation was this tsunami, let's say (indistinct) the possibility to have DC and AC power to use safety systems in order to cool the reactor. This is one example. The height of the tsunami was impaired to the operator to take positions because (indistinct) of the plant was not available. It means that the operators were not in the position to know safety parameters in order to take actions. This is one of the key issues that we identified the accident, the lack of (indistinct) of (indistinct) against the beyond design basis accident. For nuclear engineering people it is difficult to believe that we are going to lose batteries – it means DC power – if an accident happened but this was the case because the location of the plant is important. The lack of consideration of the size of the tsunami, the tsunami height, was not considered as it was, unfortunately.

MR DOYLE: So in practical terms what are the sorts of steps that the IAEA would expect an operator or a regulator to put in place to address this sort of situation?

MR CARUSO: One of the first steps that the operators – the regulators after Fukushima was to look at what we call (indistinct) the stress test. We don't use this terminology. We use assessment of safety (indistinct) abilities (indistinct) against (indistinct) but okay, we can produce this – all these word sayings, stress test. The stress test was conducted all the countries. All country with nuclear power plat and they observe (indistinct) is to see, to (indistinct) safety of the plant against extreme external (indistinct) first. Second, to see how the accident (indistinct) accident I've considered and third, how the plant can be

challenged if they (indistinct) effects, there are issues that we need to – we need the safety improvements. If we – and then finally, the conclusion, the (indistinct) about the (indistinct) reaction plan (indistinct) website, there are local factions started these plants started to (indistinct) some – but in general they – the situation in Japan was very (indistinct) because they had not – all the plants are not located in the Ring of Fire, this place that will (indistinct) 450 (indistinct) and they of course – what they reanalyse the plant against what is the worst situation that can happen, even without considering the local (indistinct) and the high consequences but without taking in to account that the accident is very low, with very local (indistinct) this is – this (indistinct) And then they took actions. One of the most important action is all plants analyse their way to be prepared for any (indistinct) accident in addition those that come from extreme events, as (indistinct) events to guarantee the cooling, to guarantee the power supply and to guarantee the containment issue. With these three things, our plants are prepare for everything, even those (indistinct) I mean both (indistinct) generators, different ways to (indistinct) reactors (indistinct) in summary, I can tell you that from our perspective, the plants after all of this is far – is safer than before Fukushima. Even for those accident, a very, very low (indistinct) but high consequences.

MR DOYLE: And what about in relation to accident management? I understand one of the difficulties at Fukushima was that the accident management plans didn't cater for this sort of extreme scenario, and in particular didn't cater for the loss of power in relation to the monitoring and instrumentation of critical measurements. What steps have been taken since Fukushima to address accident management plans for beyond design basis events?

MR CARUSO: Well, I mean you know there are different plants in the world. There are plants that (indistinct) once, they are countries that are – were very concerned since the beginning (indistinct) accident. They have a very strong plan and there are plans in countries or – or that are not – that are let's say they – they rely that improvement needs to be done, it will actually (indistinct) management after Fukushima. Then there are – we have all range of plants the (indistinct) agree and they leave all emphasise train, highlighted all (indistinct) accident that is important to consider because the – I mean before Fukushima probably the – this very, very low probability things are difficult to (indistinct) you think the combination of event what happen in Fukushima and how it happen, when it happen and how it happen (indistinct) to believe if this not happen. Now the situation is different. That's why I think it's like wake up and (indistinct) I will not – I don't want to say that safety was not good before Fukushima, I'm saying that everybody learn from Fukushima. They analyse in their own plant, every plant was in a different condition. The situation that the plant much (indistinct) than others and (indistinct) and they try to improve all this (indistinct) accident. Meaning that as result of all this analysis, there was

not any need to shut down any plant for (indistinct) for (indistinct) until they make the final improvements or implementation of the systems. It means that all of them were prepared for this, however this was very interesting to refresh, retrain, consider better in many cases, so (indistinct) even if they are very, very low (indistinct) but they (indistinct)

MR DOYLE: Thank you. Could we turn now to the question of the structure of regulatory oversight of the – of nuclear operators and I think you've – at slide four, prepared for us one of the diagrams that appears in the Director General's report. It obviously represents a somewhat complex structure but I wonder whether you can describe what the lessons learned from Fukushima were in relation to the structure of regulatory oversight?

MR CARUSO: Right. Well, I have to say that the (indistinct) of the – I personally was involved in the review of NISA, the (indistinct) authority in Japan in 2007. I – we made an agency review of the regulator in 2007. I have to say that it (indistinct) I have to say that the - several findings in this report are related to the accident. One example is considerations of (indistinct) accident is there in 2007 (indistinct) accident of training or (indistinct) However Japan, for different – you know, different purities, different things they tried to do their best but they were not able to implement all of this before (indistinct) The regulatory (indistinct) was a complex situation. In particular because they were not independent. They were not fully independent. They say they were (indistinct) independent but they are not dual independent and you know, if you are not dual independent, you're independency is relatively speaking come – it can be challenged in some – in some cases. They were inside the Ministry of Energy (indistinct) where they (indistinct) nuclear power. This is one thing.

The other thing is in the – in the (indistinct) that I – that you have when you see the (indistinct) you can see the complexity of the Japanese regulatory system (indistinct) at that time. At that time. It means that they have – they have (indistinct) they have – at the time that they have to decide, it was not clear what – who has to decide because they have also nuclear (indistinct) Commission, the NISA and (indistinct) and they were different players in this – in this structure. This structure is a complex structure, not to – for the day to day to work, (indistinct) was working. When an accident happen, this (indistinct) this is the way – this is when the structure is challenged because it is not – something is not clear, very clear and prepared to respond then the accident will be very complex. Then later in to the (indistinct) I will personally review in January the (indistinct) the newer regulatory authority in Japan. I'm (indistinct) mission for 23 high level people in January next year to discuss (indistinct) NRA is the name of the (indistinct) section. We took in to account all lessons learned and the IEA safety standards.

MR DOYLE: I wonder if, at that point – at this point, you might be able to give us your thoughts on what the key considerations are in setting up any new regulatory scheme for the generation of nuclear power in a country that hasn't previously - - -

MR CARUSO: Right.

MR DOYLE: - - - embarked on that?

MR CARUSO: Right. I think – I think it's a good question. According to our standards we have (indistinct) we call a (indistinct) and regulatory framework for safety. We (indistinct) one, this standard we start with the old principles based on the safety (indistinct) The (indistinct) area is the (indistinct) call (indistinct) regulator. The (indistinct) regulator is a regulator that is effectively independent (indistinct) factor. Has the necessary human resources either what he trained with a high safety culture, high level of competence of decision-makers in order to make the right decisions at the right moment from the regulatory (indistinct) and properly funded by the government. In summary, these four attributes, I think they are the (indistinct) if you want to establish an effective regulator.

MR DOYLE: You mentioned a moment ago safety culture. This is a topic that's touched on in the director-general's report. What was wrong with the safety culture in Japan prior to the Fukushima accident?

MR CARUSO: That's a very important question. I think when Chernobyl happened, when in fact Chernobyl was not an accident normally expected – the plant was working and explode. It was an experiment with different situations, condition of the plant, (indistinct) safety systems and of course – like in the (indistinct) of your home, if you play with your boiler you start to make (indistinct) the boiler can explode because it's not prepared for that. However, because of this the safety culture appear in 1986 as a fundamental topic to take into account because, if you have a good safety culture, you cannot do that with your boiler. You cannot do that, what's happened in Chernobyl.

Well, from that time a safety culture started to appear with high-level positions (indistinct) agency (indistinct) What happened in Japan is that – of course the Japanese knew of these things. We discuss (indistinct) times. The safety culture is a topic normally – normal topic to be discussing on safety issues. What happened in Japan is that there were what we call basic assumptions. The basic assumption was wrong. The basic assumption established in Japan, that the plants were so safe against any initiator, including natural events, that there was no need to be concerned for anything that can happen.

It means that nobody can think that this can happen in Japan and the

earthquake happened – just to tell you, earthquake is an external event that the Japanese plan had over-designed and the plant has suffered the most important shake in the world (indistinct) it's close to the epicentre and it was far beyond the design basis and this plant supported the seismic issue in 2011 perfectly without any safety problem. It means that the Japanese plant are well designed. The problem was that nobody was taking properly the operating experience about flooding. Flooding issues happening in 2004 in France in the Blayais, not more than 14 years from now, the most (indistinct) witness in some designs if the plant is located in the particular situation.

Fukushima has a very big problem with the (indistinct) okay, but going back to your specific questions, this basic assumption that the plants are so safe that nothing was necessary, there were no incentive to the operator to create self-improvements or to propose and the regulators were not encouraged to make new regulations in order to improve safety. There was a very complex situation that the plants were safe, as well we are happy. It's laissez – too much confidence. This is one point. This is one of the central points. Then the reports, they analyse that all of these, together with other elements – but this (indistinct) to the lack of questioning attitude. The lack of questioning attitude is one of the key attributes in a safety culture. If you have a high safety culture you always have to have a high level of questioning attitude, of course to some point (indistinct) case it also works. But to some extent you have to have a questioning attitude. This is one of the central points that we can mention that happened in Japan.

MR DOYLE: I wonder whether we might move forward now to emergency preparedness and response. The fifth slide in your package shows the geography of some of the locations at which decisions were made in relation to the immediate aftermath of the Fukushima accident. Tell us first in a general way what was the emergency response and what were the particular problems that were encountered.

MR CARUSO: Well, if I can summarise, the Japanese did an excellent demonstration. They are really very well organised. They are really well prepared because they located population, they follow the rules. This is something very important when accident happen, to follow the rules. We don't see any particular, let's say, big problem. One of the initial problems is because of the structure in Japan. The process to declare an emergency correspond to the prime minister – in the past, not now, but correspond to the prime minister. Then the tsunami – the highest tsunami wave happened at 3.36 Japanese time and the emergency was declared at 7.00 pm, several hours after where probably some (indistinct)

This declaration of the emergency allows the operators to start to initiate all the accident management that are beyond the operating procedures. This is one of

the key – but this was because of the complex structure, as I explained to you before, related to a regulator but this has expanded to all – because it was a very complex, the decision to take the emergency. It's different country to country but in the case of Japan was complex enough in order to produce this time between the tsunami and the declaration of an emergency.

On the screen you can see where is the location of the local emergency centre and the Tokyo centre. The local emergency centres prepare anti-seismic – it's very close to the plant. The problem is that there was a new building based on the operating experience from other seismic events. That's why it was anti-seismic. The problem was that nobody expected the high level of radiation and they have to move this local centre to the Fukushima city, to the prefecture. In the prefecture, unfortunately, they didn't have the facilities that they had in the local emergency centre (indistinct) for that.

In spite of this we didn't see any big problem in the emergency part but of course there was always lessons from any – just one example, when such a big accident happen, because remember that the accident was not only – was a nuclear accident, was an accident in the area because the tsunami affected all the area. The people realised after the accident that they need more helpers or people working in the emergency part. It is very difficult to involve people that are not trained and they don't know about all the radiation risk. They cannot explain to the population different situations. Then this produce also a kind of complex situation because the helpers should be decided before any accident, not after.

The (indistinct) matters for the people is a personal monitoring of radiation. They have a lot but, of course, considering such a big manning of the – all nuclear power plants or almost all (indistinct) nuclear power plants, the (indistinct) were not enough for all or – and you are talking about evacuations. It is difficult to think when you are in such a big undertaking to discuss case by case how to make (indistinct) the calm. For instance, you need such a big undertaking to discuss case by case how to make good (indistinct) for instance, you need to (indistinct) hospitals close to the plant and persons that are in intensive care early. One evaluation that takes time but needs to be done is some people is better to keep there even with doses that were not high at all and the people can be continuously under treatment. If you move the people you can lose people. This is (indistinct) start from speed, but this needs to be well designed before, because during the accident it's very (indistinct) this decision.

The only comments (indistinct) relations probably is not - they were fully per cent, fully in line with IEA safety standards in relation of old emergency, but probably this is something that - they changed totally now in order to facilitate and to respond better in an emergency, and the international

framework is important to consider in any emergency. For instance, Japan did not invoke the system convention. It means to receive assistance from outside. However, Japan received assistance based on the lateral agreements with the US, with France. They received assistance according to their needs, but not international (indistinct)

MR DOYLE: Well, I think you've addressed some of the topics we were going to raise with you in relation to evacuation and radiation levels. We might come forward to the eighth slide and ask you to explain what the current status is of Japan's remediation and decontamination activities.

MR CARUSO: Well, in this slide you can see basically the situation at December 2014. It is not the current situation. This is one example. In the report we have others. Today we have a different situation. Post-accident accommodations, this is something that we continue. I mean, the report, we established the criteria (indistinct) but things will change, will improve there. They are moving forward. But this represents all the Japanese where taking, lifting, lifting (indistinct) areas according to the remediation activities. It means that people come back to these areas, depends on each situation, to live.

The yellow part is smaller now probably, but this is an area where it will take time to clean in order to allow the people to come back home. Longer time than the others. Then because they establish very - let's say very conservative values for this situation. In the Agency we established a range of values and the range depend on your national situation (indistinct) aspect in several different points and that's why you've got to make an evaluation which is the values. Of course we did aim to protect the people and environment. You have to choose in order to make it easier and keep the people safe.

If you take the lowest value - it is the more conservative ones - it will create more problems for you, and if you select values that you have more flexibility, probably a little bit more doses without any health impact, but factually speaking, little bit more doses, this probably sort of the situation. The central point here, I would like to say, it's difficult to explain to people why the nuclear community was so concerned about what it means. It means that for the public we establish the doses, the limit of the doses. For normal operation it's 1 millisievert, but it doesn't mean that the (indistinct) they are going to die.

They are very, very concerned in order to limit the effluents and all the situation that the plant is doing daily and - I mean there has to be a justification if you have to release more effluents. That's why it's good to have a low level. But the people believe that this is the limit and beyond this limit they felt it's in danger where it's not correct. There are places in the world just to review that they have 20 millisieverts per year (indistinct) people living there as a normal situation without any plant. It's a very good outlook for a plant, but the natural

radiation is ten times, 20 times but in another place, and there is not any epidemiological study that in Australia the cancer is higher in that area than the other areas.

Then how to explain to the Japanese population after telling them that 1 millisievert is the limit for normal operation. Normally you cannot expose people to 1 millisievert, but now we're 20. "It's okay. You can go back home." These are the difficulties, but this is operating the nuclear area. It's a problem that we should be able to improve our explanation, because we are so conservative because we want to demonstrate that this industry is the safest. That's why I think we need to be very clear explaining what kind of (indistinct) issue with radiation.

This is an activity that you cannot do after an accident, and this is the situation (indistinct) you are cleaning and probably you clean but there are areas that are still 1 millisieverts, 4 millisievert, but you tell that people, they don't listen because the people go with (indistinct) with - the people have their own system to check and they say, "No. Look, I can't - here we have 4 millisievert." "No problem. You will not have any problem." How to explain to this person this? It's very complicated, very complicated.

MR DOYLE: All right.

MR CARUSO: Another example is in order to show that - one of the most sensitive issues that you have to rest - if you don't want to have any doses, important doses to - you have to restrict the milk consumption (indistinct) bearing in mind (indistinct) the fibre is high absorbent of iodine and iodine is (indistinct) iodine is - you have a limit basically to take it. The children is the sensitive population, like we saw in Chernobyl. Children below five years are the most sensitive part. If the Japanese cut all the milk consumption there will not be any problem, because the doses are so low. The people don't drink because milk is (indistinct) the iodine go to the grass, the cow take the grass and the iodine go to the milk. This is 99% of the dose. "Then if you don't give me this, this now."

To demonstrate the health of the fibre, the Fukushima Medical University, they make a very sensitive ultrasonic analysis and they check the big population of Fukushima the nodules in the thyroid that they have. Of course if (indistinct) and myself, we go to the very sensitive ultrasonic measurement. Of course we will find nodes that we never knew that we have, but these are nodes not because you are exposed to radiation because the fibre normally has nodes, and of course - but how to explain a mother that have children that you found nodes? How to explain, "No, don't worry. This is not because of Fukushima"?

Then what was done, just to demonstrate this, they took another town, nothing

to do with nuclear, in Japan and they found the same. They find a lot of people with nodes that nobody knew, and they check the following year and nodes (indistinct) but again, if you don't train the population early it's difficult now to say, "Don't worry. It will not affect (indistinct) issue is exactly this problem.

COMMISSIONER: Dr Caruso, that's been very useful. I thank you very much for your time and for your participation.

MR CARUSO: Anything that you need, don't hesitate to contact me.

COMMISSIONER: We will do that indeed.

MR CARUSO: Thank you.

COMMISSIONER: Thank you. We'll now adjourn until 1630 when Dr Weightman resumes.

ADJOURNED **[3.19 pm]**