PCA Case No. 2023-01

IN THE MATTER OF AN ARBITRATION

-before-

THE COURT OF ARBITRATION CONSTITUTED IN ACCORDANCE WITH THE INDUS WATERS TREATY 1960

-between-

THE ISLAMIC REPUBLIC OF PAKISTAN

-and-

THE REPUBLIC OF INDIA

CERTIFIED TRANSCRIPT
(HEARING FOR THE FIRST PHASE ON THE MERITS)

COURT OF ARBITRATION:

Professor Sean D. Murphy (Chairman)
Professor Wouter Buytaert
Mr. Jeffrey P. Minear
Judge Awn Shawkat Al-Khasawneh
Dr. Donald Blackmore

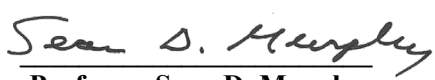
SECRETARIAT:

The Permanent Court of Arbitration

ON BEHALF OF THE COURT OF ARBITRATION:

CERTIFIED PURSUANT TO PARAGRAPH 19 OF ANNEXURE G

16 July 2024



Professor Sean D. Murphy
Chairman

In the matter of an arbitration
pursuant to Article IX and Annexure G
of the Indus Waters Treaty 1960
PCA Case No. 2023-01

Permanent Court of Arbitration
Peace Palace
The Hague
The Netherlands

Day 7 Tuesday, 16 July 2024

Hearing of the First Phase on the Merits

Before:
PROFESSOR SEAN D MURPHY
HE JUDGE AWN AL-KHASAWNEH
DR DON BLACKMORE
MR JEFFREY P MINEAR
PROFESSOR WOUTER BUYTAERT

BETWEEN:

THE ISLAMIC REPUBLIC OF PAKISTAN
-and-
THE REPUBLIC OF INDIA

Transcript produced by Trevor McGowan
Georgina Vaughn and Lisa Gulland

APPEARANCES

FOR THE ISLAMIC REPUBLIC OF PAKISTAN

MR RAJA NAEEM AKBAR, Secretary, Ministry of Law & Justice (Deputy Agent)
MR SYED ALI MURTAZA, Secretary, Ministry of Water Resources
MR SYED MUHAMMAD MEHAR ALI SHAH, Commissioner for Indus Waters, Ministry of Water Resources
MR ASAD KHAN BURKI, Legal Advisor, Ministry of Foreign Affairs
MR ZOHAIR WAHEED, Office of the Attorney General
H.E. MR SULJUK MUSTANSAR TARAR, Ambassador of Pakistan to the Kingdom of The Netherlands
MS FATIMA HAMDIA TANWEER, First Secretary, Embassy of Pakistan to the Kingdom of The Netherlands
MR JAMAL NASIR, First Secretary, Embassy of Pakistan to the Kingdom of The Netherlands
SIR DANIEL BETHLEHEM KC, Twenty Essex, London
PROFESSOR PHILIPPA WEBB, Twenty Essex, London
DR CAMERON MILES, 3 Verulam Buildings, London
PROFESSOR ATTILA TANZI, 3 Verulam Buildings, London
MR STEPHEN FIETTA KC, Fietta LLP, London
MS LAURA REES-EVANS, Fietta LLP, London
MR ABDULLAH TARIQ, Fietta LLP, London
MS MEGAN RIPPIN, Fietta LLP, London
DR GREGORY L MORRIS, Technical Advisor
MR PETER J RAE, Technical Advisor

THE REPUBLIC OF INDIA WAS NOT REPRESENTED

FOR THE PERMANENT COURT OF ARBITRATION

MR GARTH SCHOFIELD, Deputy Secretary General
MR BRYCE WILLIAMS, Legal Counsel
MR SEBASTIAN KING, Assistant Legal Counsel
MS VILMANTE BLINK, Senior Case Manager

09:16 Tuesday, 16 July 2024
(9.30 am)
THE CHAIRMAN: Good morning, everyone. It's good to see you for our last day of this hearing.
I see that Sir Daniel is at the podium. We have a new allocation of timing and presentations for today. But I anticipate that, Sir Daniel, you'd like to perhaps give us an orientation for where we are headed. So the floor is yours.
SIR DANIEL: Thank you very much, Mr Chairman and members of the Court.
Mr Chairman, I think the first order of business is for me to introduce Mr Syed Ali Murtaza, who is the Federal Secretary of the Ministry of Water Resources. I think he was unexpectedly delayed in Islamabad, was hoping to be here yesterday, but he's here today. You will hear from him at the end of the day today, when he will make some closing remarks and will also formally present Pakistan's final submissions. So our welcome and introduction to you.
THE CHAIRMAN: Thank you very much for that introduction.
It's a great pleasure to have you here, sir. I am glad that you were able to make it for today, and we look forward to hearing from you this afternoon.

09:31 Second-Round Submissions Day 2 Orientation
SIR DANIEL: Mr Chairman, members of the Court, there are two brief issues for me to address, and I won't detain you very long from the microphone. The first is to make one or two observations about the scheme. You've got it on the sheet, but just to say one or two brief words.
And the second is to raise two issues which I would ordinarily have deferred to the end of the day, but I will raise them preemptively in case they may be useful for you to consider in your deliberations during the coffee break or over lunch, because they may have some bearing on how we go forward.
Just having a look, first of all, at the scheme, we've got the same line-up as we had yesterday in the scheme that I presented to you yesterday, but the order of appearance is slightly different.
We do pick up, after my remarks, with Dr Gregory Morris. He was due to come on yesterday, but he will start off today. And Dr Morris will be addressing general issues that he was intending to address -- sedimentation, a number of other issues -- and may also make one or two observations arising out of yesterday's discussion on pondage, but we'll see how that goes.
We then propose to reorganise, as I was anticipating yesterday, and have Dr Miles follow Dr Morris, rather

09:33 than come lower down in the running order. And Dr Miles will both pick up on the discussion yesterday on pondage but also develop the legal submissions.
We will then have Professor Webb on outlets, spillways and intakes. We will have to see how the questioning goes to Dr Morris and to Dr Miles. It may be that Professor Webb comes on a little bit earlier or that she's deferred to after lunch. In any event, I think it's likely that she will split her submissions across the lunch break.
Then I think we'll move to Mr Fietta, who will pick up on some of the question 35(a) issues. You'll recall yesterday we had Mr Fietta coming first in the day [today], but we've concluded that it would be useful to deal with the engineering and engineering-associated legal issues in one block, and then have Mr Fietta.
Then I will make some final closing submissions, picking up on a number of the questions that you asked but which I was unable to get to yesterday.
And then we will close with final submissions from Mr Murtaza.
That brings me to the two issues that I raise with you preemptively at this point, in case it's useful for you to consider and for there to be an exchange across the bar.

09:34 The first one is that in the light of -- I think we were heading in this direction in any event -- but in the light of the discussions, the exchanges both last week and yesterday, I think that we have concluded that there would be utility in having post-hearing submissions. We've identified a number of points which it is evident that the Court is interested in and would like to hear a little bit more about, and I think these are issues which perhaps could not have been anticipated prior to the hearing; not on our side and perhaps not on the Court's side.
You didn't, for example, in your written questions to us, raise questions about Annexure E or raise questions about the methodology of calculation in Baglihar, and we did not have a sense necessarily that those would be looming large in your enquiry. So it seemed to us that there would be some utility in having brief post-hearing submissions that address, perhaps amongst other things, the relevance of Annexure E to the interpretation of Annexure D.
I will start that process in my submissions at the end of the day. But as I will make clear when I start to address Annexure E, I am going to be giving you, if you like, a sitrep, orientating you towards Annexure E. But I will be disciplined and not speculate when it

comes to the interpretation of particular provisions of Annexure E, because we will need to go back and have a look at that. So that's one aspect that we thought might usefully be addressed in a post-hearing submission.

The second issue is the difference between Pakistan's calculation of pondage advanced in Baglihar and in the present case. I think I addressed that at some length on Friday, and Dr Miles will come on and look at that in a little bit more detail now. But to the extent that you might find it useful actually to have a piece of paper -- or more than just one piece of paper -- which actually elaborates on this, we'd be happy to do so in a post-hearing submission.

The third element that seemed appropriate for post-hearing submissions, if for no other reason than that this is very difficult to do on the hoof from the microphone, is some further observations on the calculation of pondage in the light of the Court's questions. And I think, when one covers the pages, I think this has been the issue that's attracted most of the Court's questioning.

Then the other category may be: any other questions that the Court may identify, perhaps in the course of the next week or the next two weeks after the hearing.

I know that you're going to be deliberating tomorrow, and it may very well be that, in the light of what we've said, you identify some issues that would be useful to address.

We will come on, perhaps at the end of today, when we deal with housekeeping matters, Mr Chairman, under your control, to address questions of timing, whether there should be limitations of length or whether there should be any other considerations. But I thought that it would be useful for you to have that thought in mind already at the start of the day; also for the reason that insofar as some of these issues may arise in the course of the submissions of my colleagues to follow, which would take them into this kind of terrain, I think it is likely that they will say to you that, subject to your directions on post-hearing submissions, a further examination of those issues should be deferred to that.

Now I should just say briefly at this stage, for those who are perhaps less familiar with international arbitral proceedings such as this, that post-hearing submissions are not a novelty. In fact, they're a commonplace, so we are not proposing or suggesting anything that would be unusual. And I think they are not a novelty and are a commonplace perhaps in particular in circumstances in which a respondent is

absent. Because ordinarily, had the Respondent been here, there would have been a joining of arguments between the two parties perhaps on two or three occasions before we actually get to the end of the hearing, two rounds of written pleadings and then in the room; whereas what we have been faced with, unsurprisingly, is that the first time that there is in fact a joining of issues is when the Court is addressing questions to us. So inevitably this is pointing out issues that would benefit from further elucidation.

So that's the post-hearing submission point.

The second point, just to put on your deliberative agenda, is that in the light, Mr Chairman, of the issues that you raised last week about a preliminary partial award, and of the exchange that we had across the bar yesterday, it also occurred to us -- and I'm not making this as a proposal but just raising this as an issue for further engagement, if it would be useful to do so -- we considered that we should put on your agenda the possibility of more than one partial award.

The Kishenganga arbitration obviously had four decisions: there was the interim measures and there was the clarificatory decision, but it also had two substantive awards. There was the partial award, which dealt with drawdown flushing, the big interpretative

issues and so on; and then there were some issues that were deferred to the final award, notably the minimum flow, the environmental flow.

Quite aside from the question of 35(a) and whether 35(a) might be usefully carved out, we can certainly see that there would be both a reason and substantive coherence, were the Court to decide that, for example, you would like to deal with some of the broader interpretative issues -- for example, the status of the Treaty, perhaps the relationship of the Treaty interpretation issues, perhaps even some of the sediment control issues -- in an earlier award, and deferring some issues on which you would like to deliberate further, or you may even consider that you require further information in due course, such as perhaps on pondage.

And again I say, at the moment we are not making an affirmative request to you on this, but we would like to put this on your agenda so that you can, in the course of the day, reflect on it. And if you would like then to come back to this at the end of the day, when we have the housekeeping issues, that's something that we could address further.

So unless you've got any questions for me, Mr Chairman, members of the Court, on this, I would then

09:41 invite you to call Dr Morris to the microphone.
THE CHAIRMAN: Thank you, Sir Daniel. I think that what you've just said is very clear, very helpful in terms of our thinking through the course of the day and in anticipation of the end of the hearing. I don't think we have any questions for you right now in that regard, but no doubt it will lead to a further exchange before the day is through.
So if that's the case, then I think we are ready to hear from Dr Morris.
SIR DANIEL: Thank you very much. (Pause)
(9.44 am)
Submissions on General Engineering Issues
DR MORRIS: (Slide 1) Good morning, members of the Court. I would like to address you this morning to answer some of the questions which were posed by the Court this past Saturday.
(Slide 2) So what I will do is we will look at the questions relating to the relationship between storage, outlets and the ability to manipulate flows. And to introduce that scheme, the presentation starts with a brief overview of the impact of Treaty-compliant design versus Indian designs as they relate to controllable storage. And the presentation will then turn to addressing specific questions posed as they

09:44 relate to flow manipulation, mitigation alternatives, et cetera.
(Slide 3) So let's start by reviewing factors that will influence controllable storage capacity. And that basically starts with question 11(b), which reads:
"By contrast, if India's HEPs habitually have low-level outlets, does the concern exist regardless of whether the active storage at these HEPs is at (i) the level permitted in the Baglihar Determination; or (ii) the level advocated by Pakistan in this proceeding?"
Pakistan is concerned about the existence of all upstream storage, but it is considerably heightened by the outlets at a deep level which are incorporated into the Baglihar design. There is a remarkable difference in the capacity of controllable storage when comparing the Baglihar configuration against the level associated with a design approach which Pakistan understands to be Treaty-compliant.
To better understand that, let's look at some of the design factors that cause the controllable storage to become dramatically enlarged under India's design approach.
(Slide 4) We basically have touched on these and explained each of them in prior discussions, but this

09:46 kind of pulls them all together so that you can see the successive and cumulative impact.
So the specification of excess pondage capacity is the first link in the chain which amplifies the capacity to store water.
Next, by selecting a tall dam strategy -- remember, as opposed to smaller dams and longer tunnels -- each successive depth increment below dead storage level produces a large increase in controllable storage as a result of the following design decisions.
First, extend the headrace tunnel directly into the reservoir, instead of using a surface intake, which would separate the intake from the tunnel entrance. This then requires anti-vortexing submergence within the reservoir, which violates the highest-level criteria, because your surface intake would be the highest level; whereas a tunnel intake going directly to the reservoir, with an anti-vortexing depth requirement, placing that requirement into the reservoir instead of downstream of the intake, violates the highest-level criteria.
The next step is to place the orifice spillway entirely below the intake, which again violates the highest-level criteria.
And finally, maximise orifice spillway dimensions, and thus its depth, by sizing it to pass the PMF flood,

09:48 the design flood, rather than sizing it only for sediment management. And this also violates the minimum size criteria for outlets.
As you see on the left, each of those successively makes the outlets go progressively deeper. So basically what you're doing is you're stacking these components one on top of the other.
Now, on slide 5 you can see the elevation capacity curve that was previously introduced for Baglihar. And on this curve, I've colour-coded each of the components that we've just addressed and what their contribution is to controllable storage capacity.
So first we have the operating pool, which, according to the Neutral Expert's determination, was 32.56 million cubic metres. Then we have the submergence for anti-vortexing. We then have, moving to the left, the height of the intake itself, from the top to the bottom. And then after that we have the orifice spillway, ending up with a spillway crest at 808 metres, for a total controllable storage of 209 million cubic metres. On the little graphic on the upper right, you can see how these things are vertically stacked one on top of another.
Now, successful design approaches for surface run-of-river intakes were well known 100 years ago.

09:49 However, India has opted to use a design approach which is more suited for storage reservoirs in its run-of-river plants. This means tall dam, deep intakes, with the various components stacked vertically, as the little graphic shows you.

By situating the Indian components on the previously presented elevation capacity curve, we can see how this produces a controllable storage which is six times as large as the operating pool. Remember, the operating pool is supposed to be limited. And yet controllable storage, as a result of these design decisions, is six times larger than the operating pool.

(Slide 6) Now, if we move toward a Treaty-compliant design that places both the intake and the spillway at the highest level, we see that the results are quite different. Let's look at a Treaty-compliant design alternative for Baglihar which was developed by Pakistan. This graphic was presented to you previously by Peter Rae.

Note that the spillway and the surface intake all fall within the same range: they're not stacked on top of each other. You can see the spillways are in green, and to the right you see the elevation of the intake. The intake isn't actually located at that site: it's actually perpendicular. But it's just shown there as

09:51 a graphic of the elevation in relationship to the spillways.

(Slide 7) And what we will do now is we will look at the impact that this design alternative has on controllable storage capacity, as compared to India's design approach, which was shown previously.

So if we use the Treaty-compliant design approach, we will arrange the components at their highest level. On this graphic, on the right-hand side, you can see on the far right India's approach, which has stacked outlets. And then adjacent to that, we see a Treaty-compliant design approach which uses highest level for the intake, highest level for the outlets. And they're not stacked: they are basically occupying the same vertical space.

So as you can see here, the rearrangement of the various design elements produces a much higher elevation for the spillway crest. And this higher elevation reduces the controllable capacity by 98 million cubic metres: it basically cuts it almost in half.

Now, this is just one design alternative; there are of course other design alternatives. Every time you design a dam, there are multiple different design alternatives that the designers look at. But this alternative shown here does demonstrate that there is

09:53 ample opportunity to incorporate Treaty-compliant high-level components into the design.

(Slide 8) Now, what are the consequences of India's design choices? By selecting a high dam and short tunnel design approach, India has complicated their sediment management issues. They have not made it impossible, but they have complicated it.

And in this regard, it's also important to recall that economical design does not mean least-cost design. And furthermore, India's reliance on their proclaimed economical design for construction appears not to consider the operational consequences and costs of their design decisions.

In other words, economical design isn't just steel and concrete. You have a project, and you have to design it, build it, but you also have to operate it. So an economical design: if you go and buy a really cheap car that uses lots of gas, high fuel cost, it's not an economical decision. The same thing with power plants.

In the previous presentation, I presented a rough estimate of the annual cost of flushing 20 million tonnes of sediment from Baglihar, which included both all the power which would not be generated because of the water used for flushing, which is not passed through

09:54 the turbines, both at Baglihar and downstream at Salal, which would not be putting high-concentration sediment coming out of a flushing reservoir through its turbines. And that cost came to about $18 million a year, assuming annual flushing, to achieve a sediment balance between 20 million tonnes a year coming in, and flushing out 20 million tonnes a year of sediment.

Now, if we use a discounted cash flow analysis, and let's use a discount rate in the range of 5-7%, this produces a present value of those $18 million a year of cost in the range of $277-223 million for a 30-year analysis horizon. So this basically says: it would be economically justifiable to invest this amount of capital in today's construction to avoid $18 million a year in additional costs.

So when you look at the operational consequences versus design economy for construction, the operational costs have a very large impact, and can justify very significant design changes to avoid those costs.

So to summarise, adopting a Treaty-compliant design, not only does it provide significant protection for Pakistan, but it also may make economic sense for India if the operational costs are fully taken into consideration.

THE CHAIRMAN: Dr Morris, may I interrupt you just to ask

two questions, which maybe you're still going to get to, but perhaps not.

On the issue of cost, do I understand correctly you do see the concept of economical design as introducing the issue of costs?

DR MORRIS: Correct.

THE CHAIRMAN: It's just you're making the point that it doesn't mean least cost necessarily takes you to the proper place for an economical design and construction?

DR MORRIS: There are two points here.

First of all, as I think we've said before, economical design is basically economical design within the context of Treaty compliance. So you can't have an economical automobile that doesn't comply with regulations for safety, for gas mileage, et cetera. So economical design that is compliant.

And number two, when India says it's cheaper to build it this way, this may not be taking into consideration -- and I haven't seen any evidence that they do take into consideration -- the cost consequences of operations over a long period of time.

So it's two components: it's the economical design of a Treaty-compliant design, the economics of gaining Treaty compliance in an economical manner; and taking into consideration the substantial costs that are

associated with sediment management.

I mean, sediment management does not come for free under any scenario. But what I want to point out here is that India is pointing its plants towards flushing. It can be a very costly undertaking, just in terms of lost power, without considering any other costs.

THE CHAIRMAN: And my second question, it might help to go back to the slide that has the Baglihar-compliant version of the dam (slide 6). There you go.

And the question is this: assuming that you had this type of dam at Baglihar, is the concern of weaponisation still of great significance if the pondage level is set not at the level that Pakistan sought in Baglihar, but instead at the level the Neutral Expert set in Baglihar?

In other words, that differential in the pondage between what Pakistan sought and what the Neutral Expert called for in Baglihar, assuming that you had a dam of this nature -- and we're looking at slide 6 -- with no deep orifices, does that issue of weaponisation largely dissipate, or are you saying that: no, it is still of deep concern?

DR MORRIS: I'm going to touch on this. But I think that since you asked the question, maybe I can bring it up right now.

The weaponisation, or the impact to downstream users

through the maloperation of a reservoir -- intentionally, unintentionally, for whatever reason -- it's a question of degree. I live in the Caribbean, so let's pose this concept within the framework of hurricanes.

We can have a category 1 or category 2 hurricane that is consequential, is quite consequential. Wind speed of category 1 would be 80 miles an hour, which is 125 kilometres per hour. We go to a category 5, we're talking about 180 miles per hour, which is like 300 kilometres per hour. The difference is quite large. But both fall within the framework of creating extensive damage.

So while on one hand this will eliminate a portion of the storage, you can see it as like bringing your hurricane category from a 5 down to a 4, maybe to a 3. It doesn't eliminate the problem but it makes it less severe.

Does that answer your question?

THE CHAIRMAN: Yes, that's very helpful. Thank you.

Dr Blackmore.

DR BLACKMORE: Just going back to the net present value calculation. I'm just interested in whether you've got runner maintenance in there, through a change in the cost related to the infrastructure itself because of

sediment. So is that included in your net present value?

DR MORRIS: No. I have not looked at the alternatives. I've just said that flushing itself has a big cost.

Now, if you were to do this analysis as a full life-cycle analysis, you would of course look at what it's going to cost for flushing, what it's going to cost for sluicing. Under sluicing, you would have more runner damage as compared to flushing, but you would certainly have much less impact in terms of lost power.

So this is just to point out that the flushing can be a very expensive operation. Because I think that India is saying that, "We're choosing an economical solution", but they're focusing on the construction costs, and I have never anywhere seen India account for the cost of flushing.

So I'm just bringing this to your attention: that you say it's cheaper to build, but that's certainly not the whole story.

DR BLACKMORE: Thank you.

THE CHAIRMAN: Very good. Thank you, Dr Morris. Please proceed.

DR MORRIS: Okay, I think we had finished with slide 8 and we're now going to slide 9.

Slide 9 addresses question 16(a):

"Are low level outlets useful for sediment control without reservoir draw down? If so, when and how?"

Absent drawdown, if you don't draw down, a low-level outlet will only generate a scour cone immediately upstream of the outlet, as schematically illustrated on the left, using diagrams which were previously presented in the Memorial and the site presentations. The scour cone is very localised and does not extend a significant distance upstream, as has been amply proven by operating experience at many plants.

This type of outlet, without drawdown, may be used to maintain the area immediately in front of the intake free of sediment, using sediment sluices, and it can draw both bed material and near-bed suspended material away from the intake. In contrast, sluicing will entail drawdown, but not necessarily below the dead storage level.

So I think that answers the question about low-level outlets. Any follow-up? Okay.

(Slide 10) The next question we'll look at is a series of questions concerning flow manipulation on the Western Rivers.

THE CHAIRMAN: Sorry, Dr Morris, I think there might be a question about low-level outlets.

DR MORRIS: Okay. Perfect.

DR BLACKMORE: Sorry, can you just go back to that slide (9), please.

Just listening to all the conversations the last few days, when you've got a long reservoir, or a relatively long reservoir, and you go down to drawdown flushing, do you remove most of the coarse sediment at the top of the reservoir? Do you remove the delta, or is that pretty much stuck there?

DR MORRIS: If you flush using the highest discharges of the year, you can move the delta.

DR BLACKMORE: Okay.

DR MORRIS: The problem is that you don't generally know very far in advance when that is going to occur. And if you are already at a high flow rate in the river, you are very restricted in being able to draw down a deep reservoir, because if the flow rates are already high, by emptying that reservoir you would create downstream flooding: you would amplify the flood.

So for that reason, flushing projects tend to have the problem of accumulation of material in the delta, of coarse material. They tend to have that problem. This is one of the ways that sluicing gets around that. Because in the Himalayan environment, you leave the reservoir at a low level so that the flood, when it does occur, the reservoir is already in a low level, so that

you will generate high velocities along the entire length of the reservoir.

DR BLACKMORE: Thank you.

DR MORRIS: Okay, now we'll go to slide 10. Question 11(a):

"Is it correct that this concern [of flow manipulation] turns primarily on the existence of low-level outlets? In other words, if India's HEPs have no or relatively few ... outlets, is the concern largely addressed?"

The capacity to control flows is not simply limited to the low-level outlets. It begins with pondage, and it runs through the entire design approach which is used by India, which in the end produces deep and large low-level outlets. They are all related as links in a chain.

Because the largest danger to Pakistan is related to interruption of flows during the dry season, and particularly during the spring -- Kharif -- planting season, as long as the outlets are large enough to empty the reservoir during the dry season, it will be possible to impose highly damaging flow restrictions downstream by timing the refilling of the reservoirs.

So if the concern is a large flood downstream, you need to have very, very large outlets. But even if the outlet size is reduced to only that which is used for

sediment management during the low-flow season, they will still be large enough to empty the reservoir.

Thus, the reduction of the size of the orifice spillways to only the size needed for sediment management provides relatively little benefit against the restriction of flow during the irrigation season. It would resolve the problem of being able to release a huge flood downstream. But remember, that is not the primary concern of Pakistan. The main concern is the interruption of irrigation supply. And thus, the problem with the low-level outlets is not so much their size but their depth. By sizing the orifice spillways to manage the PMF discharge, this necessarily makes them not only larger but also deeper.

And just for the Court, when you have a low-level outlet, you can't make it a long and skinny [one], spread out horizontally, because these gates, if you start to lift them, they can get a little bit crooked and they can jam. So therefore, your low-level outlet orifices have to be square or taller than they are wide. You cannot have them wider than they are tall. So, you have a specific limitation, in terms of pulling the bottom up, by the geometry which is imposed on the gate itself.

Moving on to slide 11, and question 11(c):

"Is this concern ..."
The concern of flow manipulation:
"... altered by the existence of dams in a cascade?"
We did look at the Chenab cascade previously, and it's presented here again. And as mentioned in my prior presentation, the flow manipulation risk to Pakistan is [the] cumulative volume of India's controllable storage. It is not limited to a specific dam, because all the dams along the cascade can be operated in a coordinated manner.
And in fact, dams along a cascade for power production are normally operated in a coordinated manner. The storage dam upstream makes releases which are run through the turbines at the storage dam and all the downstream dams. So the manipulation or the operation of a cascade as, you might say, a single unit is a normal operating procedure.
So to answer the question, the concern about flow manipulation is considerably heightened by the existence of dams in a cascade because of this cumulative effect.
Moving to slide 12, and to question 12:
"What is Pakistan's capability to mitigate the harm of India either withholding or flooding the waters on the Western Rivers in the light of the re-regulating effect of downstream reservoirs and the conjunctive use

of groundwater and surface water? How has the capability changed since the Treaty was concluded? To what extent is this relevant to the proper interpretation of the Treaty?"
These are basically three questions.
So first let's talk about the storage reservoirs, and we can talk about Tarbela and Mangla, which can be theoretically used to release additional flows to offset the interruption of inflow from upstream.
Now, in reality, when you look at the historical operation and the operating schedule for these reservoirs, you see that they are already at a low level at the beginning of the Kharif irrigation season. The reservoir -- for instance, Tarbela -- is emptied at the beginning of the Kharif irrigation season. So the reservoir in Tarbela goes down at the same time that the inflow is coming up, so that Tarbela basically empties, and then the flow from the rivers comes up to compensate for the now-empty reservoir being able to make very little additional withdrawals.
When we have seen drought events in Pakistan, the spring flows are low. And this creates a crisis for the irrigators because the reservoirs don't have the additional capacity to offset the low inflow rate because they are already empty.

So in reality, the operating schedule for these reservoirs will see them at a low level at the beginning of the Kharif season, and they provide downstream flows as a combination of release from storage plus the inflow. And because there is this reliance on inflows -- especially during drought years you see the impact -- the irrigation situation becomes critical even in the command areas that are supplied by these reservoirs. So therefore, if the upstream manipulation of inflows creates a drought situation, it cannot be compensated by Pakistan's existing reservoirs.
So the presence of these reservoirs, which have already been drawn down at the beginning of the irrigation season, or at the very beginning they are drawn down, it does not offer a viable mitigation alternative.
THE CHAIRMAN: Dr Blackmore.
DR BLACKMORE: So I've understood all of that, so thank you.
What about groundwater at 1.25?
DR MORRIS: Coming to that.
DR BLACKMORE: Okay, thank you.
DR MORRIS: Next slide (13).
The greatest risk to Pakistan is the interruption of surface water supply. Some irrigated areas have the option of using wells to mitigate the lack of surface

water, but this is far from universally available.
It's already been pointed out that the most critical period is the Kharif, the spring irrigation season, when virtually the entire irrigated area is being planted, and this is a period of naturally low water availability.
The canal system was originally set up to maximise acreage under irrigation; in other words, put the water to as many people as possible. And the original designs assume that approximately one third of the land would be fallow; in other words, not irrigated in a particular year.
You have to remember that before the implementation of these irrigation systems, much of the areas which are today irrigated were what they would call basically "wasteland": it's land that -- scrubby vegetation, camels and drought-resistant vegetation and wildlife. And this was completely changed by the introduction of irrigation. So with the objective of maximising the irrigation area and the number of people who benefit from this, it was expanded in the largest area possible, rather than optimising the flow on a more limited area.
There is very little fallow land today, and the irrigation area has also approximately doubled since the Treaty. And this results in restricted water

availability to the irrigators, especially during the spring, when the flows are starting to come up and the reservoirs have already delivered their water.

Now, diverting surface water from one area to another to mitigate supply interruptions is simply shifting geographically the impact from one area to another. It's like robbing Peter to pay Paul type of a situation. You don't have the water, and so you're trying to mitigate a problem of supply interruption by taking water away from areas that are already water-limited.

Now, with respect to question 12, "How has the capability changed since the Treaty was concluded?", Pakistan has seen the number of wells being greatly increased since the Treaty. They were a minor component of irrigation in 1960, but now number about 1.1 million wells. In this same period, irrigated area approximately doubled.

However, the option to mitigate by increasing groundwater pumping is not available to all areas because not all fields are watered by wells. And as a rule, even those areas that do have wells, the groundwater quality tends to be inferior -- and in some areas is quite inferior -- to the quality of surface water with respect to irrigation use. And this is the

problem of salinisation, which is a rather severe problem throughout the Indus Basin.

One of the unfortunate consequences of the increasing well count has been that we're now seeing over-draughting of groundwater, which results in significant lowering of the groundwater table. And we're also seeing deterioration in groundwater quality.

The groundwater system is actually sustained by the seepage of high-quality surface water into the aquifer, through the bottom, of earthen canals. Canal seepage is a primary source of recharge. So this makes even Pakistan's groundwater supplies highly dependent on canal water. So an interruption in canal water supply does have an impact on groundwater.

Of course, the groundwater storage is large compared to the storage in the surface reservoirs. But they do not have the capacity to say, "We'll turn the surface water off and we can supply everything from groundwater wells", because not all fields have wells available, and the well pumping is not sized to completely replace surface water.

So therefore, the mitigation potential of relying on wells in lieu of surface water is not a viable mitigation alternative. In other words, you can't rely on that to eliminate that risk: there is still

considerable risk.

THE CHAIRMAN: Dr Blackmore.

DR BLACKMORE: I think I'd just ask you whether you'd add the word "universal" in there. It's not a universal solution to -- like, we're talking groundwater systems which are not going to be affected by a six-week change in supply, right?

DR MORRIS: Mm-hm.

DR BLACKMORE: So we've got an immense volume of water: 100/200/300 cubic kilometres at least, probably more available. We do have the salinity problem.

So we do have some buffering that's available. I take your point. But I think the issue for me was: it's not universally available, but it is available to a significant number of irrigators.

DR MORRIS: Yes.

DR BLACKMORE: That's the only point I wanted to make.

DR MORRIS: And I hope I didn't relay this wrong. It does have mitigation potential, but it is not the solution.

Is that ...?

DR BLACKMORE: Yes.

DR MORRIS: Okay, perfect.

DR BLACKMORE: I just wanted to get to the point that it's available, but it's not universal.

DR MORRIS: Exactly. It is viable, but it's not of

sufficient scale to solve the problem. You can't just say, "I'm going to turn the surface water on and I'll just cover everything with wells".

(Slide 15) Relevance of mitigation to the Treaty. This continues question 12:

"To what extent is this relevant to the proper interpretation of the Treaty?"

The proper interpretation of the Treaty is a question which will be addressed by the legal team. But from an engineering perspective, I could offer a couple of thoughts.

First, the Treaty is structured to impose design criteria on India to sustain hydrology of the flows entering Pakistan, and to minimise potential to manipulate these flows to the detriment of the downstream riparian.

The Treaty's limitations are not measured against Pakistan's ability to mitigate a non-compliant action by India. And if this were so, it would be analogous to saying: I'm going to judge a thief who's robbed things from my house, but the judge will mitigate their judgment to the extent that the victim of the robbery has the funds to replace the stolen goods.

So we can't say that the fact that Pakistan can mitigate this to a certain extent should come into the

10:23 interpretation of what India is allowed to do under the Treaty. It's like saying that India can, for instance, do things cheaper, but there will be downstream consequences which will have to be borne by Pakistan.

Pakistan has neither the surplus water nor the mitigation alternatives needed to avoid very damaging consequences were irrigation supplies to be interrupted. They can mitigate to a certain extent through wells, but you cannot avoid very damaging consequences. And this is what we have seen when they do have drought: that there are many, many farmers -- and it's all over the newspapers, the multiple and severe problems and crop losses that are caused by the unavailability of surface water.

(Slide 16) Now we'll go to question 9:

"What effect would it have on Dr Morris' simulation if the potential storage or the allowance of storage pursuant to Annexure E were taken into account?"

And of course Annexure E relates to the storage plants, which allocates a certain storage volume to India, independent of whatever they do with the run-of-river plants.

The flow manipulation model that was previously introduced conceptually examined the potential impact of managing 400 million cubic metres of capacity to

10:25 interrupt the flows released below Baglihar Dam. With that simulation, only 130 million cubic metres of the total controllable capacity is located at the Pakal Dul storage reservoir, which has an assigned live storage of 108 million cubic metres. The controllable storage is larger than live storage because the controllable storage is being calculated from the sill elevation of the low-level outlet, not over the defined operating range, as defined by India.

Continuing to use the Chenab as an example, the Chenab Annexure E plants are located in the upper watershed, either on tributaries or on the Chenab Main above Naunut. Naunut is about 3 kilometres upstream of the Kiru Dam, which we saw schematically shown over in [slide 11]. You can see Kiru Dam upstream on the -- it's right here (indicating). So about 3 kilometres upstream from there, they can start building storage dams. And of course Pakal Dul is on a tributary.

The normal practice is to use upstream storage dams to deliver regulated flows to the downstream run-of-river plants, thereby generating a regulated schedule at the storage dam's power plant plus the downstream run-of-river power plants. So the Treaty's requirement that the storage reservoirs be placed upstream, either in tributaries or on the Chenab Main,

10:27 is consistent with this operational practice. And it's also consistent with the region's hydrology, since most of the runoff is generated from higher elevations. Remember, the precipitation is much higher in the mountains -- winter snowfall -- than it is down in the watershed.

The total capacity of all Chenab storage works authorised by Annexure E, paragraph 7 is 2,098 million cubic metres; that's 1.7 million acre-feet. This is equivalent to about 9% of the mean annual flow at the Dhamkund gauge, which is located just below Baglihar.

So in relation to the total flow of the river, the storage capacity is rather limited. But because these dams are in the upper part of the watershed, they will be capturing much more than 9% of the mean annual flow at the storage dam location upstream. But it just gives you an idea of their impact with respect to the total river flow.

(Slide 17) Now, of this 2,098 million cubic metres of storage capacity that is available to India under Annexure E, only 108 is currently under development: that's at Pakal Dul. However, the combination of steep river slopes and narrow valleys results in smaller reservoir volumes moving upstream.

For example, at Pakal Dul, the depth from the bottom

10:29 of the reservoir to the top of the full pondage level is 123 metres. At Baglihar, it's 130 metres. So there's not much difference in depth at the dam. Yet, because Pakal Dul is on a much steeper section of the river, narrower valley, the gross storage volume of Pakal Dul is only 130 million cubic metres versus 400 at Baglihar. So approximately the same height, but maybe Baglihar has two and a half times as much storage.

When we review the conditions in the Chenab watershed, it suggests that it would be extremely challenging, and probably not practical, for India to develop the full magnitude of this allocated storage. However, if India were to develop, say, additional storage equivalent to four times Pakal Dul, for a total controllable storage of 5 times 130, equal to 650 million cubic metres, within their Annexure E reservoirs, the ability to impair water deliveries would be increased significantly.

Combining the allowed storage plus controllable capacity throughout the cascade, a controllable volume on the order of 1,000 million cubic metres -- in other words, 1 cubic kilometre of water -- might be envisioned, of which about half of this would be authorised storage and the remaining half would be additional controllable storage produced by the use of

deep spillways.
If we look at this impact, we could anticipate that it would more than double the period of water supply interruption as compared to the prior simulation. So more storage capacity, a longer period during which the supply can be interrupted downstream.
(Slide 18) So in closing, I would just like to make a couple of final --
THE CHAIRMAN: Dr Morris, before you close, I think we may have some questions on what you've just discussed.
DR MORRIS: Sure.
THE CHAIRMAN: Professor Buytaert.
PROFESSOR BUYTAERT: Thank you, Dr Morris.
I think two slides ago -- you don't have to go back, but you mentioned this value of 9% of the mean annual flow.
DR MORRIS: Yes.
PROFESSOR BUYTAERT: Of course, the critical period here is the dry-season flow. Do you have an appreciation of what percentage of the dry-season flow this would constitute?
DR MORRIS: I will have to get that to you. I can calculate it easily, but I don't have it on my head.
PROFESSOR BUYTAERT: My gut feeling would be that it might well be pretty much the entire dry-season flow. So that

order of magnitude you would agree with?
DR MORRIS: It would be quite large. Remember, on the other simulation, with 400 million cubic metres, we are showing that you could interrupt the flow in the February/March period for nearly a month. So if we go to a larger capacity -- for instance, 1,000 million cubic metres instead of 400 -- we could probably anticipate an interruption for about two months.
PROFESSOR BUYTAERT: Thank you.
DR MORRIS: It's not quite that easy, because of course the storages are at different places in the watershed. And again, that's why I say this is a conceptual model. But it gives you the idea of the potential magnitude of impacts.
PROFESSOR BUYTAERT: Okay. Given that you calculated it with 1,000 million cubic metres, given that the potential is twice as high, that obviously would further increase the time period.
DR MORRIS: Correct. So we have the potential for a lot of risk to Pakistan with the existing condition, which was simulated in the model. I shouldn't say "existing", because it's existing plus under-construction reservoirs. So this is the condition which will prevail at some not-too-far-in-the-future point. But the potential to make it considerably more problematic is

certainly there.
PROFESSOR BUYTAERT: Thank you.
THE CHAIRMAN: Dr Morris, I have a question for you. And maybe I will observe, for both you and the other speakers, that if you begin speaking before we've finished asking the question --
DR MORRIS: Oh.
THE CHAIRMAN: -- it presents a problem, particularly for the reporter, to capture the question in the transcript. So although you may have the answer at the tip of your fingertips, I'd encourage you to wait until we've finished speaking before you begin speaking.
With respect to my question, you provided some calculations relating to the total storage available on, say, the Chenab. As I look at Annexure E and at that paragraph 7 table, my understanding is that we have a column of "General Storage Capacity" and then we have a separate column of "Power Storage Capacity" and then a third column of "Flood Storage Capacity" for each of the river components, essentially.
And my question to you is: am I correct in understanding that these are cumulative capacities in paragraph 7? The general storage capacity would be added to the power storage capacity and to the flood storage capacity for each of the relevant rivers listed,

to get a grand total storage capacity at the end of the day?
DR MORRIS: The answer is: yes and no.
First of all, the flood control storage should not be counted with the other two, because flood control storage is a temporary storage.
For instance, there are flood control dams that consist of a large dam and an orifice spillway with no gates at the bottom: it's just a hole in the bottom of the dam, and it's designed to accumulate water and then allow the water to be released. So it's uncontrollable storage, so it doesn't count as storage that can be used for any beneficial use. And flood control is of course also beneficial to Pakistan, to the extent that downstream flooding is reduced.
The other two: it is cumulative, the differentiation being between that the general storage of course has a variety of things it can be used for, whereas the power storage is only for power production.
THE CHAIRMAN: So when I look at something like the Jhelum, excluding the Jhelum Main, and it has three columns, you're saying that the design of the storage work does or does not allow for a maximum capacity of all three columns?
DR MORRIS: No, it allows for the maximum capacity of the

power storage plus the general storage. And the flood storage would be, for instance, this flood surcharge capacity that is mentioned in the Treaty.

THE CHAIRMAN: Very good. That's helpful.

Now, you --

SIR DANIEL: Mr Chairman, I wonder -- this is not to do anything other than perhaps make a perhaps helpful observation.

There are, of course, in paragraph 2 of Annexure E, the definitions of all of these phrases, and they will make it absolutely clear what the relationship is, for example, between conservation storage capacity and power storage capacity and general storage capacity and flood storage capacity.

So I just point this out because Dr Morris may be responding to your question in the light of his slides, but we can't lose sight of the legal interpretation that's given on the face of the Treaty.

THE CHAIRMAN: Thank you, Sir Daniel. Yes, I'm quite aware of those definitions, and they are quite helpful. Dr Morris had provided particular numbers on his slides that were representing particular storage capacity within a particular river system, and I was simply trying to clarify where those numbers were coming from.

I won't ask you to do the math now, Dr Morris, but

when I add up the numbers in the general storage capacity for these various rivers, I get to something in the nature of 1,540 million cubic metres. Does that sound like it might be correct?

DR MORRIS: On the Chenab -- and I don't have it in front of me here -- if I'm remembering correctly, there was 0.6 of power, another 0.6 of power, and 0.5 of general, for a total of 1.7 million cubic metres; which then converts over into 2.098 cubic kilometres.

THE CHAIRMAN: Yes, I won't pursue the matter. I think you're focused on the Chenab --

DR MORRIS: Yes.

THE CHAIRMAN: -- and that is perfectly fine.

I think I was just noting that the overall magnitude of general storage capacity, if I converted properly acre-feet into cubic metres -- which I may not have done properly, but if I did do it properly -- we reach something like a general storage capacity of all of these storage units of about 1.54 billion cubic metres; and then for power storage capacity, a total of 1.97 billion cubic metres. And let's just assume that I've added those up right. When you then look at the grand total storage and power capacity, we're getting upwards of 3.5 billion cubic metres, which seems like a big amount to me.

And all of that is just to lead to the question of: if that's correct, if India is entitled to build storage works that could have that capacity -- and I understand your point that practically that may not be possible -- but if they could have that capacity of storage, does that give us any insights into or perspective on the issue of the pondage at the Annexure D hydroelectric plants?

In other words, it seems like a very big amount that they are able to store under Annexure E as compared to what we've been talking about in terms of the pondage in Annexure D.

DR MORRIS: Okay. I would like to address that in two points.

First of all, what we have seen to date is large run-of-river plants. We have seen very limited development within the allocation of storage which is given to India.

The second thing that I wanted to just make clear is that when I did my calculations, the flood storage is not included.

THE CHAIRMAN: Fine.

DR MORRIS: Okay. I thought I had another thought, but it's ...

THE CHAIRMAN: Okay. I was, I suppose, just probing

a little bit about whether the magnitude of that Annexure E storage gives us any insights into what was being thought about for levels of pondage in Annexure D. But perhaps you don't have thoughts on that.

DR MORRIS: I don't know what was in the minds of the people drafting the Treaty. I know that it was a contentious process and that they arrived at certain, let's call it, compromises.

But with respect to pondage, you also need to remember that pondage is a first step in this chain of design decisions that produces the very large controllable storage. Remember, in the case of Baglihar, the pondage is a first step which, at the end, ends up with a controllable storage of six times pondage.

So we can't step back and say: well, pondage, because it's a small number, it's not important. Because what we're seeing is pondage is the first link in a chain that amplifies, amplifies, amplifies the storage volume, so our controllable storage becomes very large.

So in that respect, I would say that pondage, even though it looks small, is very significant.

THE CHAIRMAN: That's helpful.

Do you know, coming from an engineering perspective,

how difficult it would be to transform a hydroelectric plant that falls under Annexure D into a plant that would fall under Annexure E instead? Annexure E does allow for power storage capacity; arguably it has differing constraints that might be more favourable to what India might want to do.

Is there an interchangeability between these two plants?

DR MORRIS: To a certain extent.

Let's use Baglihar as an example. Remember, as I mentioned, that Pakal Dul and Baglihar are about the same height of dam. Pakal Dul is storage; Baglihar is classified as run-of-river.

If I were to change and design Baglihar as a storage dam, first of all, I would consider that I'm going to have deep drawdown, because to have storage, I have to draw the water down to release the storage. So that means that my intake for my power intake has to go down deep. So I can't have an intake at the level that it currently is; it has to move down. Which of course is what they've done at Pakal Dul: the intake is established based on the lowest operating level in the reservoir.

So I don't remember the numbers, but at Baglihar the operating range is like 4 metres; and at Pakal Dul, it's

probably -- I can't remember off the top of my head, but it's probably maybe 60 metres. So you have a very substantial difference in the range.

From the intake down to the power plant, the only difference is that you would select your turbines to operate over a wider range of head, as opposed to selecting a turbine to be optimal at a very limited range of head.

And of course within the dam, you would not necessarily have to have your flood discharge outlets at a low level; you could keep them up on top. But you would have to put your sediment management outlet at a level which is corresponding in relationship to your lowest drawdown level.

So basically the modifications are, I would say -- let's call them minor within the overall scheme of things. Your tunnel alignment of course is going to be a little bit different because your intake is lower. But these are not a big deal.

But there also comes back -- and since the tunnel is already constructed at Baglihar, you cannot change that plant once it's built, because then you would have to relocate the intake to a lower level. And that's certainly not trivial.

THE CHAIRMAN: It may not be relevant to the issues before

us, but it's just a question in the back of my mind. If India knows that it's having difficulties with Pakistan with respect to Annexure D matters, including level of pondage and so on, is there any reason why they couldn't simply switch over to Annexure E and do largely the same thing that they are seeking to do in a manner that would be regarded as perhaps Treaty-compliant?

DR MORRIS: From me, speaking as an engineer, it seems logical to do that. But I'm sure there's a lot of other things that go into that decision which I do not know.

THE CHAIRMAN: Very good.

We do have a question 10 that plays out some of these issues with respect to the switch that occurred for Kishenganga. I take it that's not a part of your presentation, and we'll come to Sir Daniel. So we'll hold off on thoughts about that.

Any other questions from ...?

Dr Blackmore.

DR BLACKMORE: I just want to take the Annexure D conversation just a little bit further, just so that I understand it.

So in a storage dam, you elevate it up, say, to 100 units of elevation, 100 metres. But for a large part of the year, you're going to use that storage at some stage, and very difficult to recover it once you go

into the dry season. So what you've traded off is: you've lowered your storage, because you use that storage for power production in whatever way you see fit; but then you're going to run your storage at a much lower level, and may have traded off 60 metres of head at your turbines for all of the dry season, because you can't recover it.

So there's a very large economic penalty for that configuration vis-à-vis if you ran it as run-of-river dam, where you're forced to run it higher but you get the benefit of the head. And as you know, energy is all about the amount of head you can run through a turbine.

So I'm just wondering whether it's a self-correcting issue. The economics won't be as attractive for a storage dam because once you you've used that storage, you have also used a significant amount of head on your plant.

DR MORRIS: When you talk about the storage dams, you need to remember they're in a cascade. For instance, Pakal Dul will discharge directly into the reservoir for Dul Hasti. Dul Hasti will discharge its turbine immediately upstream of Ratle. Ratle discharges then immediately downstream into Baglihar, which in turn gets picked up at Salal. So we have Pakal Dul, Dul Hasti, Ratle, Baglihar, Salal: five plants.

10:49 So part of the economic consideration is: how am I going to operate this storage not just at my first plant, but to operate through the entire cascade? Because the water which is released upstream of course flows downstream and can be picked up by all the downstream plants.

So you would normally fill it up, and it would be full, let's say, at the end of September. And from September on, if I was to operate the system to try and maximise my benefits, I would run the plant not as a baseload, but I would run it during the peaking hours at near full capacity. You are probably going to have one of your turbines out of service for maintenance, so you're going to have n-1 turbines available at all your plants. And I would arrange my releases so that I could produce full power, or near full power, during some period of hours at all the plants.

And gradually, over the period of months I would be doing this, as you correctly indicated, I would be losing power at Pakal Dul, the upstream storage plant, but all the other plants would be operating at full head. So as a result, by the time I get to, let's say, April, my reservoir is empty and I can start the refill process.

DR BLACKMORE: Thank you.

10:51 THE CHAIRMAN: Very good. Thank you, Dr Morris. Please proceed with your presentation.

DR MORRIS: Okay. To summarise, I just want to leave you with a couple of thoughts.

(Slide 18) First of all, sediment management strategies were being employed at run-of-river plants 100 years ago. And while the Himalaya does indeed have high sediment loads, India has decided to approach the problem of operating its run-of-river plants as if they were storage plants, incorporating deep intakes, even deeper large capacity spillways, and developing a physical setup that's tailor-made for sediment flushing, not sediment sluicing.

India has avoided implementing proven run-of-river strategies that permit sediment management in compliance with the Treaty's highest level and minimum size requirements for intakes and outlets. Thus, India has selected designs that lend themselves to flushing, while making it more difficult -- though not impossible -- to manage sediment by other proven means. And with respect to that, I would again recall the example of Kali Gandaki, which handles double the sediment load that we have at Baglihar, and it is handling that successfully.

Now, this leads us to the final thought: India's

10:52 sediment management problems are of its own making: it's the result of their design choices; it does not originate in the requirements of the Treaty. You can develop projects in compliance with the Treaty. India's design simply has gone another direction.

Thank you, gentlemen.

THE CHAIRMAN: Professor Buytaert.

(10.53 am)

Questions from THE COURT

PROFESSOR BUYTAERT: Thank you, Dr Morris.

So you discussed at slide 9 low-level outlets without drawdown. And in your presentation last week, you mentioned density current venting. Does that come into play here? You didn't mention it here. Is that also an option, to use low-level outlets without drawdown?

DR MORRIS: Yes, I should have put that on. They could be used for turbidity current venting.

PROFESSOR BUYTAERT: Thank you. That's all.

THE CHAIRMAN: Very good. I don't think we have any other questions for you, Dr Morris. So thank you very much for your presentation. It was very helpful.

You had several metaphors: you threw our direction from hurricanes to thieves to Peter robbing Paul, I think very helpful in explaining the points you were

10:54 trying to get across. Thank you.

DR MORRIS: Thank you. It's been a pleasure.

THE CHAIRMAN: So I believe at this point we are quite close to our break. I'm thinking we might go ahead and take the break, and come back in a half hour and start up with Dr Miles.

SIR DANIEL: Thank you, Mr Chairman.

THE CHAIRMAN: Very good. So let's reconvene at 11.25.

(10.54 am)

(A short break)

(11.24 am)

THE CHAIRMAN: Alright, I think we are reassembled. I see that Dr Miles is at the podium. So please proceed with your presentation.

Submissions on pondage

DR MILES: (Slide 1) Mr Chairman, members of the Court, it's again a pleasure to be before you. In my submissions today, I will be addressing the legal aspects of the Court's questions regarding the calculation of maximum pondage under paragraph 8(c) of Annexure D.

(Slide 2) So getting right to it. I propose to deal with the matters as follows.

First -- I should have mentioned I would be dealing with this -- I will be dealing with the Court's sole question on freeboard -- that's question 17 -- hopefully

drawing a line under that and giving the Court what it needs to commence its deliberations on that topic.

Second, I will turn to the question of pondage. The Court's questions on these matters are arranged in the order in which they arose, I believe, in the course of my earlier submissions, but I'll tackle them thematically.

I'll first deal with some quick questions regarding Pakistan's interpretation of the Treaty provisions that are the focus of India's pondage calculation. That's paragraphs 2(c) and 15 of Annexure D, which are addressed in questions 25 and 28.

I will then address the Court's question concerning the basis of Pakistan's six sufficiency criteria for assessing which is the correct mechanism for the calculation of the pondage under the Treaty; that was question 19.

I'll then address the Court's question regarding the evolution of the parties' position on pondage calculation over time, question 18.

I'll then turn to a document which I think is going to be presented to you by way of a handout, if you don't have it already. It will be handed out in due course, at the appropriate time. That's Appendix VII of P-0546, which is India's pondage calculations for the Kiru HEP.

And I'll answer the Court's four-part question in relation to that, which was question 29.

Staying with the theme of the parties' different approaches, I'll then answer the Court's question on the divide between them on the meaning of the phrases "required for Firm Power" in paragraph 8(c) of Annexure D and "corresponding to" in paragraph 2(i) of the same, being the definition of "Firm Power". That's question 24.

And finally, I will address the two alternative methodologies that the Court has kindly presented to us for the calculation of maximum pondage in the context of the language of the Treaty; that's question 30.

So a few things to get to, but I'm hoping to be able to finish in the time allotted to me.

(Slide 3) Starting with question 17, which is on the slide:

"Pakistan posits that freeboard must be restricted even with an ungated spillway at Full Pondage Level because the level of controllable storage could ... be later increased with fusegates, flashboards, or stoplogs. Would such instruments constitute part of '[t]he works themselves' for the purposes of paragraph 8(a) if they were not an integral part of the HEP design?"

Now, in Pakistan's submission, we've got two answers to this question: one based on answering the question as posed, and another on clarifying what Pakistan believes is the premise behind it.

So the first answer: to take question 17 at face value, it essentially asks whether, in the case of an ungated spillway, fusegates, flashboards or stoplogs can be considered an integral part of the HEP design. Each of these, as I explained in my first-round submissions on this topic, is a barrier that allows the spillway to be blocked; and when that barrier is in place, the operating pool may be overfilled.

(Slide 4) Now, to answer this question, we need to draw a distinction between the three possible types of barrier. You'll recognise the image of the NJHEP on the slide, with the stoplogs marked. And you'll recall that stoplogs are usually used to allow a gated spillway to be dewatered for maintenance purposes.

These are not ordinarily part of an ungated spillway -- they could be -- but not normally part of an ungated spillway, as that kind of spillway has no moving parts and therefore little need for maintenance.

But assuming India does want to use them on an ungated spillway, the short point is that stoplogs will always be an integral part of the HEP's design

because they're inserted into the spillway on rails, and those rails must be placed in the dam wall during construction. That's again marked on the slide.

(Slide 5) Now, the situation is a bit different for fusegates and for flashboards, which do not require specially installed rails to work. And we can see that from the image on the slide. I believe this is another Australian dam -- which I do prefer, if at all possible! -- but I may be wrong about that.

As you can see there, the fusegates have been added to this dam in order to raise the crest of an ungated spillway and convert it from a standard free overflow spillway into a labyrinth spillway. In the process, the crest of the original spillway has been blocked to the height of the fusegates, which now reach to the top of the dam.

Now, if the dam operator wishes, they can close the orifice spillway -- which you'll see I have marked in the bottom left-hand side there -- and the water level and the operating pool will rise until it spills over the new spillway crest.

The fusegates are not automatically, we would say, an integral part of the works, and structures like this may not, therefore, be part of "the works" within the meaning of paragraph 8(a).

But this then brings me to my second part of the answer, concerning a clarification of the premise of the question, or perhaps a clarification of Pakistan's case in response to the question.

As you can see from the picture on the slide, it's difficult to think of an ungated spillway into which fusegates could not be fitted; particularly just a normal free-overflow spillway, with just a completely flat crest.

And you'll recall that the Neutral Expert in Baglihar (PLA-2), at 5.8.1, said that "the artificial raising of the full pondage level" through fusegates and flashboards is "a generally accepted way of improving the performance of an existing dam".

So although not necessarily an integral part of the works, dam designers will almost always have flashgates or fuseboards in mind when the dam itself is designed. Indeed, that's the whole point of fusegates: they can be fitted on any ungated spillway, effectively as an after-market part. And it is this potential for fusegates to be fitted that underpins Pakistan's case on paragraph 8(a) so far as it pertains to ungated spillways.

The problem with the spillway is not the fusegates: it's the fact that India could, with very little effort,

using very well-recognised means, block the spillway by installing fusegates and permitting overfilling. And it's that potential of the works as constructed that justifies the limitation on the freeboard under paragraph 8(a). An ungated spillway comes with an automatic possibility of being blocked, and therefore the freeboard above it must be limited to limit the potential for abuse.

That concludes my answer on question 17.

THE CHAIRMAN: Dr Blackmore.

DR MILES: Please.

DR BLACKMORE: I don't know this dam in Australia, so that's not the reason for the question. So I'm just looking at the fusegate design here. And as I see this, there's a dozen different ways to put fusegates on, but this one here looks like it's been set out to double the existing spillway crest level so that when the reservoir is overflowing, it's got a much longer crest.

DR MILES: Precisely.

DR BLACKMORE: So I'm just wondering whether that's your observation as well.

DR MILES: It is. And indeed, Dr Blackmore, that demonstrates sort of the threat that fusegates pose in this respect. I mean, you can obviously have small fusegates, which only give you a little bit of extra

storage, or you can have big fusegates that could go up to the entirety of the top of the dam, blocking the entire spillway.

So given that fusegates, as you rightly point out, come in all shapes and sizes, and given that they're obviously contemplated as a normal part of ungated spillway design, that justifies, in my submission, Pakistan's case on this.

THE CHAIRMAN: So, Dr Miles, if I understand correctly, with respect to at least the fusegates and the flashboards, your thinking is that it should give us some perspective on why freeboards should be limited in nature.

Is it also the case though that assuming the dam is designed with a limited freeboard, if India were to then use fusegates or flashboards to artificially raise the pondage, that doesn't violate the Treaty because this doesn't fall within the scope of paragraph 2(a)?

DR MILES: Bear in mind that what the Treaty requires is two things: it requires, first of all, a free overflow at the full pondage level; and then it requires a limited freeboard. So what would happen if you blocked the spillway itself is that you would lose that free overflow function, effectively. And that's exactly what's happened here. I mean, you would get a free overflow function, but it would be at a higher flood

level; it would be considerably higher.

DR BLACKMORE: (Inaudible).

DR MILES: Quite right. Yes.

THE CHAIRMAN: Okay, thank you. I think we have no other questions on freeboard.

DR MILES: Wonderful.

(Slide 6) Moving on to pondage, and the first block of the questions that the Court has asked. Now, in both of these, the Court asked about the role that the two provisions on which India's calculation depends will play under Pakistan's approach, and that's of course paragraphs 2(c) and 15 of Annexure D.

(Slide 7) I will start with paragraph 2(c), which is back on the slide. And I've also put up paragraph 2(i) of Annexure D so we can see the way that these provisions are juxtaposed. And I've got four points to make in relation to the interaction between these two provisions and paragraph 8(c), with which we are all familiar.

The first one is that paragraphs 2(c) and 2(i) are based on premises that are fundamentally different in character. Paragraph 2(c) is the definition of "Pondage". It's based on the load placed on the plant by India, whether driven by a load curve or simply because India feels like placing a particular load on

11:35 a particular HEP.

And the load placed -- or capable of being placed -- on a plant by India is a feature of its installed capacity. That installed capacity, as Mr Rae explored, represents India's decision about the plant's planned contribution to the grid. It's entirely a matter for India's unilateral determination, and it can have no realistic bearing whatsoever on the hydrology of the river.

Paragraph 2(i), conversely, is the definition of "Firm Power". Now, as we can see by the reference to the minimum mean discharge, and as we've explored together several times over the course of this hearing, it's based on river hydrology: on what the river can provide when flowing in its natural configuration, averaged over a very long period of time. It can't be altered by India and it can't be altered by Pakistan. It simply is; it's entirely objective.

Second, paragraph 8(c) is the design criterion that drives the calculation of pondage. By contrast, paragraph 2(c) is the definition of "Pondage". It defines its use, not the means by which it's calculated. Paragraph 8(c), with the reference to "Firm Power", is controlling the calculation, based again on hydrology. If we can return to the analogy of pondage as a battery,

11:36 paragraph 8(c) tells India how big the battery is; paragraph 2(c) tells India what it can use the battery for.

And when you think about it, it's obvious why that's the case. And I really can't put it better than Sir Daniel did in closing on Friday. That's transcript reference Day 5, page 228, line 24 to page 229, line 21. Sir Daniel said this:

"It cannot be the place of the plant in India's unilateral conception, in a dark room somewhere in Delhi, about how much a particular plant is going to be providing to the grid, the load of the plant, because that could change from day to day to day, or India could come to Pakistan and say, 'This is the amount that we consider that the plant in question will provide to the grid', and give a massively overinflated amount, just in order to get the pondage; and then to use the pondage ..."

And my third point: nevertheless, it is plain that, on Pakistan's conception, 2(c) does have a role to play in the general concept of pondage, and that's because it defines the operating concept of pondage. And this is entirely consistent with the principle of effectiveness, which is what the Court asked about in relation to paragraph 2(c).

11:37 And it clarifies -- and we can see that from the slide -- that the purpose of pondage is solely for power production, and not for any other purpose. Paragraph 2(c) confirms, for example, that India can't use its pondage for irrigation or regulation of downstream flows or for sediment management or any other purpose. It's just about power production.

(Slide 8) Now turning to paragraph 15, which is back on the slide.

Now, in relation to this, Professor Buytaert asked a frankly excellent question about the role that paragraph 15 can be expected to play under paragraph 8's approach to pondage, particularly within the various daily limits set by that provision.

The overarching point is that on a plain reading of paragraph 8(c), paragraph 15 is irrelevant to the calculation of pondage. I think Mr Minear made that point yesterday or at least, when discussing what he believed Pakistan's case to be, he mentioned that point. And that is indeed Pakistan's case.

Paragraph 8(c) is a criterion of design. Paragraph 15 is an operational parameter. If the drafters of the Treaty had intended for paragraph 15 to be a criterion of design, it or something like it would be in paragraph 8(c).

11:39 But as an operational rule -- and this is coming on to Professor Buytaert's point -- paragraph 15 retains a more than meaningful operational role under Pakistan's formulation. There will be important situations in the operation of the HEP where it will come into play.

Now, as the Court will recall, Pakistan's formulation in terms of its outcome, its overall result, allows India an operating pool fixed by reference to 12 hours of inflow at 50% of the minimum mean discharge, and that amount is then doubled, per the provisions of paragraph 8(c).

Now, even on India's formulation of the pondage, paragraph 15 is going to be irrelevant for large parts of the year. During the wet season, the flow will be so large that even India's larger operating pools will not be able to retain even a fraction of the water coming down the river on a given day. From this we know that paragraph 15 is only intended to become relevant during low-flow periods in the dry season. It's intended to protect Pakistan's hydrology in the depths of winter. It's a safety valve.

(Slide 9) This is confirmed, and Professor Buytaert's very valid question answered, when we crunch the numbers on this using the Kiru HEP as a testbed. You'll recall that there are three different

schedules potentially set by paragraph 15, and I'd like to explain the relevance of each on Pakistan's formulation.

Professor Buytaert asked specifically, I think, about the 30/130 storage schedule in particular, but we'll deal with all three of them, just to confirm the global relevance.

Now, Kiru HEP. The MMD at the Kiru HEP, as we can see on the slide, is 65.3 cubic metres per second. On Pakistan's formulation, this results in an operating pool of 2.82 million cubic metres, which is the equivalent of 12 hours of MMD inflow, so 12 hours of 50% MMD, doubled.

The Kiru is on the Chenab above Ramban, and so the daily limits set by paragraph 15(ii) apply. On any given day, Kiru HEP is not going to be able to store more than 50% of daily inflow in its operating pool.

When the river is flowing at the MMD, the daily inflow is going to be 5.64 million cubic metres. That's 24 hours of MMD inflow. And that's precisely twice the size of the Kiru HEP's operating pool, on Pakistan's formulation.

Put another way, on Pakistan's approach, when the Chenab's daily flow averages the MMD, India will be able to store exactly 50% of the flow in the Kiru HEP's

operating pool, thus meeting the limit that paragraph 15(ii) sets. Put another way, on this formulation, on Pakistan's formulation, paragraph 15(ii) will become engaged whenever the Chenab drops below the minimum mean discharge. And that, I think Mr Rae said yesterday, is going to be about 13% of the time in any given year.

That's what the mathematicians would call an interesting coincidence. I don't put it any higher than that. But it is an interesting coincidence.

But let's imagine -- and this is answering Professor Buytaert's question -- that the Kiru HEP is on the Jhelum, where the generic limit of clause (b) of the paragraph 15 chapeau applies. So now we're in a situation in which the Kiru HEP can't store more than 70% of the daily flow.

For 2.82 million cubic metres of operating pool, for the Kiru HEP to store 70% of the daily flow, the total daily inflow would need to be less than 4.03 million cubic metres. And that implies a flow rate of 46.65 cubic metres per second.

Now, this comes on to Professor Buytaert's question, which is: how often does that occur? Well, the answer seems to be: relatively infrequently, but frequently enough to worry about if you're Pakistan.

(Slide 10) On the slide, we have the table set out in Appendix E1 of our Memorial, which contains the 25-year averages of the 10-day periods that make up the MMD calculation, and I've highlighted in yellow the entries that drop below 46.65 cubic metres per second. And we can see -- this is on the 25 years of data presented when the Kiru HEP was revealed to Pakistan -- this has actually happened a few times.

So in 1975, the Chenab -- reimagined for present purposes as the Jhelum -- averaged a flow below 46.65 cubic metres for the ten-day period between 11 and 20 February. And that's unsurprisingly the period ultimately selected as the MMD. It was only 42.2 cubic metres per second.

In 1995, another very dry year, the river averaged below 46.65 cubic metres per second for two ten-day periods: 11 to 20 February -- the MMD period again -- and 21 to 28 February. And it's worth noting -- and you can sort of see this in some of the green highlighting around 1995 -- that it was averaging perilously close to that amount for the entire period between January and early March.

In 2007, another very dry year, we've got an average flow below our target amount for two further periods: 11 to 20 February and 21 to 28 February.

Then finally, in 2011, we have the lowest average in the record. For the period 11 to 20 February, the Chenab averaged a very low 36.6 cubic metres per second.

It's important to recall that these are ten-day averages. So in these periods, we're looking likely at multiple days on which the Chenab was flowing below our target amount. And where we have periods that are just above that amount -- so anything below 50 cubic metres a second, for example, which I've marked in green -- there are probably days lurking within that period where the flow is below our target amount.

So if we look at the table on the slide -- and conjecture is dangerous, so bear with me -- it rather looks like the limit in clause (b) of the chapeau of paragraph 15 has been set deliberately by reference to hydrology.

The MMD, as I mentioned on Friday -- and this is at transcript Day 5, page 48, line 9 to page 49, line 8 -- is not predicated on a worst case scenario. Rather, it is predicated on producing, through averaging, a reasonably low flow rate that could be expected to be encountered by the HEP in any given year. And if I'm right, then the default storage schedule at paragraph 15 is predicated on a severe low-flow scenario.

If I can put this in simple terms, and again

speculating perhaps a little bit, it seems that the drafters could have looked at the hydrological record, figured out where the semi-regular historical minimums are, and set clause (b) of the chapeau to guarantee that these critical, but entirely foreseeable, minimal flow conditions had some protection for Pakistan's hydrology.

Now, just to complete the analysis -- going back here (slide 8) -- just to complete the analysis here, we've got our third storage schedule:

"... where [the] Plant is located at a site on the Chenab Main below Ramban, the volume of water received in the river upstream of the Plant in any one period of 24 hours shall be delivered into the river below the Plant within the same period of 24 hours ..."

Now, that essentially means that the HEP cannot store water overnight. So it's going to be required to limit India in any situation in which the HEP has an operating pool.

The objective here, as the Chenab flows towards the Line of Control, is to ensure that variations in flow are evened out as the river enters Pakistan. And that dovetails, if you recall, with paragraph 8(g) of Annexure D, which provides that if a HEP is constructed on the Chenab Main below Kotru, which is a little bit downstream from Ramban, it must include a regulating

basin, defined in paragraph 2(h) as a basin intended to even out variations from turbine discharge.

So if I can pull the threads of all of this together.

On Pakistan's analysis, paragraph 15 is still given a very important role. It's by no means redundant, as the question asks. In its default clause (b) mode, it protects Pakistan's hydrology in critical low-flow periods where the river flows below the MMD. Its limits will be tested in any particularly dry year, and it is therefore of vital importance. It protects Pakistan's hydrology when that hydrology is most in need of protection.

Within the Chenab, however, a special schedule is set out.

Above Ramban, India cannot store more than 50% of the daily flow of the rivers. On Pakistan's formulation, the operating pool is precisely 50% of the daily inflow when the river flows at the MMD level. This means that India will be operationally limited by paragraph 15 in any sub-MMD conditions.

Below Ramban, India is effectively prohibited from storing overnight, and so paragraph 15 will be required to limit pondage operations in any conditions. The effect is to turn the entirety of the Chenab below

Ramban into a big regulating basin, evening out fluctuations in low-flow conditions before the river crosses into Pakistan.

This brings me to the end of the answer on paragraph 15. Pakistan's methodology renders paragraph 15 far from irrelevant in practice; in fact, it remains vitally important to guarantee Pakistan's hydrology during the dry season.

THE CHAIRMAN: Questions?

I don't think there are any questions. Thank you, Dr Miles.

DR MILES: Thank you so much.

(Slide 11) If I can turn now to question 19, which is on the slide. The Court has asked Pakistan to inform it of the basis in the Treaty for each of the six sufficiency criteria that it has adopted.

Now, to clarify, Pakistan's sufficiency criteria are not driven by any specific language within the Treaty, and I'm sorry if I gave that impression in my presentation last week. Rather, they arise out of the basic obligation, expressed in VCLT Article 31(1), to interpret treaties in good faith.

As the ICJ explained in Gabcikovo-Nagymaros -- that's PLA-0094 at paragraph 142 -- this principle:

"... obliges the parties to apply [a treaty] in

a reasonable way and in such a manner as its purpose can be realised."

Pakistan's sufficiency criteria are manifestations of this principle. In short, Pakistan's view is that when interpreting paragraph 8(c) frustration of any of the sufficiency criteria violates this principle, such that any interpretation is ex facie incorrect.

I believe I described them as truths self-evident in the fabric of the Treaty: that was perhaps a poetic flourish that prompted this question. But in reality, they form part of the wider principles of effectiveness and good faith in treaty interpretation.

They take as their touchstone that if there is something in the Treaty that you should point to, it would be Article III of the Treaty, which is the rule from which Annexure D and paragraph 8(c) derogate, and the statement by the Kishenganga Court at paragraph 504 of its partial award that:

"... one of the primary objectives of the Treaty is to limit the storage of water by India on the Western Rivers ..."

And:

"... Annexure D likewise restricts the permissible volume of pondage, and pegs this limit to power generation at the minimum mean discharge calculated at

11:51 the site."

To this we may add a further element, drawn from the Treaty's wider object and purpose as reflected, inter alia, in the preamble, which was to set down clear rules for the cooperative settlement of disputes concerning allocations of the waters of the Eastern and Western Rivers. So this was a treaty that was intended to settle disagreements, not propagate them.

If I might be permitted just to draw back the curtain a little bit for the Court, Pakistan developed these sufficiency criteria as part of a process of determining the correct approach to the calculation of pondage. The process was to start with a blank piece of paper and develop the criteria, and then test them against every approach its internal and external teams could think of, including Pakistan's earlier approach and India's current approach. At the end of this process of elimination, only the approach that Pakistan presents was left standing.

(Slide 12) I just want to take the Court back through the criteria to see how they are all manifestations of the principle of good faith and treaty interpretation as applied to this particular Treaty.

So criterion 1, if you recall: the methodology must be capable of coming up with a unique and fixed volume

11:52 of maximum pondage for each HEP, derived from the MMD at the site of the HEP in question.

This one is self-evident, in Pakistan's submission. To a certain extent, it is located in the wording of paragraph 8(c) itself. But clearly the methodology has to come up with a single number, as the volume of the operating pool can only be a single number, not a range of numbers that may be subject to further discussion. That would propagate disagreement between the parties, not settle it.

Criterion 2: the methodology must be capable of generating a maximum pondage figure using tools that would be available at the time the Treaty was drafted, 1960. And this means that we are limited effectively to graphical computation. And the computation must be capable of being done in a straightforward manner.

Now, plainly, any good faith interpretation of paragraph 8 that wants to be reasonable cannot rely on means of computation that had not been invented in 1960.

And as for the requirement that the computation be straightforward, this is another manifestation of the Treaty being intended to settle disagreements, not propagate them. If the parties are perpetually fighting over the fine details of a pondage calculation, the objective won't be met.

11:54 And to a certain extent, it's a reflection of the language at paragraph 8(c) itself. This is a simple -- even sparse -- form of words. While this has created issues over the years, it does indicate, at least to a degree, that this simple, sparse formulation had something simple in mind from an engineering standpoint when these words were put on the page.

Criterion 3: the methodology should not require or warrant constant correction, or be rendered unfit for purpose by future developments.

This criterion arises from the realisation that the plant will be, as I think Professor Buytaert pointed out, in operation for an extended period of time. The calculation cannot, therefore, be premised on an integer that will be quickly rendered out of date on its own terms, such as a load curve for a particular month or a particular year. And Professor Buytaert and I explored how a wider forecast may well prove suitable under this particular sufficiency criterion.

Criterion 4: the result that the methodology produces should not be overly sensitive to input data such that data errors or discrepancies would significantly alter the outcome, opening the door to further disagreement.

Pakistan sees this as a reflection of the Treaty's

11:55 dispute settlement function. Again, its terms cannot be used in such a way as to propagate further disputes, and must be capable of being applied, to the extent possible, in a clear and consistent manner.

In this context, it seems unlikely that the correct approach would have the capability to descend into an unseemly squabble over the correct data. Such an approach, in the words of the ICJ in Gabcikovo-Nagymaros, would not be reasonable, and it wouldn't allow the purpose of the Treaty to be realised.

Criterion 5: the methodology should be capable of resting on data expressly addressed in the Treaty, and in particular it should not rely on information that India is not required to provide Pakistan in the course of notifying Pakistan of a new HEP.

This is perhaps the most reasonable of all criteria: the Treaty must be confined within its four walls. It would not be reasonable to expect that the Treaty drafters would, sub silentio, have required that the calculation of pondage depend on information not required under the Treaty to be provided to Pakistan.

Rather, the contrary is true. The purpose of the information-sharing provision in paragraph 9 of Annexure D is:

"To enable Pakistan to satisfy itself that the

design of a Plant conforms to the criteria mentioned in paragraph 8."

This purpose would be squarely defeated if the calculation depended upon information that India was not required to provide. We simply wouldn't be able to check the numbers.

Criterion 6: the methodology should not be one that one party would be capable of manipulating the result of to suit its priorities by unilateral means.

For Pakistan, this is the most important sufficiency criterion, as it maintains the essential balance of the Treaty. It cannot be that India can manipulate the pondage formula for its own ends without Pakistan being able to do anything about it: Sir Daniel's "dark room somewhere in Delhi". Such an interpretation, Pakistan says, would not be reasonable, and it wouldn't be consistent with the object and purpose of the Treaty.

In the particular context of pondage, moreover, it would also be inconsistent with the presumptive ban on storage in Article III(4). That wouldn't be much of a ban if India could circumvent it at will by means that it only has control over; that "it" only has control over, if I can put the emphasis in a slightly different way.

This concludes Pakistan's answer on question 19.

The short answer is that these criteria, while emerging from the text of the Treaty in some respects, are better seen as specific articulations of the principle of good faith in treaty interpretation. They are abundantly sensible: the kind of thing that Pakistan would hope a reasonable person, informed of the Treaty's wider context, would look at and say, "Well, of course".

This brings me to question 18, unless there are some questions?

THE CHAIRMAN: I have, I think, two questions for you, Dr Miles. (Pause)

We didn't ask this as a part of the question, but I'm interested in your reflections on the basis for the sufficiency criteria in other places. My understanding is that the travaux don't give us any particular insights into these particular sufficiency criteria, at least not in a specific or direct sense.

DR MILES: No.

THE CHAIRMAN: Is it the case that there is anything to be gleaned from the discussions within the Commission that point in the direction of these sufficiency criteria? Have you had an opportunity to assess that.

DR MILES: No, I have to confess I haven't, and I'll have to take that question on notice. It's an interesting question.

Given the way that things have unfolded in the Commission recently, obviously meeting minutes are rather sparse. But I can certainly go back and have a look at the previous meeting minutes, while meetings were still occurring, to see if there's anything sort of along those lines.

THE CHAIRMAN: Anything in the parties' positions before the Baglihar Neutral Expert on these kinds of sufficiency criteria, as far as you know?

DR MILES: Pakistan's position at least was similar, in the sense that it was saying: the solution cannot be that India gets to tell us what the pondage is based on levers that only India can pull. So certainly to that extent, I would imagine that the Baglihar pleadings would have reflections, at least from Pakistan's point of view, of the sufficiency criteria.

As I said, we don't want to imply here that India is completely unreasonable in every aspect of its behaviour. There may well be statements in the Indian pleadings as well that also indicate that they think that these are valid yardsticks by which Treaty-compliant measures can be determined.

THE CHAIRMAN: The last question is how far you go with this idea of India's approach as being one that opens the door to manipulation of pondage for its own ends.

Would you agree that India's approach -- which I know that you're going to get to a bit more later -- is somewhat cabined by what MMD will allow for, such that it's not just an open-ended approach?

DR MILES: Yes. No, I would agree with that entirely, Mr Chair. And it's also cabined, India would say, by paragraph 15, because that obviously -- I mean, we say that's not a criterion of design and you can't use it for a criterion of design, but India introduces it to the calculation in order to place additional guardrails. But at bottom, the source of the calculation is installed capacity, and that's the lever that only India can pull.

THE CHAIRMAN: Very good. Thank you. Please proceed.

DR MILES: (Slide 13) Now, this brings me to question 18, concerning the evolution of the parties' positions on pondage calculation over time. The Court has asked for comment on: (a) the negotiation of the Treaty; (b) the Baglihar proceedings; (c) following the Baglihar proceedings; and (d) following the Kishenganga proceedings, presumably up to the present day.

I hope to answer this question with reasonable dispatch. Each of these elements has been answered by individual members of Pakistan's counsel team over the course of last week -- I'll try to elaborate on those

a little bit -- and so my answer will initially proceed by reference to relevant transcript references. I apologise in advance to the transcriber: this bit is going to get terribly boring.

(Slide 14) The parties' changes in approach in the negotiation of the Treaty were discussed by Ms Rees-Evans in the context of her presentation on the travaux préparatoires. And in particular, she highlighted the process by which the idea that pondage should be calculated based on plant load diminished over time, becoming converted from a criterion of design to a mere definition, while the concept of "Firm Power" assumed steadily greater prominence, eventually becoming the dominant limit in paragraph 8(c).

To the extent that anything can be gotten from the travaux, obviously; the travaux in this case are perhaps not as definitive as in others.

That's transcript reference Day 2, page 57, line 20 to page 61, line 12.

The parties' approach prior to the Baglihar proceedings was discussed by Professor Webb. This is transcript Day 2, page 103, line 17 to page 104, line 6. And there she explained that Pakistan had agreed to India's pondage in six plants prior to Baglihar, but that five of the six -- the exception was Dul Hasti --

had extraordinarily small pondage: less than somewhere between 0.1 and 0.9 million cubic metres, so a puddle.

For your note, India lists those plants at Appendix 2.6 of its counter-memorial in Baglihar, if you wanted to go and have a look at that in slower time.

This perhaps explains, Professor Webb said, Pakistan's willingness to go along with India's position. The live storage of these plants was so small that it wasn't raising a protest in the Commission. There was a bit of horse-trading going on, so: maybe let them have their pondage and they'll change their design in other respects.

All that changed with Baglihar, of course, with India's initial design for the HEP contemplating 37.722 million cubic metres: a large volume of pondage that compelled Pakistan's protest in the letter of 12 August 1992, P-586, that Sir Daniel drew to the Court's attention.

At this point, Pakistan insisted that India cleave to the plain words of the Treaty and ensure that it was calculating pondage based on the MMD, and not on the load that it, and it alone, decided to place on the HEP by reference to what was described in that letter as "a very hypothetical load curve".

This then led to the Baglihar proceedings and the

Neutral Expert's finding there, with which we're all very well familiar.

The post-Baglihar landscape was sketched out by myself and by Sir Daniel.

India obviously immediately adopted the Neutral Expert's approach as its own, and I took you through why it was wrong to do so. That's transcript Day 5, page 116, line 18 to page 135, line 13.

As for Pakistan, it initially maintained its own approach from Baglihar. But during the pendency of the six-year pause, it had the opportunity to reconsider its position in the cold light of day, and indeed in the light of these proceedings. That's Day 4, page 238, line 17 to page 241, line 20. In that context, it developed the sufficiency criteria, which we've just been through, as expressions of the principle of good faith in Treaty interpretation, and undertook a rigorous and, frankly, soul-searching process to determine what it believes to be the correct approach.

The Chairman posed a question to Mr Rae yesterday about Pakistan's approach to pondage in Baglihar. I had intended to cover this in my presentation on Friday, but I'll address it now briefly. Obviously there's a lot of fine detail of engineering calculation in there that I probably shouldn't get into. But I'll give a summary

as to what the individual steps were, and then I'll tell you why, on Pakistan's view, it doesn't meet the sufficiency criteria. (Pause)

(Slide 15) Now, as a matter of Treaty interpretation, Pakistan's earlier approach was based on the following premises. And there's a useful summary of this, from which my remarks are drawn, in paragraphs H.1 to H.7 of the Baglihar memorial.

Paragraph 2(i) of Annexure D defines "Firm Power" as:

"... the hydro-electric power corresponding to the minimum mean discharge at the site of a plant ..."

The same paragraph provides the detailed methodology for the calculation of the MMD. So that's proposition 1. Very similar to Pakistan's case today.

Paragraph 8(c) of Annexure D maintains that maximum pondage is "twice the Pondage required for Firm Power". Again, Pakistan's case is consistent with that still.

And Pakistan's working assumption at this time was that the Treaty entitled India to constant firm power throughout the year, regardless of the hydrological conditions on any given day. Now, this was the part of the analysis that Pakistan's current methodology abandons in favour of an approach that prioritises firm power as a rate of production only that does not

guarantee India a fixed amount of firm power on any given day. Pakistan's current approach guarantees India a HEP capable of producing firm power on any given day, but the duration of that firm power will be determined by the hydrology on that day.

The function of the pondage -- and this is returning to bits common between the two approaches -- the function of the pondage is therefore to turn a variable inflow into a constant outflow. And again, this is moving back, as we don't maintain this position anymore. Continuous generation of firm power throughout the week will require the MMD to be passed through the HEP's tours continuously. So constant MMD inflow.

Thus, the pondage required for firm power in such circumstances would be the minimum quantity of storage which would allow the continuous production of firm power, so long as the average inflow at the site was equivalent to the MMD. Once doubled, the argument ran, this amount of storage would meet the criterion of paragraph 8(c). Completely absent from the enquiry were paragraphs 2(c) and 15. Again, that's consistent with our current position.

(Slide 16) Now, the core difficulty, and eventually what became the fatal flaw with this methodology, was that India could not know in advance what the

hydrological conditions of any week will be. The methodology therefore required data review in order to operate, and that took place in several processes, which I've got set out on the slide -- no, I don't, I beg your pardon. That's the previous discussion. But to sort of take you through those steps.

First, the historical daily data for the HEP site had to be sifted. So we've no longer got MMD; we've actually got to go back to the original data and start looking at that. And within that data, you have to find a seven-day period in which the average inflow was closest to the MMD in the entire hydrological record. So we're not just getting into ten-year averages here; we're getting into daily data.

Second, the daily inflows of the sample week were then upscaled in order to make their average equal to the MMD.

Third, the pondage "required for Firm Power" within the meaning of paragraph 8(c) was then calculated as the storage necessary to allow the production of constant firm power throughout the week, given those inflows.

Then finally, the storage was doubled, per paragraph 8(c).

Now, what we discovered when we sort of went through the cold-towel-around-the-head process, the

soul-searching, was that this failed several of the sufficiency criteria, and failed them obviously.

First of all -- and I don't know if I made this clear -- this does not come up with a fixed and unique value of pondage. What it does actually is it produces a range of values, some of them extraordinarily low, some of them extraordinarily high, and then the value with a 10% exceedance rate -- so the value that's going to be available 90% of the time -- is selected.

Now, one might ask, "Why not 9%?", or "Why not 11%?", or "Why not 5%?", or whatever: that is when the problem arises. And that's the issue, right: who gets to pick the exceedance? I mean, this is disagreement upon disagreement upon disagreement.

Second, it relies on an unusual process, shall I say, in order to work. I think I may have this on the next slide (16); I do, in point of fact. It relies on some pretty heavy data review in order to work. I say "data manipulation" there: that's not quite right. It's data review. You've got to dig around in the historical record to compute a series of seven-day moving averages, and that's just not very satisfactory.

And third, I said it's very complicated when you sort of get down to the nuts and bolts. I'm not sure if it could be done with 1960s technology, that is to say,

graphically; but if it could be done, it wouldn't be an easy exercise, and again it would likely produce more arguments between the parties than any actual solutions.

So, if anything, the rejection of this approach confirms the usefulness of the sufficiency criteria and the even-handedness which Pakistan has been applying them.

That ends my answer to question 18 on Baglihar and the evolution of the parties' positions.

THE CHAIRMAN: Mr Minear.

DR MILES: Yes, Mr Minear.

MR MINEAR: Just to be clear, was India's position consistent from 1960 up until the time of Baglihar? In other words, did they use exactly the same methodology in each of those plants?

DR MILES: I believe so. I would have to go back and check, but I believe that they were pretty consistent. Baglihar being the first plant where Pakistan raised an issue that the amount of pondage is incorrectly calculated.

But I've not looked at the Commission minutes. I'd have to go back and look at every individual plant and see what the equivalent of Appendix VII of P-0546 was that was provided in relation to that plant.

MR MINEAR: And in a nutshell, could you describe to

12:12 me/remind me of what the difference was between India's position in Baglihar and the different result that the Neutral Expert came up with in Baglihar?
DR MILES: Again, this would require getting into the fine details of India's approach.
What I can tell you is that, broadly speaking, the premise of India's approach was accepted by the Baglihar Neutral Expert. So he was saying: this is pondage that is going to be required to turn a constant inflow into a variable outflow. It relied on load, it used paragraph 15, and it used a load curve, or the load from the plants, in order to define when storage and discharge was going to be taking place.
MR MINEAR: Right. So the difference focused on exactly which load curve or what rate or order of release should be used for producing power; is that --
DR MILES: You're quite right. In terms of outcome, you're absolutely right, Mr Minear.
So effectively what happened is that India produced a storage and discharge schedule saying, "Here is when we want to operate the plant and under what conditions". The load curve was sort of provided as evidence of that. And I think Professor Buytaert yesterday pointed out that it's used to define the peaks and troughs of when you're peaking or not peaking, as the case may be,

12:13 defined on times of peak demand.
And the Neutral Expert looked at the table and he looked at the load curve, and said, "These two don't match. You're not peaking when you should be peaking". And then he modified the storage and discharge schedule in order to line up with the load curve.
MR MINEAR: And my last question, perhaps you will answer this in your next presentation: is India using exactly the same discharge schedule that Baglihar used?
DR MILES: It picks a different discharge schedule for every plant. We'll get on to that in a minute, because in my submission, the storage and discharge schedule in Kiru is a remarkable document.
MR MINEAR: Please proceed. Thank you.
DR MILES: (Slide 17) So question 29 is now on the slide. And the Court -- at Mr Minear's request, if I'm not mistaken -- has asked to see India's pondage calculation for the Kiru HEP.
In the same breath, I recall my exchange with Professor Buytaert -- Day 5, page 139, line 14 to page 140, line 6 -- regarding the potential need for India to provide a load curve under paragraph 3(b) of Appendix II of Annexure D requiring India to provide the calculations for the operating pool.
Just so I can check, do you have a copy of

12:15 Appendix VII of P-0546?
MR WILLIAMS: Tab 21.
DR MILES: Tab 21 of your bundles, please, gentlemen.
THE CHAIRMAN: I think we all have it before us.
DR MILES: Superb. To that end, question 29 has asked us:
"Appendix VII of P-0546 sets out India's calculation of maximum Pondage at the Kiru HEP, the plant which Pakistan used to illustrate its calculation of maximum Pondage. The Court invites Pakistan to explain and comment on India's calculation, including:
a. Whether Appendix VII reflects India's current methodology;
b. Pakistan's understanding of India's methodology.
c. The differences between India's and Pakistan's approaches; and
d. Any other considerations relevant to the calculation of maximum Pondage."
So you now have Appendix VII in front of you for Kiru. I can confirm that this document does indeed reflect India's current approach. And I can also confirm that if the Court was somewhat confused, perhaps wondering where the rest of Appendix VII is, that this is the entirety of Appendix VII: it's one piece of A4 paper. And that signifies a pondage of 10.5 million cubic metres, with no calculations behind it -- nothing

12:16 akin to the calculations done by Professor Lafitte in Annexes 6.5.2 to 6.5.7 of the Baglihar decision -- and no load curve.
Indeed, simply by looking at this, one might conclude that India is no longer even using the load curve for its calculations. It's setting its own load on the HEP, without reference to any curve, and telling Pakistan potentially that it is entitled to do so.
But let's go through this document and try and make some sense of it.
At the very top, we see the MMD for the Kiru HEP, which India has rounded down from 65.3 to 65 cubic metres a second. Then we see our design discharge for 586 cubic metres a second, which is what the inflow is for the Kiru turbines to be driven at their installed capacity of 624 MW.
Below that, we see also that India has made provision for a minimum environmental flow of 16.33 cubic metres per second.
Below that, we see that India is assuming -- this is daily inflow -- that the Chenab will always be flowing at the MMD; so that's 24 hours of constant MMD, which is hydrologically strange, to say the least. And it's using cumec hours as a unit of measurement, which is a unit of measurement similar to a megawatt hour. And

12:17 24 of those megawatt hours produces the assumed daily inflow, which is 1,560 cumec hours.

Below that, we see the numbers are then applied to the storage schedule imposed on the Kiru HEP by paragraph 15. This is India's version of the guardrail. And so because it's on the Chenab Main above Ramban, this means that paragraph 15(ii) applies, and the Kiru HEP can retain no more than 50% of inflow on a given day: that's 780 cumec hours. And it can't discharge any more than 130%: this is 2,028 cumec hours.

Finally, we have the nod to the part of paragraph 8(c) that India actually likes, which is that it gets to double whatever the result of its approach is.

What we then have is the storage and discharge schedule that India has used to fix the pondage at the Kiru HEP. And it runs from Saturday to Saturday, in accordance with the parameters of paragraph 16.

There's a few things to note here.

First, and as noted, India is assuming a constant inflow at the MMD level for the entire week.

Second, we can see from the column on the far right that it's generating only at the HEP's installed capacity. It's not generating firm power, only ever secondary power, and that's clear from the column on the

12:19 far right.

Third, India is actually generating power from the schedule for a tiny amount of time. We can see that in the "Time" column. So Saturday to Sunday, less than an hour: 0.95. Sunday to Monday, an hour. Monday to Tuesday, an hour. Tuesday to Wednesday, Wednesday to Thursday, Thursday to Friday, Friday to Saturday: 2.75 hours on each day. It's a tiny, tiny amount of time.

At the bottom, we can see that the Kiru HEP, on this storage and discharge schedule, will be generating power for just under 14 hours in the week. So for only 8% of the entire week is this HEP going to be generating power, if India is to be believed.

Fourth, from this, India has picked the pondage required based on the largest amount of cumulative storage it needs to satisfy this schedule. And that's at 2,808 cumec hours, which is 10.11 million cubic metres; which is in the operating pool, I think, Tuesday evening, about 17.00 on Tuesday.

Finally, India tells us that this amount may be doubled, and so they end up with a potential operating pool of 20.22 million cubic metres. Obviously, and as I think either the Chairman or Professor Buytaert pointed out, India isn't compelled to select

12:20 an operating pool of this size; it's merely the outer limit. And so I think that India has ultimately fixed the final size of the operating pool at 10.5 million cubic metres.

Now, I hope from this description that the Court is starting to feel a little bit uncomfortable. There's something a bit off about this. Specifically, something is off about the idea that India thinks it's sensible to only generate power for a little under 14 hours a week, all of it at the plant's installed capacity, in low-flow conditions. (Pause) So it's generating for 14 hours, full-blast, in low-flow conditions. You'll recall in Baglihar, Professor Lafitte developed a schedule that enabled 49 hours of production in exactly the same conditions.

But when we plot this schedule on a graph, we can see why this document makes us so uncomfortable.

(Slide 18) Here's what it looks like. On the Y-axis, you'll see plotted the total storage; and then on the other Y-axis, the reservoir level. Those two obviously track. On the X-axis, you'll see the time period, together with miniscule hours of production -- the little blue "U"s down the bottom in each day -- and long, long periods of storage.

Members of the Court, this is a table that's driven,

12:22 in Pakistan's submission, by one imperative and one imperative only, and that's the maximisation of storage.

What this shows is India storing the maximum amount of inflow it can, and then dumping it all through the turbines as quickly as possible -- that is to say, at the highest possible rate -- in order to meet the requirements of paragraph 15(ii), and then immediately start storing again. This is shown by the intense bursts of power production -- that's the down-spikes that you'll see in the graph -- kept as short as possible -- a completely uneconomical form of plant operation -- followed by long periods of further storage.

And another thing that's quite striking, in my submission, is the fact that the HEP stores pondage not only over the low-demand weekend, but it's also storing through the entirety of Monday and Tuesday morning, missing three whole periods of peak demand, where the plant could be producing useful energy under a peaking plan.

The Court has asked Pakistan to comment on India's current methodology as reflected in this diagram, and I suppose it's what I have to do. It's Baglihar off the rails.

(Slide 19) Now, from a Treaty-interpretative

12:23 perspective, as I said in my submissions on Friday, Baglihar is bad enough. And the Court has asked us to show the differences in terms of approach perspectives.

Baglihar is bad enough. It's governed by load, not hydrology, as paragraph 8(c) requires. Pakistan's preferred approach is paragraph 8(c)-compliant.

It doesn't result in production at the firm power rate as calculated under paragraph 2(i), effectively reading the concept out of the Treaty. And as we've seen now, it's designed for the production of very, very, very small amounts of secondary power. Again, the production of firm power is the guiding light of Pakistan's approach.

It also assumes constant inflow at the MMD level, which is a hydrological impossibility. This also means that in reality no pondage, when the river is flowing at the MMD level as we've described, is actually required for firm power. The river itself provides more than enough -- well, it provides exactly enough, rather, for firm power in those conditions.

Pakistan's approach, in contrast, assumes a realistic variable inflow, which is then discharged through the turbines at the MMD level; which is plainly, once more, what the Treaty requires.

But in Baglihar, Professor Lafitte made at least

12:24 an effort to produce a model of plant operation that was sensible, even if the entire premise of his model was wrong. And we do say the premise of his model was wrong. And in the wake of that -- if I can just go back to this remarkable diagram (slide 18) -- India seems to have taken the sensible bit of that flawed approach and removed it. It's gaming Professor Lafitte's methodology in order to maximise the pondage that it produces.

Now, as I said, based on all of this, it's possible to conclude that in reality India is no longer using a load curve at all. You'll recall -- and I explored this, I think it was with Mr Minear -- that in Baglihar, Professor Lafitte looked at India's schedule and noted that it didn't match the load curve and therefore required adjustment. And the upshot of that was that the Baglihar HEP's operating pool was reduced from 37.722 million cubic metres in India's design to the final design parameters of 32.56 million cubic metres. So because they couldn't keep to the load curve, India lost a little bit over 5 million cubic metres of live storage.

And it's entirely possible that the lesson India has learned from all this is to simply abandon the load curve. The result is the habitual handing-over to Pakistan of a piece of paper telling Pakistan what the

12:25 schedule is, and that the maximum storage required to operate it is a particular number linked not to firm power but the need to produce a minuscule number of hours of energy at the plant's installed capacity.

The result of this is the expropriation, in Pakistan's submission, of the waters of the Western Rivers, reflecting the occasional instinct of the upper riparian that Sir Daniel referred to yesterday.

That's all I wanted to say about the Kiru HEP schedule and India's current approach to the calculation of maximum pondage. I obviously made far longer submissions on this point towards the end of my submissions last Friday, to which these are merely additions.

Now, this discussion has now put me -- unless there are questions?

THE CHAIRMAN: Mr Minear.

MR MINEAR: Dr Miles, just a point of clarification. The minimum environmental flow on this schedule that India provides, do you know how that is determined?

DR MILES: Not the foggiest, I'm afraid. As I've said, this is what we get.

MR MINEAR: And also I had asked previously whether the discharge schedule is different for each plant. I think you said that it does vary from plant to plant. Is

12:27 there anything in the record right now that would illustrate that for us?

DR MILES: Well, aside from the fact that this is different to the Baglihar schedule, no. But there should be other storage and discharges schedules out there that --

MR MINEAR: That we could request?

DR MILES: Yes, of course. No, no, no, absolutely.

MR MINEAR: Okay, thank you.

DR MILES: Obviously every time we get notified about a plant, this is what shows up.

MR MINEAR: Okay, thank you.

THE CHAIRMAN: Professor Buytaert.

PROFESSOR BUYTAERT: Dr Miles, coming back to the graph you've got here on slide 18.

If I recall correctly, one of the things that the Neutral Expert did was change the loading, or the moment of switching on and off.

DR MILES: Yes.

PROFESSOR BUYTAERT: Where originally India's approach did not have any outflow apart from the minimum requirements during the weekends, Saturday and Sunday, if I'm correct, the Neutral Expert spread out the outflow more evenly between the weekdays and the weekend, which also seems to be reflected here in the calculations of Kiru.

Do you believe that in the Kiru, India has taken into account some of those adjustments and essentially allowed the corrections of the Neutral Expert in Baglihar to inform the calculations for Kiru? Or do you believe that they just ignored any corrections the Neutral Expert did, and rather implement the same method they had been using before?

DR MILES: I think maybe it's a hybrid of the two approaches. I can't tell, is the obvious answer, because it's very hard to tell anything from a single piece of paper, which is one of the reasons that Pakistan is slightly upset about this.

I would say, taking your question at face value, that whatever view you take, this is not a good faith implementation of the Baglihar approach. I mean, you can't have 14 hours of generation at the installed capacity and say that this is a genuine attempt to implement Raymond Lafitte's vision. I just don't see how that tracks.

PROFESSOR BUYTAERT: Thank you.

THE CHAIRMAN: Just to follow up on that.

I take it your point, in part, in placing before us the graph that you have at slide 18 is perhaps that even if one were to operate within the approach taken by the Baglihar Neutral Expert, it allows for a lot of play in

the joints that India would take advantage of, that would then result in friction between the two parties repeatedly in the Commission; and consequently, Pakistan's preferred approach to the pondage calculation, which is far more definitive in nature, helps avoid those types of conflicts?

DR MILES: That's precisely correct, yes.

THE CHAIRMAN: Very good. Please proceed.

DR MILES: (Slide 20) Okay. On to question 24. That's now on the slide.

"What is the difference between the Parties as to the language of 'required for Firm Power'? ... Is there also a potential difference as to the meaning of 'corresponding' to in the definition of Firm Power?"

Now, having adopted the determination of Professor Lafitte in Baglihar as its own, India does not, says Pakistan, acknowledge the plain wording of paragraph 2(i), which provides that "Firm Power" is the power produced by the HEP when the river flows at the MMD level.

(Slide 21) Now, in Baglihar, Professor Lafitte was not entirely clear, at least on my reading, as to what he thought the words "required for Firm Power" meant. At paragraph 5.9.3 (PLA-2), he referred to two definitions as you know: the definition in

paragraph 2(i); and then there's a second definition I've got highlighted on the slide, which is the definition from the American Society of Civil Engineers.

The two definitions are very different. The first is based on hydrology, and specifically the MMD. The second is based on load:

"... Power intended to have assured availability to the customer to meet all or any agreed portion of his load requirements."

The "customer" is of course, in this circumstance, India.

Now, although he does not say so in terms, Professor Lafitte appears to have adopted the second for the purposes of the Treaty, turning firm power into peaking power, and writing large amounts of paragraph 2(i) out of the Treaty.

And as we've seen from the Kiru HEP calculations, India has done exactly the same. The sole power that is produced by the HEP is secondary power. It's more than that: it's secondary power right up to the limits of the installed capacity of 624 MW.

India, if pressed, would therefore appear likely to claim that pondage "required for Firm Power" in paragraph 8(c) means required for peaking power of the kind that I've just demonstrated. Again, it's

regrettable that they're not here to make this point for themselves. But as I say, it seems to follow from what they have told Pakistan in the Kiru HEP calculations that that's their understanding.

I also note that India is far from clear on this point in the Commission minutes. Most of the time, and certainly post-Baglihar, its Commissioners don't refer to paragraph 8(c) at all. They tend, rather, to refer to paragraphs 2(c) and 15; or, more often still, just to Baglihar itself, which has become something of a talisman for the various Indian Commissioners since that decision was handed down.

Pakistan's view, as you know, is that "required for Firm Power" means required for firm power: it is the pondage required to assist the river in reaching the MMD rate so that the plant can produce firm power.

Now, there may also be a difference in the meaning of the term "corresponding to" in paragraph 2(i). Again, India isn't terribly fond of paragraph 2(i): it doesn't seem to refer to it overtly in the Commission. But as we've seen from the Kiru HEP calculations, its theory is premised on a constant, 24/7 inflow at the MMD rate. So it would see "corresponding to" as being the energy corresponding to that which a HEP can produce through peaking when the river flows continuously at the

12:33 MMD rate. Again, that's consistent with what we've seen from the Kiru calculations.

The difficulty with this approach, as we have explored multiple times over this hearing, is that the Treaty doesn't make a provision for energy production -- which is what India is effectively doing: they're saying, "We're guaranteed 14 hours of installed capacity generation per week"; that's energy -- it makes a provision for power production.

And that realisation is at the heart of Pakistan's interpretation. "Firm Power" within the meaning of paragraph 2(i) is the power corresponding to that which the HEP can produce when the river is flowing at a particular rate, and that's the minimum mean discharge.

So that's the differences between the two parties on those two crucial terms.

THE CHAIRMAN: No questions for you on that, Dr Miles. Please proceed.

DR MILES: (Slide 22) This brings me to my final question, which is of course question 30. It's on the slide. And it presents two alternative approaches for the calculation of pondage put forward by two of the Court's members, the Chairman and Mr Minear, and it has invited Pakistan to comment on them.

12:34 The questions are as follows. The first proposal:

"... multiplying the minimum mean discharge by a 24-hour duration factor, doubled, producing a maximum Pondage of 11.283 [million cubic metres] for the Kiru HEP ..."

And then the alternative:

"... multiplying the minimum mean discharge, less the lowest historic minimum discharge, by a 24-hour duration period, doubled, producing a maximum Pondage of 4.959 [million cubic metres] for the Kiru HEP ..."

Now, as is apparent from their wording, these two approaches draw from the same conceptual wellspring. And both of them produce a simple and straightforward mechanism for the calculation of pondage, so no risk about breaching the sufficiency criteria here.

(Slide 23) But in Pakistan's submission, neither of them is consistent with the language of the Treaty, and the reason why is on the slide. It's paragraph 8(c), and I've highlighted the words "required for".

Pakistan has always seen these words as important. They've been deliberately chosen by the Treaty drafter, and must be given meaning. Together with paragraph 2(i), they reflect the fact that paragraph 8(c) contemplates that pondage will provide the additional flow "required for" a plant to achieve

12:35 firm power, and not more than that; in other words, not secondary power.

And that's exactly what Pakistan's approach has set out to do: to ensure that in any sub-MMD conditions, the operating pool will have sufficient storage to allow the entire reservoir inflow, on a given day, to be used to produce firm power by being passed through the turbines at the MMD rate. Pakistan's approach will therefore give the plant the storage "required for" this operation in all hydrological circumstances: from 0% of the MMD -- never going to happen -- to 100% of the MMD, perhaps more likely to happen. And that storage, when doubled, fixes the size of the operating pool.

And that's the issue that Pakistan has with both of these alternative theories. While both alternatives recognise, correctly, that the right approach must be derived from the MMD, they reflect essentially arbitrary volumes of water. It's difficult to see how either of them will provide the storage that is required for firm power on any particular day.

Now, this is particularly the case for the first alternative. On a 24-hour cycle, the only time that a plant would need an entire day's worth of MMD flow to produce firm power would be if there was no flow in the river at all. That's a highly unlikely hydrological

12:37 circumstance.

This was the point that I tried to make -- unartfully, I'm sure -- when it was first raised with me, this alternative, on Friday. That's transcript Day 5, page 100, lines 2-6. Now, in response to that, the Chairman noted, quite rightly, that if that's what the Treaty says, then that's what the Treaty says. We're engaged here in an act of legal interpretation.

But as I hope I've demonstrated, paragraph 8(c) doesn't say that. The premise of the pondage is that it's "required for Firm Power", implying a working plant attempting to achieve the firm power rate in particular hydrological circumstances. It is this image that has been Pakistan's guiding light as it has developed its approach, and it is borne out in the language of paragraph 8(c). It's not reflected in the first alternative.

Now, if the Court were to force me to choose between these alternatives, I would pick the second one, and the reason why is that it's more congruent with the language of the Treaty.

What it appears to do is scan the hydrological record that produced the MMD, the ten-day averages, and identify the lowest entry. In essence, it recognises that this level of daily cubic metres per second flow is

12:38 likely guaranteed to be available no manner what. We could call it the "guaranteed minimum discharge", or "GMD".

The approach then subtracts the GMD from the MMD, and provides for 24 hours of the resulting flow rate as storage. Essentially, what this means is that when this storage is added to 24 hours of the GMD, India gets 24 hours of MMD, and therefore firm power.

One can see how this would indeed be "Pondage required for Firm Power", albeit in very specific and historically unlikely circumstances. In all other circumstances, so below that GMD level, it would enable production of secondary power. Nevertheless, it can be better made to fit the language of the Treaty, and is therefore to be preferred over the alternative, which remains, in the grand scheme of things, an arbitrary number.

And that concludes my answer on question 30.

THE CHAIRMAN: Mr Minear.

MR MINEAR: Thank you, Dr Miles. This goes to a more general question concerning India's approach. And obviously India is not here to inform us, but you can be assured that we are doing our best to understand their position. I don't think it's fair to ask you to try and explain it any further for us. But I do have this

12:39 question.

India is operating these run-of-river plants as part of a contribution to a very large grid, I think the "Northern India grid", it's described as, and I assume that consists of plants that are both Treaty and non-Treaty-based. Is that right?

DR MILES: That's correct, yes. I think they still have a number of the grandfathered plants mentioned in paragraph 4 to Annexure D, for example.

MR MINEAR: Your position puts severe constraints, in my view, on pondage, as you're entitled to request under your view of the theory. But my understanding is: even if those plants are restricted, sufficient other Indian plants would be available to provide that peaking, even if the Treaty-based plants are constrained. Maybe I'm not making myself --

DR MILES: That's quite right, Mr Minear. I mean, we're dealing with the whole northern Indian region here. I mean, there's going to be a whole blend of different plants in there. There's going to be nuclear; massive amounts of solar is coming online in India; there's going to be coal-fired plants, gas-fired plants. It's all part of an integrated grid in which hydro is a relatively small portion.

I don't know what the other river basins that are

12:41 feeding the northern region of India may be. But if there are multiple such basins, then obviously the Treaty won't apply to them. And even within the Indus Basin, of course, India can do whatever it likes on the Eastern Rivers. It's just these Western Rivers plants that are constrained in terms of pondage.

Also, by the way -- I think I said this in my remarks last Friday -- just because you've got a small amount of live storage in your plant doesn't mean that it's useless. I mean, these things are going to be running full-blast in the wet season, providing healthy amounts of baseload power into the northern region. You only need pondage during the depths of winter, when the flow rate really starts getting down there.

And so it's not even a case that there are other plants that are able to take up the load on India's behalf in the northern region; it's that even these plants are only going to have reduced capacity for a small portion of the year. I can't put it any higher than that.

MR MINEAR: Again, trying for me to understand India's concerns here, I take it from this discussion that it might be that India doesn't need to be concerned about meeting its peaking requirements; rather, its concerns are the most economical or efficient operation of these

12:42 Treaty-based plants?

DR MILES: Exactly, and that's a completely justifiable perspective on India's behalf. But it entered into a treaty in the terms that it did. "Pondage required for Firm Power" means pondage required for firm power.

As I think Sir Daniel said, I mean, this is not a one-sided bargain. They got the entirety of the Eastern Rivers in this deal; and in exchange, they got restricted rights to build hydroelectric plants on the Western Rivers. And one of the restrictions that they agreed to was limited pondage: specifically, "Pondage required for Firm Power" only.

MR MINEAR: Thank you.

THE CHAIRMAN: So, Dr Miles, I'm wondering what you think of the following proposition, which is that the different possibilities that perhaps are in front of us in terms of the way one might understand paragraph 2(i) and paragraph 8(c) are that, on one end of the spectrum, one might view this as driven almost entirely by MMD: that when we look at 2(i), it arguably takes you into an MMD concept to try to figure out the pondage issue, and located on that side of the spectrum might be the two approaches that are at issue in question 30.

More towards the middle of the spectrum would be the idea that MMD is a driving element of the way that

12:43 this should be interpreted, but, as you pointed out, 2(i) does refer to "Firm Power"; 8(c) does refer to "Pondage required for Firm Power". You didn't say this, but I suppose one might also look at 2(c): the idea that pondage is supposed to have something to do with the meeting of fluctuations that the plant is trying to achieve. And that because of all of that, one shouldn't simply lean on MMD; one should lean on MMD in relationship to the way that a plant normally would operate. I think you said all of this implies a working plant and what is needed to make it work.

And then at the other end of the spectrum would be leaning heavily on the concept of firm power in the way that it's normally perhaps understood, as driven considerably by a plant's operation and a load curve and things of that sort. And India is residing on that end of the spectrum when it attempts to interpret 2(i) and 8(c).

I think you've articulated why we should perhaps be in the middle, and I'm just wondering if that's the way you're seeing things as well.

DR MILES: I think I would say that we would articulate Pakistan's approach as being -- yes, in the middle in the sense that there is a form of reservoir operation that is being carried out. But you've got to be able to

12:45 dispose of the entire daily inflow into the reservoir at the firm power rate, and you need capacity to do that.

But it's important to avoid confusion here: that that still remains, MMD, as the driving element of the calculation, as I think you said. There's a reservoir operation in there. But completely absent from the calculation are considerations of load, levers that India is capable of pulling by itself.

So I think I would agree with that spectrum you've set out, emphasising that Pakistan is currently sitting somewhere in the middle of it, premised on reservoir operations but not on load, not on installed capacity, and nothing that India is able to unilaterally modify.

THE CHAIRMAN: Very good. I think we have no questions for you on that.

DR MILES: In that case, members of the Court, it remains for me to thank you for your kind attention.

THE CHAIRMAN: Very good. Well, thank you, Dr Miles, for your presentation. It covered a lot of ground and was of considerable assistance to us.

DR MILES: Pleasure.

THE CHAIRMAN: So, Sir Daniel, I think we are, perhaps surprisingly, a little bit -- well, perhaps not ahead of schedule, but I thought maybe we would be going up to the lunch break with Dr Miles. We do have a good

12:46 15 minutes. Does Professor Webb wish to begin now? The alternative would be to break for lunch and come back 15 minutes early from lunch.

SIR DANIEL: Thank you, Mr Chairman. Having consulted with Professor Webb for precisely this eventuality, I think she would prefer to have a clear run. And if we could break now and come back 15 minutes early.

THE CHAIRMAN: Okay. Well, that's fine then. So we will plan to come back at essentially 1.45 in order to pick up with Professor Webb.

SIR DANIEL: Thank you, Mr Chairman.

THE CHAIRMAN: Thanks.

(12.47 pm)

(Adjourned until 1.45 pm)

(1.45 pm)

THE CHAIRMAN: Welcome back, everyone. I hope that you had a good lunch.

So I see that Professor Webb is at the podium and she's going to be speaking to us about outlets, spillways and power intakes. So whenever you're ready, please proceed.

Submissions on outlets, spillways and intakes

PROFESSOR WEBB: (Slide 1) Thank you, Mr Chairman, members of the Court. I will be addressing you on questions 4(b), 4(c), 5, 14, 15, and 16(b) and (c).

13:46 (Slide 2) So starting with question 4(b). The Court has asked about the relationship between "the concept of necessity in paragraphs 8(d) and 8(e), and the choice of site for a HEP". And they've asked:

"If an outlet below Dead Storage Level or a gated spillway is necessary at one site, but not another, is India obligated to choose the site not requiring such elements?"

So we have here the test of necessity for key design features, and the prohibition of drawdown flushing, which applies throughout the Western Rivers, as the Kishenganga Court confirmed in its decision on clarification or interpretation (PLA-21) at paragraph 33. And both of these factors, the necessity gateway and the prohibition on drawdown flushing, inform and constraint site selection.

(Slide 3) So the range of options can be seen in this table.

If India chooses a site and design intended for drawdown flushing, that is prohibited under the Treaty.

If the site and design would enable drawdown flushing, then it is not immediately prohibited, but the choice of that site is heavily constrained. The burden is on India to show that it has a plan for sediment management that does not involve drawdown flushing. And

as the Kishenganga Court said in its partial award (PLA-3) at paragraph 506:

"... the Treaty does not simply restrict the Parties from taking certain actions, but also constrains their entitlement to construct works that would enable such actions to be taken."

Then we relate this to the design and placement of outlets and gated spillways. So we see that for an outlet to be below dead storage level, India has to show that this is necessary for sediment control or another technical purpose, excluding a sediment control plan or a purpose that would be achieved through the depletion below the dead storage.

And similarly for the gated spillway, in order to have a gated instead of ungated spillway, India has to show this is necessary due to the conditions at site, and that would exclude any compulsion towards the depletion of dead storage.

And when we are assessing this necessity criterion in 8(d) and 8(e), we have to recall that this has to be a genuine necessity, and not a manufactured or artificial necessity compelled by a poor site choice.

So if the outlet is below dead storage level or the gated spillway is necessary for reasons other than drawdown flushing, then India is not obliged to choose

another site. But in order to reach this point, it has to discharge its burden under paragraphs 8(d) and 8(e) in order to comply with the Treaty.

As we pointed out on Thursday -- and that's transcript Day 4, pages 117-119 -- there is no preordained site in these circumstances, and there is no perfect site. There will always be a choice.

(Slide 4) Question 4(c) asks how this relationship compares to "the relationship between site selection and the prohibition on drawdown flushing found by the Kishenganga Court".

(Slide 5) That can be shown with this Venn diagram.

The relationship between necessity and outlets below dead storage level and having a gated instead of an ungated spillway substantially overlaps, but not perfectly, with the relationship between site selection and the prohibition on drawdown flushing.

The overlap exists -- and that's the darker red colour, which is the prohibited area -- the overlap exists because outlets below dead storage level and gated spillways are features of the typical Indian HEP design that is intended to be used for drawdown flushing.

You've heard from Dr Morris this morning about the vertical stacking features going deep into the reservoir

that is a feature of such a design. And I spoke to you last week about how placing intakes very deep into the reservoir then perpetuates this vertical stacking and these increments of submergence, because you need an even deeper outlet to clear sediment from the area of the intake. That's transcript Day 4, page 173. This was also consistent with Pakistan's argument in the Kishenganga proceedings, as recorded at the partial award (PLA-3) at paragraph 330.

However, there is, as you see it in the lighter pink area, an area where there is no overlap between these relationships. And that is when you have certain scenarios where an outlet below dead storage level or a gated spillway is necessary for reasons other than drawdown flushing. And in these scenarios, then the necessity analysis is detached from the prohibition on drawdown flushing as established and confirmed by the Kishenganga Court.

(Slide 6) I will just recall how the Kishenganga Court analysed its approach to site selection and the prohibition on drawdown flushing. And you can see the rigour of this analysis.

At paragraph 517 (PLA-3), the Court observed that "the prohibition on reservoir depletion [under the Treaty] will preclude India from having recourse to

flushing with drawdown below Dead Storage Level", noting that "[drawdown] flushing is but one of a number of techniques available for sediment control".

In footnote 724, the Court noted that India's argument on necessity had not been consistent. India had argued that drawdown flushing was "one of the effective techniques" for maintaining the sustainability of reservoirs, but also, at another point, argued it was "necessary" for the sustainability of the Kishenganga plant.

At paragraph 519 of the partial award, the Court considered that the testimony of India's expert showed "that drawdown flushing [was] an appropriate (and perhaps preferable) technique, but not the only possible one", and that he had failed to "examine[] whether sluicing would suffice to control sediment at [Kishenganga]".

At paragraph 520, similarly, the report of another Indian expert stating that drawdown flushing was "essential for the sustained operation of the [plant]" was doubted by the Court, in that it did not "exclude other possible designs that could operate on a different basis" for sediment management.

And the Court concluded -- and this is clear in its clarification decision (PLA-21) at paragraph 34 -- that

13:54 in this situation, the options for India are to modify its design, even if it's not the most economical approach, or to choose another site.

I'm now moving to question 5, on best practices, unless there are any questions so far on these points.

THE CHAIRMAN: I don't think we have questions. So please proceed.

PROFESSOR WEBB: Thank you.

(Slide 7) So question 5 asks about "the different ways the concept of best practices is referenced in the Treaty" and "the support for the proposition that doing so refers to international best practices".

I recall Sir Daniel's observations in response to the Chairman's question at transcript Day 5, page 262, line 5 to page 264, line 11. He said that best practices cannot be by reference to Indian standards, or even Indian and Pakistani standards, because this is an international treaty of a special character.

(Slide 8) Support for this proposition is found using the well-established principles of treaty interpretation. The ordinary meaning of terms in the Treaty that we have referred to throughout are not limited to a locality or even to a region: so "sound and economical", "satisfactory operation", "customary and accepted ... design" -- which was not associated with

13:55 a particular region -- and methods of achieving the "highest level" or the "minimum size". So as we've said throughout, this requires using best practices in the service of the Treaty.

Context is also helpful here. When "customary and accepted ... design" is used elsewhere in Treaty, such as paragraph 10(a) of Annexure D, it is associated with the effective date of 1 April 1960. In paragraph 8, it is not so tied to that date, meaning that it can and must include developments since 1960.

Article IX on dispute settlement, and paragraph 4 of Annexure G, envisage a court of "highly qualified engineers" and "persons well versed in international law". And the selection process also points to this focus on international practices. It is a process involving the heads of international organisations, the leaders of academic institutions, the head of the judiciary in England and Wales, and the highest-ranking officer in the US Federal Judiciary.

Paragraph 29 of Annexure G provides that, "whenever necessary", the Court may apply "International conventions" and "Customary international law". There is no reference to local or regional standards.

We come then to a supplementary means of interpretation: the circumstances of conclusion. And as

13:57 we have heard from Ms Rees-Evans, it was negotiated with international practices very much in mind, including the role of Raymond Wheeler, Chief of Engineers of the US Army before his appointment to the World Bank.

Also in 1960, at the time of conclusion, India did not have developed standards, given the pretty limited dam construction at the time. And both states, India and Pakistan, were relying on international advisors and international firms for dam design and construction. And the Bureau of Indian Standards' publication -- which we have referred to, for example, at P-0583 -- was first published on hydropower intakes in 1981, more than two decades after the Treaty was concluded.

I'm now turning to the next question, which is question 14, which revolves around notions of cost and economical design. But before that, Mr Chairman ...

THE CHAIRMAN: Let me just check to see if there are questions.

I have one on this issue of international best practices or more local best practices. You've been quite clear about the relevance of the Treaty text about the selection of the arbitrators, the choice of law provision and the types of standards that were available as of 1960. So that was all very clear.

In the course of the negotiating history, which

13:58 I know was not your original presentation, but do you recall there being references, in the course of the back-and-forth between the two parties, about the use of standards, perhaps references to particular materials such as the Creager treatise? Does that exist in the negotiating history?

PROFESSOR WEBB: I will be checking this with my colleague Ms Rees-Evans. From my review of the travaux, it is not there, or it's not at all prominent. What you do see though is Raymond Wheeler's role; you see the early reference to the Lilienthal plan based on seven states in the United States.

But on the other hand, I'm not sure about whether we've got express reference, although certainly the engineers involved in those negotiations would have been very familiar with those handbooks.

THE CHAIRMAN: Thank you.

And a similar question relating to the practice of the parties after 1960. This may come out more as the record is developed of the exchanges between the Commissioners, for example, in the Permanent Indus Commission.

PROFESSOR WEBB: Yes.

THE CHAIRMAN: Is it the case, in that context, that both sides are referring to international practices in the

course of their dialogue?
PROFESSOR WEBB: So I have certainly seen reference on both sides to purported state of the art, which Pakistan would submit in some circumstances -- although India was drawing on international practice -- was not actually state of the art, or not applicable given the prohibition on drawdown flushing.
Then you've got the counter-arguments from Pakistan's Commissioner in the Commission saying: this is not actually the practice that's applied in this topography with this kind of run-of-river dam.
That's another thing that, as you say, we can keep an eye on as we do our first sift through the material that's coming in for 30 September.
THE CHAIRMAN: And then a final question, and this is mimicking, to an extent, the question I put to Dr Miles.
Is it the case that in the pleadings before the Baglihar Neutral Expert and the Kishenganga Court of Arbitration, you have both parties habitually referring to international standards of practice?
PROFESSOR WEBB: You do. It's in different ways. And you have the Neutral Expert also himself, I think, at one point, referring to a survey of 14,000 dams.
But what I would caution with the way that material is used is not that it's international practice in the

service of the Treaty. It has to be very carefully assessed, because sometimes it's got nothing to do with run-of-river situations, as opposed to other types of dam. And sometimes it's used, particularly by India, as an excuse to ignore Treaty constraints.
But certainly in Baglihar, you see reference to comparative and international practice.
THE CHAIRMAN: Yes, I could see it's two different points: when should one use these practices; but then, if one does refer to these practices, what is the nature of them?
PROFESSOR WEBB: Exactly.
THE CHAIRMAN: It sounds as though, from what you say, it is international practices that are being discussed?
PROFESSOR WEBB: Yes.
THE CHAIRMAN: Thank you. That's fine. Please proceed.
PROFESSOR WEBB: Thank you.
(Slide 9) So question 14 asks about the extent to which "cost is a relevant consideration with respect to outlets, spillways and intakes ... given the references to 'economical design' ... and 'economical construction'". And I start with two observations.
First, as Dr Morris has explained this morning, and as I explained at transcript Day 4, page 124, line 25 to page 125, line 4, "economical" does not have the same

meaning as "cost".
"Economical" means: is "characterized by or tending to economy; careful [utilization] of resources, not wasteful"; not being disproportionately expensive given the purpose for which it has been designed. So it is about the use of resources in relation to other considerations. It is a contextual term, in the way that perhaps "cost" is less often used in a contextual way.
The second observation is that in paragraphs 8(d) and (e) of Annexure D, the consideration of economical design or construction only comes into play after India has discharged its burden of showing necessity, whether that's the necessity of a gated spillway or outlets below dead storage level. And "economical" is viewed in tandem with other relevant factors, and I just return to the three flowcharts that I presented on paragraphs 8(d), (e) and (f).
(Slide 10) So you see under 8(d), the first step is to show that a low-level outlet is necessary for sediment management or other technical purpose. Once you have gone through that gateway and proven that it is necessary, then it is about identifying the options, which are tested and screened against this concept of "sound and economical design". Then the idea of the

smallest and highest outlet comes into play, to narrow down the options to a particular design. And that needs to fit in with the "satisfactory operation of the works": it has to, obviously, perform its desired function in an acceptable manner.
(Slide 11) In 8(e), the initial requirement is showing that a gated spillway is necessary, and that is linked to the conditions at the site of the proposed plant. "Sound and economical" once again comes in at the second step, once you're identifying your options, having met the threshold of showing that a gated spillway is necessary. Then the design options are narrowed down according to the highest position of the bottom level of the gates when they're closed. And this time "satisfactory construction and operation" come in as the final stage.
(Slide 12) For intakes, we don't have an initial necessity test under 8(f), so the first test will be looking at whether these are satisfactory and economical designs; then the highest level intake in the reservoir among those designs; and taking into account customary and accepted practice for the designated range of that plant's operation, bearing in mind it is a run-of-river plant.
So in this process, whether something is

14:06 an "economical design" or an "economical construction" is not an overriding consideration. It is always associated with being "sound" or "satisfactory". It is often associated with something being at the "highest level", a structure being at the "highest level". For intakes, it's associated with the operation of a plant as a run-of-river plant. And of course, "economical", as a term, is always subject to the object and purpose of the Treaty, including the hydro bargain.

So I recall what I said on Thursday, which is: if there is a choice in design, and one outlet would be higher and smaller but more expensive to build, then India is obliged to choose that design.

(Slide 13) We can look at how this was treated, this notion of economical and design choices, in the Kishenganga proceedings. So in the expert's report by Dr Schleiss appended to India's rejoinder, the expert said that:

"Under the local topographic conditions of the KHEP it is technically not feasible to design free surface desilting basins or desanders. The only but not economical solution would be to place them underground as a pressurized desilting chamber."

So he has rejected the underground desander option as being not economical. And he has concluded that

14:08 a minimum reservoir size is essential to guarantee the settling of the sediments, essentially turning the reservoir into a desander.

(Slide 14) Now the Court directly addressed this point in its partial award (PLA-3) at footnote 734. They said:

"For the Court, this ..."

The report of the expert:

"... suffices to establish that the current design of the KHEP may well be the simplest alternative and the use of drawdown flushing the most economical approach to sediment management; it does not establish that these approaches are the only ones available."

And even if it had been the only option available to India -- which the Kishenganga Court doubted, because sluicing with little drawdown would have been particularly effective in the region, as they note at paragraph 521 -- then the solution is not to permit designs that are intended for drawdown flushing but, as the Court said at paragraph 34 of its decision on clarification (PLA-21), it would be for India to secure a more appropriate location and draw more appropriate designs.

So the second part of the question of the Court is:

"... if [the cost] is not relevant, how is that

14:09 consistent with the principle of effectiveness in the law of treaties?"

We would say that it is compatible with the principle of effectiveness and that principle is respected because the interpretative approach that we are putting forward for 8(d), (e) and (f) does not render the reference to "economical" superfluous or devoid of any effect, which would be the intention with the principle of effectiveness. It includes the notion of "economical" as part of a step-by-step analysis that takes a number of factors and principles into account.

The other part of the Court's question was the distinction to be drawn between "economical design" in 8(d) and "economical construction" in 8(f). And Pakistan submits that there is a distinction between them.

(Slide 15) "Economical design" refers to designs that fulfil Treaty requirements. It's to be read in the light of the chapeau of paragraph 8, which says:

"... the design of any new Run-of-River Plant ... shall conform to the following criteria: ..."

It concerns how the feature will operate to fulfil its purpose, including considerations of sediment control, sustainability and maintenance.

As Dr Morris said this morning, it is not that the

14:10 least-cost design will be chosen, either under the Treaty or how India actually has been designing its plants in practice. "Economical" does not equate to "least cost".

"Economical construction" is limited to paragraph 8(f) on power intakes. It concerns the practicalities of building the intake. It requires that the height of the intake be "consistent with satisfactory and economical construction and operation". And the drafters of paragraph 8(f) favoured a surface intake with a part slightly below dead storage level, which is better able to manage sediment while also being cheaper to construct, and therefore would meet that economical criterion.

So stepping back, the reference to "economical" in the various provisions of paragraph 8 is not a basis or a justification for incorporating a cheaper alternative that would contravene the Treaty.

As a practical matter, and as you've heard from Dr Morris, it is also not entirely clear that India's designs would be more economical, with their deep, high-pressure, low-level outlets, which are more costly in general than a crest-gated spillway.

And there's also not just the cost of construction and design and complexity but the ongoing maintenance of

these plants which comes into the design. Deep low-level outlets are more likely to be clogged with debris; and spillways located on the crest are much easier to maintain and clear of large debris, like logs that may have come from an upstream landslide or flood.

(Slide 16) I will now move to question 15, which is on outlets in general. The Court asks:

"What is the universe of outlets regulated by ... 8(d) of Annexure D?"

And we say the universe of outlets is: all outlets below dead storage level. Outlets can be classified according to their function. At Exhibit P-0304, we have the US Army Corps of Engineers Hydraulic Design of Reservoir Outlets Works Engineer Manual from 15 October 1980, which this graphic is based on, and it lists various functions for outlets.

(Slide 17) Not all of these would be relevant to an Annexure D hydroelectric plant, but you asked about the universe of outlets. So they would include: flood control, navigation, irrigation, water supply, hydropower of course, E-flows or low flow, diversion, and drawdown for inspection or maintenance.

Some of these functions of course may be combined in a single structure. And as I said last week, Pakistan has no objection to dual-function outlets as long as

they are in the service of the Treaty.

(Slide 18) The next part of question 15 asks if paragraph 8(d) is "limited to outlets located entirely below Dead Storage Level", or it may "include outlets located partially above and partially below Dead Storage Level". And:

"To the extent that [we] maintain[] that this provision applies only to outlets located entirely below ... what is the basis for [that] interpretation?"

In Pakistan's Memorial at paragraphs 10.80 and 10.101, and in these proceedings at transcript Day 4, page 142, lines 16-20, we have stated that paragraph 8(d) applies to outlets entirely below dead storage level. And this has been for three reasons.

The first is that we are simply interpreting the ordinary meaning of "outlets below Dead Storage Level" as meaning outlets wholly below dead storage level.

The second reason is that in terms of context, when the Treaty addresses structures at a certain height, it does tend to specify it. So in paragraph 8(e), it refers to the bottom level of the gates in the normal closed position. In paragraph 18(c) of Annexure D, which relates to small plants, it refers to:

"... the crest of the diversion structure across the Tributary, or the top level of the gates, if any, shall

not be higher than 20 feet above the mean bed of the Tributary at the site of the structure."

The third reason is: as Dr Morris and I noted last Thursday, at transcript Day 4, page 51, lines 11-14 and page 175, lines 20-24, the invert of a power intake is always at least partially below dead storage level, in order to divert water into the intake and have the full range of the operating pool. And for this reason, paragraph 8(f) of Annexure D will always address intakes that are at least partially below dead storage level.

So those were our reasons for taking that interpretation of paragraph 8(d) as meaning wholly below.

However, reflecting upon the Court's questions, and consistent with Pakistan's emphasis that paragraph 8(d) is, as Sir Daniel said, "the gateway to all kinds of outlets that appear in a hydropower plant" -- transcript Day 4, page 14, lines 3-5 and page 101, lines 18-19 -- Pakistan is willing to accept that paragraph 8(d) can include outlets located partially above and partially below dead storage level. Such an outlet would have to satisfy both the criteria in paragraph 8(d); and then, if it was a spillway, 8(e); and if it was a power intake, 8(f) as well.

THE CHAIRMAN: Thank you, Professor Webb.

So you've left me a little bit puzzled. There is presumably the best interpretation of the Treaty. And the question is: is the Treaty best interpreted as regarding outlets that are partially below dead storage level as falling within the scope of paragraph 8(d) or not?

And I wasn't entirely clear. Are you saying that Pakistan has a position, which is that they must fall entirely below dead storage level --

PROFESSOR WEBB: Yes.

THE CHAIRMAN: -- but that you can see a possible interpretation that says a partial outlet below dead storage level also is included in paragraph (d)?

PROFESSOR WEBB: Yes, that's exactly what we're saying, Mr Chairman.

The challenge here is with paragraph 8(f) on power intakes, because a power intake will always have its invert slightly below the dead storage level, or deeper.

So when we were interpreting the Treaty, we were thinking: how does 8(d) relate to 8(f)? With spillways, there can be a surface spillway, free-overflow spillway: then it would be entirely regulated by 8(e). And if it is below dead storage level, it would be regulated by 8(d). But it was with the power intakes that we were considering what function that would still play in 8(f),

if you always put it within 8(d).
THE CHAIRMAN: Okay.
PROFESSOR WEBB: (Slide 19) Perhaps I'll expand on that in the answer to the last part of the Court's question, which is:
"Would any difference of significance follow from ... applying ... 8(d) to outlets partially below Dead Storage Level?"
We say that by applying 8(d) to outlets partially above or partially below dead storage level, it would make the criteria for such outlets more stringent.
(Slide 20) 8(d), as you can see, introduces a necessity test that does not appear in 8(f), for example. So 8(d) requires showing that that placement of the outlet would be "necessary for sediment control or another technical purpose".
The test in 8(e) for a gated spillway is related to "the conditions at the site", which may or may not overlap with "sediment control [and] other technical purpose".
Importantly, 8(d) introduces the requirement of "minimum size", which is a factor that is not mentioned in the other paragraphs. 8(d) requires the location "at the highest level". 8(e) also requires that, as does 8(f), but with slightly different criteria for each of

them.
And finally, 8(d) does not include the criteria of "satisfactory and economical construction" or "customary and accepted practice", which only appears in 8(f). So therefore it doesn't apply a construction lens to the design of the outlet that may affect its placement if you were purely under 8(f).
(Slide 21) I now turn to question 16(b), 16(a) having been answered by Dr Morris this morning. And this asks about:
"What would Pakistan understand as constituting a potential 'other technical purpose' for having an outlet below Dead Storage Level?"
As Sir Daniel said on Thursday, at transcript Day 4, page 13, line 23 to line 2 on page 14, the principal focus of 8(d) is sediment management. That's the first and specific criterion that is specified. The phrase "other technical purpose" is a catch-all term. I indicated last week, at transcript Day 4, page 119 lines 12-14, that it would include contributing to the passing of the design flood.
In the light of the Court's question, we've given even more thought to this, and other possibilities for the phrase "other technical purpose" include: having an outlet below dead storage level to pass ecological

flows -- by being below dead storage level, it can help guarantee such flows at any time; as Dr Morris explained, an outlet below dead storage level may be used as a sediment sluice in front of or otherwise situated in the immediate vicinity of the intake to produce a localised scour cone or otherwise pull sediment away from the intake, to minimise accumulation and entrainment into the intake; as Professor Buytaert pointed out this morning, it can also be used to vent a turbidity current without reservoir drawdown; and it may also be designed to allow dewatering of the dam.
So we've expanded, in the light of your question, on what we would consider an "other technical purpose".
(Slide 22) Question 16(c) asks about "purposes that would call for an outlet below Dead Storage Level that is not located at a low level near the reservoir bottom". And there are indeed purposes that would call for an outlet that is below dead storage level but not sitting on the river bottom, and I'll just give two examples.
So as you've heard from Dr Morris, a high-capacity outlet with the crest elevation below dead storage level is used for sediment sluicing. It would be advantageous for that outlet to be relatively shallow. Its crest would be set lower than the intake, but it would not be

located on the bottom of the reservoir.
As we pointed out in transcript Day 4, page 130, lines 12-17, ICOLD guidelines, in Exhibit P-0530, actually recommend that a five-year flood would be passing, rather than higher floods produced at higher levels. So when part of the outlet below the dead storage level should be designed for the five- or ten-year flood and is mainly about sediment management.
The second example is an intake, whether it's a power intake or an environmental flow intake, that is helpfully located below dead storage level, because otherwise the water cannot flow into the intake when the reservoir is at its minimum operating level. However, you wouldn't want such an intake at the riverbed because you would have the problem of taking in a lot of sediment.
Mr Chairman, members of the Court, those are the questions that I wished to address you on. I'm happy to answer any questions; otherwise that concludes my submissions.
THE CHAIRMAN: Thank you very much, Professor Webb. Let me just turn to my colleagues and see if they have any questions.
(2.25 pm)
Questions from THE COURT

14:25 THE CHAIRMAN: I just have one question for you.
We've occasionally raised the issue of Annexure E in the course of the hearing.
PROFESSOR WEBB: Yes.
THE CHAIRMAN: And as I think you perhaps have even noted, we do have comparable provisions relating to outlets and spillways and intakes in Annexure E.
So it's just a general question: have you looked at that language as perhaps relevant context for interpreting the provisions that you've been addressing in this presentation?
On first glance, they look to be very similar, and therefore there's perhaps nothing much to be taken from it. But if I understand correctly, in an Annexure E storage work, it might be the case that your intake is at a lower level because of the nature of it, and therefore it seems to me maybe some relevance could be divined from that context, with that language, as to what might be meant in Annexure D.
So it's just a general question for you to reflect upon, now or in due course.
PROFESSOR WEBB: Yes.
So the similar language is relevant to an extent. I did refer to it in the context of the hydro bargain: that we keep seeing this relationship between a rule and

14:27 an exception, developing that balance between the parties, reflecting the peace and the Treaty bargains underlying the Indus Waters Treaty. But it only goes so far.
And I know Sir Daniel will be developing this in his closing submissions, and we will certainly be coming back to it in any post-hearing submission, if that would be helpful to the Court. Because there are key differences between storage works and run-of-river plants, both historically and in the way that they function from an engineering point of view, even when there is a power storage capacity associated with a storage work.
So I think we can only go so far. You've already given the example that there may be a tendency towards multiple outlets, including very low outlets, in a storage work that can't be transposed to a run-of-river design.
THE CHAIRMAN: Very good. Thank you.
I think that's all the questions we have.
PROFESSOR WEBB: Thank you.
THE CHAIRMAN: So thank you very much for your presentation. It was very helpful.
PROFESSOR WEBB: Thank you very much.
THE CHAIRMAN: So if I understand it correctly, we have

14:28 Mr Fietta next, to raise with us some points about the paragraph 35(a) issues. Is that correct?
SIR DANIEL: That's correct. Thank you.
THE CHAIRMAN: Very good. In which case I invite Mr Fietta to the podium; and once you are assembled there, feel free to proceed. (Pause)
MR FIETTA: Okay, thank you.
(2.28 pm)
Submissions re Question 35(a) Issues
MR FIETTA: (Slide 1) Good afternoon, Mr Chairman and members of the Court. My task today is to address you on one residual but important element of Pakistan's answer to the Court's question at paragraph 35(a) of your PO No. 6, dated 6 July 2023, namely about the extent of the binding or otherwise controlling effect of decisions of Courts of Arbitration under Article IX of the Treaty, with a focus on the Kishenganga awards.
I explained on Day 3 of the hearing that there is in fact apparently little or no disagreement between the parties as to the limited res judicata effect of determinations of a Neutral Expert. Specifically, India has never argued, as I explained on Day 3, that the Baglihar determination has any legally binding or otherwise controlling effect beyond the specific aspects of the Baglihar HEP that were the subject of that

14:30 determination.
But as you picked up on Day 3, Mr Chairman, India's position with respect to the binding or otherwise controlling effect of the Kishenganga Court of Arbitration awards has been, to use your words, "less clear"; that's Day 3, page 131. Both in the PIC and the Commission and other contexts, India has been circumspect, if not evasive, as to the res judicata consequences of those awards.
So in order to assist your decision-making with respect to your first question in PO No. 6, whether in an expedited partial award or an award covering all of your questions, I will explain to you why the systemic res judicata effect of Kishenganga derives not just from its dispositifs but also from certain of the paragraphs setting out the Court's underlying reasoning which informed those dispositive findings.
(Slide 2) So we can pick up the discussion on Day 3 between pages 143 and 146. There, Mr Chairman, you raised the question of what constitutes the award, with reference to the wording at paragraph 23 of Annexure G, which provides, as you will recall, that:
"The Award shall be accompanied by a statement of reasons."
You asked whether, in effect, this wording means

14:31 that the award is limited to its dispositif, such that the statement of its reasons is separate, and thus potentially not final, binding or otherwise controlling in the same way as a dispositif.

After some discussion on Day 3, you correctly summarised Pakistan's position to be that: "[res judicata extends to] not just the dispositif", but also to, you said, "aspects of the reasoning underlying what is determined in the dispositif". And you added:

"There may be other aspects of the award that are not directly germane to the outcome that might not have res judicata effect."

And that is the crux of Pakistan's position: namely that there is nothing in paragraph 23 of Annexure G of the Treaty to disapply the basic position at international law that the res judicata of a binding adjudicative decision extends to the paragraphs setting out the rationale which underpins the dispositive findings.

So in the remaining 20 minutes or so of my remarks, I'm going to split my presentation into three parts.

First, I will briefly revisit what are the main dispositive findings of the Kishenganga awards.

Second, I will explain, with reference to long-standing international jurisprudence, why the

14:32 awards' binding or otherwise controlling effect extends to the critical elements of their underlying reasoning; a point which we touched on briefly in the Memorial, but on which we thought we could usefully elaborate in this closing.

And third, I will apply that jurisprudence to the Kishenganga awards, in order to identify at least some of the central paragraphs of that Court's reasoning, which plainly, in our submission, form part of the res judicata of those awards.

First then, let us look at some of the dispositive paragraphs of the Kishenganga awards and distinguish between those that were specific to the KHEP plant and those that were of more systemic or general application. And for this purpose, I have focused on the partial award, together with the Court's subsequent decision on India's request for clarification or interpretation.

So if we look at the partial award (PLA-3), we can see, on my next slides (3-5) a distinction between, in blue, the KHEP-specific, the Kishenganga plant-specific aspects of the partial award dispositif, so paragraphs A(1) and A(3) there, for example; and then aspects of the dispositif which were more systemic or generic in nature in red: for example, paragraphs B(1) and B(2) of the dispositif, concerning the prohibition

14:34 against reduction below dead storage level, save in cases of unforeseen emergency; and the fact that accumulation of sediment in the reservoir of a plant on the Western Rivers did not constitute an unforeseen emergency that would permit depletion of reservoir below dead storage level for drawdown flushing purposes.

They were clearly, on their face, systemic findings. But as I will explain, that fact is confirmed in the reasoning of the Court which forms part of the res judicata underlying those paragraphs.

As I mentioned last week, India has never acknowledged that the Kishenganga award dispositifs even have any systemic or otherwise controlling effect on the interpretation of the Treaty. So it's therefore important that in your forthcoming paragraph 35(a) decision, you confirm the extent of the res judicata which emanates from the various Kishenganga Court dispositifs, such as those on the screen here.

But it will be no less important that your decision confirm also the res judicata elements of the underlying reasoning of the Kishenganga Court's dispositive findings. And you can do this, we say, with reference to extensive and long-standing international jurisprudence and commentary to this effect.

(Slide 6) On Day 3 of the hearing and in our

14:36 Memorial, we restricted our submission on this point to the International Court of Justice's fairly recent preliminary objections judgment in Colombia v Nicaragua; that's PLA-108. But I'm going to expand that submission with reference to other similar jurisprudence. That jurisprudence confirms that the underlying reasoning contained in Court of Arbitration decisions, including the Kishenganga awards, has res judicata effect as a matter of international law.

I'm going to look at four additional examples from the jurisprudence; there are others. We'll start with two state-to-state arbitrations, and we will move on then to look at an award of the Iran-US Claims Tribunal, and finish with the award of an ICSID World Bank tribunal chaired by Professor Alain Pellet, all of which confirm this core element of the res judicata doctrine at international law.

(Slide 7) The first case I'm going to look at for this purpose is the UK-France Continental Shelf Delimitation case relating to delimitation of a maritime boundary between the UK and France. In that case, there was a post-award application by the United Kingdom concerning the meaning and scope of the court of arbitration's decision.

The UK contended in its application that:

14:38 "... certain clearly identified passages in the [Court of Arbitration] Decision itself constitute essential elements of the Award which equally have the authority of res judicata and, indeed, form an integral part of the Court's response to the question specified."

And the UK, for that purpose, cited previous cases dating back to the Chorzów Factory case of the early 20th century -- Permanent Court of International Justice, of course -- which it said had confirmed the significance of both the dispositif and its underlying reasoning whenever determining what is the res judicata element of an international judgment or award.

Now, France did not reject these propositions of law. And they were picked up by the court of arbitration in its 1978 decision on the UK's application, as shown on these slides here.

(Slide 8) So at paragraph 28 of its decision, the court held that:

"... if findings in the reasoning constitute a condition essential to the decision given in the dispositif, these findings are to be considered as included among the points settled with binding force in the decision ..."

And there you see the reference to Chorzów Factory.

Then later on in its decision, on the next slide

14:39 (9), the court said at paragraph 70 -- I'm sorry, I think we've gone ahead one slide. If we go back (slide 7).

Yes, so we hadn't looked at this, at paragraph 25 actually, just beforehand. The court said:

"... it by no means follows that the 'decision' referred to in those Articles ..."

I.e. the articles of the arbitration agreement:

"... is to be considered as denoting a disembodied dispositif and chart wholly detached from the reasoning leading up to and justifying the provisions of the dispositif ..."

So in other words, it would have been artificial to separate the dispositif of the court's award from the underlying reasons for purposes of identifying the res judicata effect of that award.

THE CHAIRMAN: Mr Fietta, could you just clarify the bracketed text there, "of the Arbitration Agreement"? Are you saying that there is a dispositif in the arbitration agreement?

MR FIETTA: No. The arbitration agreement referred to the decision having binding effect.

THE CHAIRMAN: So the arbitration agreement is what we're using to call the "decision"?

MR FIETTA: No. The arbitration agreement referred to the

14:41 decision of the court of arbitration having binding effect.

THE CHAIRMAN: Okay.

MR FIETTA: And the question was: okay, what is the "decision" for that purpose: was it only the dispositif or was it also the underlying reasoning?

THE CHAIRMAN: Very good. Thank you.

MR FIETTA: The court held the latter.

In 1994 -- we can go to our next slide (9) and our next case. This is the Laguna del Desierto case (PLA-67, paragraph 70). This again confirmed -- a case between Argentina and Chile relating to a land boundary delimitation -- it confirmed, with reference to the UK-France decision that we've just looked at and other previous jurisprudence again, that the "logically necessary antecedents" of the operative parts of international judgments form part of their res judicata.

(Slide 10) Then to similar effect we have Case No. B61 at the Iran-US Claims Tribunal. And the words here actually, the later words in the extract here, echo, I think, the summary of you, Mr Chairman, on Day 3. Here the tribunal held that:

"In addition to the operative part (dispositif) of a decision, the reasons (motifs) provided in the decision also have res judicata effect to the extent

14:42 that those reasons are relevant to the actual decision on the question at issue."

And then a quotation from the Genocide case, where the court had said that:

"... it may be necessary to distinguish between, first, the issues which have been decided with the force of res judicata, or which are necessarily entailed in the decision of those issues; secondly, any peripheral or subsidiary matters, or obiter dicta; and [thirdly, any final] matters which have not been ruled upon at all ..."

And that trilogy of categories of findings in international judgments and awards was echoed in your summary on Day 3.

(Slide 11) Then finally, to similar effect we have the decision of the World Bank ICSID tribunal in RREEF v Kingdom of Spain, which made a general remark relating to res judicata. And it confirmed, that tribunal, in its 2018 decision on responsibility (RLA-106, paragraph 209), that paragraphs in the main body of its earlier decision on jurisdiction had formed part of the res judicata of that decision, even though they had not appeared in the operative part of that earlier decision on jurisdiction, and therefore they would not be reopened.

14:44 That's quite common, I think, in the context of merits phases, where a party may try to reopen issues decided in the reasoning of a decision on jurisdiction.

Importantly for the purposes of this jurisprudence, it is immaterial whether the reasoning formally forms part of an award or not. What is important is that the reasoning underpinning a decision can -- and indeed must -- be used in order to elucidate the meaning and scope of the dispositif part of that decision. Consequently, it forms part of the res judicata. Annexure G, paragraph 23 supports this by positively requiring any award to be accompanied by a statement of reasons.

Moreover, it's notable that both in the Kishenganga awards and in your own Award on Competence, the reasoning underpinning the dispositive paragraphs formed part of the text of the awards themselves. Thus, neither Court has understood paragraph 23 of Annexure G as requiring production of any separate or detached statement of reasons that might somehow have less legal consequence or weight than the reasoning of any other international judgment or award.

Nothing in paragraph 23 indicates that this was the intention of the parties when drafting the Treaty. On the contrary, paragraph 23 serves to confirm the mutual

14:45 intention that any dispositive findings should be underpinned by reasoning. This serves both to reinforce the juridical weight of the dispositive paragraphs and to confirm their material scope and effect.

(Slide 12) Now, between 2005 and 2009, the International Law Association undertook a study into res judicata and international arbitration. This was by its Committee on International Commercial Arbitration. And in its final report in 2009, the committee endorsed what it called an "extensive notion of res judicata", and it commented that it was "also followed in public international law", which the committee had looked at, including some of the jurisprudence we've been through today. And the committee said that under that extensive notion of res judicata:

"... res judicata not only is to be read from the dispositive part of an award, but also from its underlying reasoning."

And it continued by observing that "More restrictive notions of the scope of res judicata, limiting conclusive and progressive effects to the dispositive parts of awards" had not been followed in the committee's final recommendations, because the committee considered that they would be "overly formalistic and literal".

14:47 (Slide 13) The ILA committee proceeded to issue a series of recommendations relating to res judicata which were intended for the benefit of international arbitrators faced with res judicata issues. Those recommendations are based in part upon a review of the public international law jurisprudence, as is seen in the report. And they are informative in confirming the extent of a persuasive understanding in international adjudication that the conclusive and preclusive effects of arbitral awards extend beyond their formal dispositive parts, into "all reasoning necessary thereto", in the words of the recommendation there, and into:

"... issues of fact or law which have actually been arbitrated and determined ... provided any such determination was essential or fundamental to the dispositive part ..."

So, Mr Chairman, members of the Court, returning then to your question at paragraph 35(a) of PO No. 6, and your comment at page 146 of Day 3 that then the core issue becomes, in light of that: to what extent is the reasoning of a Court of Arbitration under the Treaty binding or otherwise controlling?

In its Memorial at paragraph 8.6.9, Pakistan stated that the res judicata of a Court of Arbitration decision

14:49 extends both to the operative part -- that is the dispositif, of course -- and to the "reasoning informing that operative part". That was the formulation we used, the "reasoning informing that operative part".

Now, we've seen in the jurisprudence today, in the ILA report, various similar formulations in the jurisprudence and commentary. In light of this jurisprudence and commentary, in particular the jurisprudence, the ILA committee was plainly correct, we say, in concluding that the res judicata doctrine of public international law "is to be read from the dispositive part of an award but also from its underlying reasoning".

In our submission, this answers your question about the extent to which the reasoning of a former Court of Arbitration decision, such as the partial and final awards in Kishenganga, are binding or otherwise controlling with respect to future disputes or differences.

And notably, in fact this Court -- on my next slide (14) -- this Court adopted such an approach in its Award on Competence last year, when it rejected India's argument that differences between the parties must be directed to a Neutral Expert under Article IX of the Treaty unless the parties mutually agree otherwise.

14:50 In rejecting that argument, the Court made reference to res judicata paragraphs contained in the main body, but not the dispositif, of the Kishenganga partial award, namely paragraphs 476 to 479. You noted that India had advanced the same argument, and the Court had rejected that argument, and the interpretation of Article IX in the Kishenganga award was final and binding on India.

So I now come to the third and final part of my presentation, and this considers: to what extent do the supporting paragraphs of the Kishenganga awards form part of their res judicata, and specifically which paragraphs?

Now, Pakistan does not purport to identify every single paragraph of the Kishenganga partial and final awards which has res judicata effect. This would be an extensive task, and would require more than the period of time allocated to me today.

Clearly, however, as the Iran-US Claims Tribunal observed in Case B61, the res judicata should not extend to "any peripheral or subsidiary matters, or obiter dicta" in those awards, or to paragraphs in which there was no ruling made at all.

But as shown on my final slides, which we'll come to now, a number of the paragraphs of the partial award,

14:52 for example, can clearly be identified as having res judicata effect because they provide important underlying reasoning for the Court's dispositifs.

(Slide 15) We can see here on the slide, these include, of course, paragraphs 476 and 479, which you cited to this effect in your own decision on competence. They include paragraph 410. And in each of these on the list, I've identified to which dispositive paragraphs these relate.

Paragraph 410, which underpinned a number of the dispositifs, that confirmed the unrestricted use and let-flow provisions, and the deliberate division of the Western and Eastern Rivers between the parties as a defining characteristic of the Treaty and part of its object and purpose.

Then we see paragraphs 433 to 436. And they engaged in a systemic interpretation of the words "then-existing Agricultural Use or hydro-electric use of Pakistan" in paragraph 15(iii) of Annexure D of the Treaty. They are clearly systemic interpretations.

The fourth example is paragraphs 448 to 452, which again were important reasoning to a number of dispositifs in confirming that principles of international environmental law must be taken into account when interpreting and applying the Treaty.

14:54 (Slide 16) And then three more examples. Paragraphs 464 to 468, which underpinned the decisions on drawdown flushing, et cetera, prohibiting the reduction of water level below dead storage.

And then 469 to 470 explained how those systemic findings around reduction of the water level below dead storage and drawdown flushing, how those findings were unaffected by the Neutral Expert's previous decision in Baglihar and did not change the res judicata effect of that determination only for the Baglihar HEP. Those paragraphs in particular are essential in informing the systemic interpretations at dispositifs B(1) and B(2). And without them, there would have been clearly confusion over how that decision would sit alongside Baglihar, for example.

Then finally by way of example, paragraphs 509, 517, 521 and 522. And the impact of those was confirmed explicitly in the later decision on interpretation. And they explain how the general prohibitions on reduction of the water level below dead storage and on drawdown flushing were based, first of all, on the availability of alternative methods of sediment control at appropriate locations for Indian HEPs on the Western Rivers; and secondly, that those findings were unaffected by arguments about best practices in HEP

14:56 design and operation.

All of these paragraphs, we say, set out critical rationale and reasoning for the dispositifs identified in these examples.

Now, a similar exercise could have been done, of course, in relation to the final award, but time doesn't allow for that today. But I think and I hope that these examples will be illustrative as to how the approach -- which is well settled as a matter of international law -- could be applied to the Kishenganga partial award, particularly to issues that are relevant in the dispute before you.

That actually concludes my submission, and Pakistan's substantive submissions in respect of paragraph 35(a) of PO6. So unless there are any further questions, I invite you to call on Sir Daniel or a break, as you decide.

THE CHAIRMAN: Mr Minear.

(2.57 pm)

Questions from THE COURT

MR MINEAR: Thank you, Mr Fietta. Let me describe a situation that might help me understand your position on res judicata.

Annexure E is not a part of the dispute that Pakistan has raised. We've raised questions about

14:57 Annexure E, however. Suppose that we've looked at Annexure E and decided that our construction of it informs our decision on Annexure D, which is a part of your dispute: would a future Court be bound by our construction of Annexure E in the course of our interpretation of D?
MR FIETTA: Well, you're right it's not part of the dispute that's been referred to you. I think the answer to your question may depend on how you frame the dispositive and how broadly, perhaps, you frame the dispositive, because it may or may not be possible to frame the dispositive findings in a way that does not require reference to any paragraphs in the reasoning around Annexure E, doesn't require those to be formed as part of the res judicata underpinning the dispositive paragraphs.
To the extent that any such paragraphs were essential rationale to your dispositive findings, they could form part of the res judicata. But I'm not certain, by any means, that they would need to.
MR MINEAR: Just to refine this a bit, suppose that we said that our construction of Annexure D is consistent with our understanding of Annexure E: would that give any res judicata effect to our conception of Annexure E?
MR FIETTA: I think the devil would be in the detail. I don't want to avoid the question. It really depends

14:59 though on whether that assessment of Annexure E was deemed to be essential rationale to your interpretation of Annexure D or rather some obiter dictum -- which it may well be viewed as in a number of domestic systems -- which is not essential to your ratio decidendi on interpretation that you've been asked to make of Annexure D.
Annexure E is not formally part of the dispute. So I think that's a good starting point, and would lead to an assumption perhaps that any discussion of Annexure E need not form part of the ratio decidendi and res judicata. It is only if you heavily relied on an interpretation of Annexure E in order to inform your interpretation of Annexure D that it might more clearly form part of your res judicata. And I think certainly our position is that you would not need to do that.
MR MINEAR: Thank you.
THE CHAIRMAN: Mr Fietta, your reference to the International Law Association's work was of interest. And it triggered off in my mind that last August, in Angers, l'Institut de Droit International completed work on a project that concerned the use of case law and precedent. And I'm just wondering in the course of your work whether you had occasion to take a look at what the Institut did in that project or not.

15:00 MR FIETTA: Not yet, no. It's something we can come back to if necessary. The Institut's work is always highly informative.
THE CHAIRMAN: No, it may not be necessary. As I recall that project, it was dominantly focused not so much on res judicata as on the use of prior case law by subsequent courts and tribunals, in the same way that you've been relying on ICJ jurisprudence and Iran-US Claims Tribunal jurisprudence and so on. So it may well be a completely different beast. I just wanted to see if you had already looked at it and set it aside, or whether it was something that might be worth a look.
A different question for you: we did have a question 7 on the Neutral Expert and precedential effects. I take it Sir Daniel will be taking that up in his presentation, rather than coming to you?
MR FIETTA: He will, yes.
THE CHAIRMAN: Okay. In that case, I think we are done with you, Mr Fietta, other than to say: thank you so much for the presentation.
MR FIETTA: Thank you.
THE CHAIRMAN: As always, very helpful.
So, Sir Daniel, we are a bit early to be taking a coffee break. So we could simply move on to you, unless you see any reason to take a break now.

15:02 SIR DANIEL: Mr Chairman, we are only a bit early, by ten minutes or so, because we started a little bit early. I think it would probably be sensible, as we're coming to the last submissions, if you're amenable to this, that we take a break now, even if it's a briefer break, and then come back for the final stretch.
THE CHAIRMAN: That's fine. Let's take the full half-hour if we think we will still be able to fit it in by the end of the day.
SIR DANIEL: We will.
THE CHAIRMAN: Let's return at 3.30.
SIR DANIEL: Thank you very much.
(3.02 pm)
(A short break)
(3.28 pm)
THE CHAIRMAN: Welcome back, everyone.
I think we are now ready for your closing submissions, Sir Daniel.
Second-Round Closing Statement
SIR DANIEL: Thank you very much, Mr Chairman, members of the Court. I have the sense that I'm going to be stepping into my biblical namesake now.
I'm going to be addressing you on four issues: first, question 8, the first part of question 9 and question 10 concerning Annexure E, that's where the

15:29 biblical namesake comes in; the second is questions 7(a) and 7(b), relating to the competence of the Neutral Expert; the third is, Mr Chairman, to address your five-step sequence for applying sources of law or practices; and then fourth, I will have some brief closing remarks.

Mr Chairman, members of the Court, I do propose to take you, in the course of my opening submissions on Annexure E, to the Treaty. We will put it on the screen, but if you would like to mark it up, it may be useful for you to have your hard copies available, or indeed marking up in electronic form.

Now I should add, we are obviously, as I mentioned in opening this morning, very mindful of the fact that you have a lot of interest in this. I think your questions on Annexure E probably started the proceedings last week -- I haven't been back to check -- but they have certainly closed the proceedings just before the break, Mr Minear, with your question to Mr Fietta. And that's the reason why we proposed the possibility of limited post-hearing submissions to address these issues.

I am going to endeavour to not take you systemically through Annexure E but make some framing remarks about the relationship between Annexure D and Annexure E.

15:30 I must say, just as a headline on this point, right from the outset, if you are minded -- and I certainly don't want to dissuade you from doing so, because it will be useful to focus our attention -- but if you are minded to take me into small aspects of the some of the definitions, for example, or the calculations, I will simply park those, so that we can come back to them later if you do give us the latitude to put in those submissions. This is simply a question of not wanting to speculate when we may not have done the research and the thinking.

So turning first to question 8, the first part of question 9 and question 10, all arising from Annexure E issues. And it's convenient to address question 10 and the first part of question 9 before turning to question 8, as they admit of rather easier answers.

By question 10, you asked what the basis was:

"... for Pakistan's belief that the Kishenganga HEP, as originally planned as a storage work, violated Annexure E? Does it relate to Annexure E, Paragraph 7?"

You will find elements of a response to this question at the following transcript references: Day 3, page 201, line 2 to page 202, line 1; and then Day 4, page 25, lines 11-17.

You will recall, Mr Chairman, members of the Court,

15:32 that Pakistan set out the origins of the Kishenganga dispute in Appendix A to its response on competence, that very detailed appendix which was tracing the origins of the dispute. And as explained in paragraph 1 of Appendix A, India first formally informed Pakistan of its plan to build a reservoir dam with a HEP on the Kishenganga site in June 1994, and that's at Exhibit P-47.

At that point, the project was designed as a storage work under Annexure E. And Pakistan objected to this initial proposal on several grounds. You will find Pakistan's objections captured, amongst others -- I think there are additional documents, but amongst others -- at Exhibit P-48, which is a September 1994 letter, and Exhibit P-49, which is an October 1997 letter.

The key elements of the objection were: first of all, the impermissible diversion of the river; in other words, the impermissibility of a storage work simultaneously incorporating a diversion work. This was not envisaged by Annexure E. There is no equivalent in Annexure E to Annexure D, paragraph 15, subparagraph (iii).

The second point of objection was the prejudicial effect on Pakistan's Neelum-Jhelum plant downstream,

15:33 which is contrary to paragraph 10 of Annexure E.

The third point of objection was the lack of complete information on the project that India had provided to Pakistan. This is contrary to paragraph 12 of Annexure E. Paragraph 12 of Annexure E corresponds to paragraph 9 of Annexure D, the provision of information six months before. So Pakistan's objection was that there was a lack of complete information.

Then Pakistan also objected that there was a breach of several of the design criteria in respect of storage works at paragraph 11 of Annexure E.

Pakistan's objections were discussed, inter alia, at the 92nd and 93rd meetings of the Permanent Indus Commission, and you will find those documents at Exhibit P-51 and Exhibit P-645; that was just admitted, by your direction, this morning. The minutes of the 93rd meeting, for example, set out in extensive detail the parties' discussions regarding each aspect of Pakistan's objection under paragraph 11 of Annexure E.

So in answer to your question, Pakistan's objection to the Kishenganga plant as a storage work did not relate to paragraph 7 of Annexure E.

In April 2006, India informed Pakistan that "due to local concerns over the extent of submergence and environmental issues", India had reconfigured the

15:35 Kishenganga project from a storage work to a run-of-river plant governed by Annexure D of the Treaty. And you will find that at Exhibit P-54.

With that, I'll turn to question 9, first sentence, in which you asked whether the existence of Annexure E has a bearing on the let-flow, non-interference, no-storage principle advanced by Pakistan. And you will find elements of a response to this question at the following transcript references: Day 3, page 205, line 15 to page 206, line 22; Day 3, page 207, line 11 to page 208, line 2; Day 4, page 99, line 15 to page 100, line 17; and Day 5, page 23, line 2 to page 25, line 11.

Now the short answer to your question is that Annexure E evidently has a bearing on India's let-flow, non-interference, no-storage obligation. And I'm choosing the words quite carefully, "has a bearing on" those obligations. But we reserve our position on a more precise formulation of the nature and extent of the interaction for any post-hearing submissions that you may direct.

And the reason for reserving our position beyond the language of "has a bearing on" is that unlike, for example, Annexure D, Annexure E is not referenced in Article III, paragraph (2), and it's obviously not

15:36 referenced in Article III, paragraph (1). So we would like to explore a little bit more closely whether there is, as it were, any distinction to be drawn between the unrestricted rights addressed in Article III, paragraph (1) and paragraph (2), subject to the exceptions and the no-storage obligation.

I think that that's probably splitting hairs a little bit, because it's quite clear that, alongside Annexure D, Annexure E is an express exception to the prohibition on India storing water and constructing storage works on the Western Rivers, which is affirmatively set out in Article III, paragraph (4).

I note though that this is subject to very tight constraints in Annexure E, and we'll come to some of those. And I note also that some of the provisions of Annexure E reflect similar principles to those laid down in Annexure D; but others are bespoke, given the special character of storage works.

Mr Chairman, members of the Court, I add here for completeness -- because of course there are other aspects of the Treaty that we haven't looked at over the course of the last seven days -- I add for completeness that, like Annexure D, Annexure C establishes an express exception to Pakistan's right of unrestricted use for purposes of agricultural use by India of the

15:38 Western Rivers.

I don't need to take you to that. But at some point, particularly if you are interested -- as I detect you are -- in the holistic interpretation of the Treaty, you will wish to have a look at Annexure C as well, in particular because there are cross-references between Annexure C and Annexure E. As we will come on to in just a moment, there are circumstances in which the water impounded in a storage work can be used for agricultural purposes. That's not the case with regards to pondage for a run-of-river HEP.

And Annexure C, just to run through a number of provisions for the transcript which you may want to pick up later, it sets limits on maximum withdrawals of water for purposes of agricultural use: that's at paragraph 3. It prescribes restricted periods in which there may be withdrawals from the rivers: that's at paragraph 6. It addresses the use of water stored in storage works for agricultural purposes: amongst other provisions, that's paragraphs 6 and 7.

And there are important interactions on this between Annexure C and Annexure E. And as one looks across, for example, Annexures C, D and E, you will see that wherever there is an entitlement based on an exception for India, that entitlement is very tightly defined, in

15:40 a very extensive fashion.

So then turning to question 8, where you asked what the relationship is between Annexure D and Annexure E to the Treaty, recognising that Annexure E includes storage for use of generating power. And you went on to ask:

"What sort of power storage work is permitted in this regard?"

And you will find elements of a response to this question at the following transcript references: Day 3, page 192, line 1 to page 193, line 19; Day 3, page 205, line 15 to page 206, line 8; Day 3, page 207, line 11 to page 208, line 2; Day 3 page 220, lines 7-25; and Day 4, page 25, lines 3-10.

In the event that you do accept our proposal for a post-hearing submission, we will address in a more considered manner, in writing, the interaction, the relationship between Annexure D and Annexure E for your purposes, for interpretative purposes. But let me start off with some preliminary observations at this point.

If we could have the Treaty on the screen, please. So if we could have the screen on. Thank you.

The starting point is the relationship between the two annexures, what each addresses; that they largely address different things, although there are some elements that overlap.

So if we start off with the difference in focus, Annexure D, paragraph 1: a provision that you know very well, but we won't have focused on this for these purposes. You will see in the second part of paragraph 1, it says:

"Provided that the design, construction and operation of new hydro-electric plants which are incorporated in a Storage Work (as defined in Annexure E) shall be governed by the relevant provisions of Annexure E."

So we have, right from the outset of paragraph 1, Annexure D, really a carve-out for design, construction and operation of hydroelectric plants that are incorporated in a storage work. They are not addressed in Annexure D.

Mr Minear, it may be, at least I hope it will be the case that, as I come to the end of my submissions, there may be some further clarity in the response that Stephen Fietta gave to your question about what happens if the Court were inclined to draw on Annexure E for purposes of its Annexure D interpretation. And I think Mr Fietta said that may not be necessary, and I'll come on to address some of that quite specifically.

If we could then jump to Annexure E, paragraph 2(a)(iii), and you will see there

a corresponding provision.

I will start off with paragraph 1, just for completeness:

"The provisions of this Annexure shall apply with respect to the storage of water on the Western Rivers, and to the construction and operation of Storage Works thereon, by India under the provisions of Article III (4)."

And then paragraph 2:

"As used in this Annexure:

(a) 'Storage Work' means a work constructed for purposes of impounding the waters of a stream; but excludes ...

(iii) a new work constructed in accordance with the provisions of Annexure D."

So we have between paragraph 1 of Annexure D and paragraph 2(a)(iii) of Annexure E, if you like, a bifurcation, a parting of the waters. One deals with run-of-river HEPs; the other one deals with storage works.

As you will be very well aware, the two annexures have bespoke definitions for the most part. There is some crossover on a number of points, and I'll come on to identify those. But for the most part, they are bespoke definitions, even if there is a lot of

similarity -- apparent similarity -- between them.

So then considering some areas of overlap between Annexures D and E.

First of all -- and I don't need to take you to this, but perhaps we may come back to it -- Annexure E adopts the Annexure D definition of "Pondage". And you will find that at Annexure E, paragraphs 21(a) -- the same definition, there's a cross-reference to the definition of "Pondage" in Annexure D.

Second, Annexure E proceeds on the basis of a similar structural framework. There are mandatory design criteria, there are provisions of information requirements, there are mandatory operational criteria as regards a power plant incorporated into a storage work. So the Annexure E structural framework is a very similar in many respects to the Annexure D structural framework.

Elements of overlap, but I put it in terms of "overlap" because it's not the same: storage works can have "a power plant" attached. Annexure E is quite careful not to talk about "a run-of-river plant". The language that's used is "a power plant" -- lower case PP -- attached. And that appreciation comes, of course, from paragraph 1 of Annexure D, which expressly talks about a hydroelectric plant attached to a storage work.

It also comes, inter alia, from -- or can be deduced/implied from -- the definitions of Annexure E, and you will find it referenced in a number of provisions. For example, paragraph 11(g) of Annexure E talks about:

"If a power plant is incorporated in the Storage Work ..."

And then you've got paragraph 21 of Annexure E, which also talks about a power plant that's incorporated in a storage work:

"If a hydro-electric power plant is incorporated in a Storage Work ..."

That's Annexure E, paragraph 21.

The filling of dead storage is addressed in Annexure E at paragraphs 18 and 19. And indeed Annexure D on this occasion cross-refers to Annexure E, paragraphs 18 and 19. Annexure D does this in paragraph 14. So there is that cross-reference.

Then there is a prohibition in both annexures on the depletion of dead storage. You've got this in Annexure D, paragraph 8(d), and Annexure E, paragraph 19.

So the first tranche of provisions that I took you to were addressing a different focus. The ones I've just taken you to address elements of overlap.

15:48 There is also a commonality of purpose, but a commonality of purpose that is driven by a difference in approach. Both operationalise the parameters of the exception to India's no-storage obligation. Both Annexure D and Annexure E operationalise the parameters of those exceptions, but subject to very tight constraints. And both impose significant design and operational constraints. So that's the commonality of purpose.

But then we come to the differences in approach between the two annexures.

So with regard to Annexure D, it does not contain a limit on the number of run-of-river HEPs. It does not prescribe the location of run-of-river HEPs. It does not describe the aggregate pondage. It describes the calculation of the maximum allowable pondage for an individual plant, but it does not address aggregate pondage or the aggregate storage of work. It does not address, in the way that Annexure E does, the refilling of the reservoir. There are very tight provisions relating to the refilling of the reservoir of an Annexure E storage work. And it does not address timing of use. Once you've got your pondage pool under Annexure D for a run-of-river HEP, the operator can use that pondage pool -- within the operational constraints

15:50 of paragraph 15, but can utilise that pondage pool as he or she sees fit. We'll see in just a moment this is different with regards to Annexure D.

Annexure D, though, does contain limits on the use of pondage, and paragraph 2(c) of Annexure D establishes a limit on the use of pondage for purposes of power generation. That's the language that's used in paragraph 2(c). It doesn't incorporate or address agricultural uses.

When, though, we turn to Annexure E, Annexure E is less limited than Annexure D when it comes to use. A storage work can be either a single-purpose or a multipurpose storage works. It can be for agricultural use: that's the linkage to Annexure C, which addresses agricultural use. It can also be used for purposes of power generation. And of course, as we know, and have heard from Dr Morris, it impounds a considerable volume of water which can be used, released downstream into a cascade for other purposes.

But then Annexure E does impose strict limitations -- in some cases, very strict and very specific limitations -- on location, on total aggregate storage, on the filling of the reservoir and on timing and use.

It's evident, we say, from this -- indeed,

15:52 manifestly evident from this -- that Annexure D contemplates, in practice, small HEPs, usually located downstream, to suit the topography, that are to be used for the limited purpose of power generation. Whereas Annexure E contemplates large works, usually located upstream, that are suitable for regulating flows of water into a downstream cascade for wider use. It's not set out in these terms, but that's the nature of the constraints of the limitations that are found in both of the provisions.

So Annexures D and E impose different forms of constraint on India. And it may be useful -- perhaps not so much for purposes of exploring the small detail with you but just identifying the provisions where some of these Annexure E constraints are located -- for me to run through some of them with you. As I say, I may be in a position to respond to any questions that you may have; I may not. And if I have any doubt, I'm going to defer them, if I may.

So let's start off with location. And if I can take you to paragraph 7(iv), which is on the screen. You will see there, for example, that it says:

"Storage works to provide the Power Storage Capacity on the Chenab Main specified against item (e) above shall not be constructed at a point below Naunut

15:54 (Latitude ... Longitude ...)."

So there we have a very specific location constraint. And just for reference, I don't need to take you to this, but if you go back to the definitional section in the Treaty at Article I, paragraph (4), you will see the definitions of what is meant by "Main" in contrast to a "Tributary". And we know that when we go up to the table that you asked a number of questions about, you will see that it breaks out "The Jhelum (excluding the Jhelum Main)", then "The Jhelum Main", then "The Chenab (excluding the Chenab Main)", and "The Chenab Main". So there are some specific locational provisions.

We then look at aggregate storage. And I'm less here concerned, Mr Chairman, with the question that you put earlier -- I think it was you, Mr Chairman -- about the overall volume of water that's impounded, when you were doing your calculations to million acre-feet, but more concerned just to look at the aggregate storage. And this is against the contrast of Annexure D not specifying, on an aggregate basis, how much water can be impounded in the operating pool by way of pondage of the run-of-river HEPs; whereas here, as regards the storage works, there is an aggregate storage limit, and you see that very clearly stated in paragraph 7.

15:55 I note for completeness -- but this is not a point, I say candidly, on which I am in a position to assist you in terms of all of its full detail -- but you will see, for example, that pondage is excluded from this aggregate storage capacity. Because, if you have a look at paragraph 8(3), you will see there that it says:

"The figures specified in Paragraph 7 above shall be exclusive of the following: ..."

And then subparagraph (e):

"The volume of Pondage for hydro-electric plants under Annexure D and under Paragraph 21(a)."

And if you would like just to jump forward to paragraph 21(a) -- but I don't propose to address this just at the moment -- you will see that paragraph 21 addresses:

"If a hydro-electric ... plant is incorporated in a Storage Work ... the plant shall be so operated that: ..."

And then subparagraph (a):

"... the maximum Pondage (as defined in Annexure D) ..."

That's the cross-reference to Annexure D:

"... shall not exceed the Pondage required for firm power ..."

I'll come back to that provision a little bit later,

15:57 but just in the context of aggregate storage, I wanted to reference it.

If we go back to paragraph 7, I note also for completeness that in that table that you've seen so many times before, that, for example, when it comes to storage capacity, general storage capacity and power storage capacity for the Jhelum Main, there is no entitlement, save as provided in paragraph 9.

Paragraph 9 is concerned with flood control, but it is also subject to limitation. And again, I don't propose to take you to the detail of paragraph 9, but paragraph 9 is in the same spirit of tight control. So where India is entitled to construct works for purposes of flood control, that then again is subject to limitation.

I note also, while we are at paragraph 9, that Annexure E specifically addresses downstream effects. So if you have a look at paragraph 10 of Annexure E, it says:

"Notwithstanding the provisions of Paragraph 7 [above] ..."

That's the aggregate storage:

"... any Storage Work to be constructed on a Tributary of The Jhelum on which Pakistan has any Agricultural Use or hydro-electric use shall be so

15:58 designed and operated as not to adversely affect the then existing Agricultural Use or hydro-electric use on that Tributary."

So once again, you have in paragraph 10 a balance that is struck. There are a very extensive number of mini-bargains. We've taken you to the three main bargains for purposes of these proceedings: the peace bargain, the Treaty bargain and the hydro bargain. But in all of these things, there are sub-bargains.

So while India is entitled to construct storage works when we come to the tributary of the Jhelum Main, paragraph 10 of Annexure E then establishes design and operation restrictions.

We then have, in paragraph 11 -- and I'm not going to take you to any specific ones, but just to identify the scheme here -- we have what in structural terms is similar to paragraph 8 of Annexure D, because this is the mandatory design criteria:

"The design of any Storage Work ... shall conform to the following criteria: ..."

And there are then seven subparagraphs. And you are obviously very familiar with this because you've asked specific questions, most recently to Professor Webb, about subparagraph (e) and "Outlets [and] other works of sufficient capacity".

16:00 And I venture to speculate that it may be the paragraph 11 provisions that you may be most interested in for purposes of your contextual interpretation of paragraph 8. You may want to know whether there is anything in paragraph 11 that informs the interpretation of paragraph 8 in Annexure D.

You've heard what my co-counsel have had to say so far; I'm not in a position to shed any further light on that. But that would be a matter that we would come back to in a post-hearing submission to see whether there are any tighter points that might be made.

Mr Chairman, members of the Court, I'd then like to take you to paragraph 18, if I may, because this is also a matter of some importance when it comes to storage works:

"The annual filling of Conservation Storage ..."

The "Conservation Storage" being the significant volume of impounded water:

"... and the initial filling below the Dead Storage Level, at any site, shall be carried out at such times and in accordance with such rules as may be agreed upon between the Commissioners. In case the Commissioners are unable to reach agreement, India may carry out the filling as follows: ..."

And then we have three subparagraphs, and they are

16:01 rather interesting and rather restrictive:
"(a) if the site is on The Indus, between 1st July and 20th August ..."
So you've got seven weeks in which you can fill.
"(b) if the site is on The Jhelum, between 21st June and 20th August ..."
So slightly longer: two months, eight or nine weeks.
"(c) if the site is on The Chenab, between 21st June and 31st August ..."
Slightly longer.
"... at such rate as not to reduce, on account of this filling, the flow in the Chenab Main above Merala to less than 55,000 cusecs."
So once again, you have very, very tight -- not just constraints in terms of the aggregate volume, but constraints in terms of when those dams can be filled.
This is consistent, we say, with the balance, with the bargain. It's also consistent, we say -- perhaps here more explicitly than in the case of run-of-river HEPs -- with the issue of downstream effects, because the filling of a large storage dam is obviously going to have potentially very significant downstream effects, and it is here confined to periods in the height of the wet season.
We then come to paragraph 21 of Annexure E, which is

16:03 the power plant operation. And I imagine that this may also be a series of provisions that may be important for your interpretative purposes or just for peace of mind. And we would address this in any post-hearing submissions, if you are minded to so direct.
If you have a look, for example, at paragraph 21(b), you will see an element of the let-flow obligation:
"... the plant shall be so operated that: ..."
And then:
"(b) except during the period in which a filling is being carried out in accordance with the provisions of Paragraph 18 or 19, the volume of water delivered into the river below the work during any period of seven consecutive days ..."
Once again, we've got the focus on days, just to underline that.
"... shall not be less than the volume of water received in the river upstream in the work in that seven-day period."
So here we have a let-flow obligation again, when it comes to the operation of these plants, where a hydroelectric power plant is part of that operation. So it has parallels with Annexure D, but it's different.
Then I note, just for completion, paragraph 23, which is a rather bespoke and unique provision for

16:04 storage dams, dealing with sedimentation:
"When the Live Storage Capacity of a Storage Work is reduced by sedimentation, India may, in accordance with the relevant provisions of this Annexure, construct new Storage Works or modify existing Storage Works so as to make up the storage capacity lost by sedimentation."
Once again, I'm not in a position, I think, to help you with the small detail of that, but it is something that we can come back to.
Mr Chairman, members of the Court, this brings me back to your question, question 8:
"What is the relationship between Annexure D and Annexure E to the Treaty, recognizing that Annexure E includes storage for use in generating power? What sort of power storage work is permitted in this regard?"
And let me address the second part of the question first:
"What sort of power storage work is permitted in this regard?"
My observations here come back to the point that I've just been making, and that is that Annexure D at paragraph 1 and Annexure E, at paragraph 2(a)(iii), make it absolutely clear that run-of-river HEPs are addressed in and governed by Annexure D only. They are not addressed in and they are not governed by Annexure E.

16:06 So whatever the overlap in purpose and scheme, and sometimes in their terms, Annexure E does not address run-of-river HEPs. Annexure E does contemplate the possibility of the incorporation of what is termed a "power plant", as part of a storage work, but this is not a run-of-river HEP as is defined, expressly defined, in Annexure D.
We say that this is highly material, both conceptually and for your deliberative and adjudicatory task.
It is conceptually highly material because it reinforces the character of Annexure D.3 plants, that they are run-of-river plants. This is a definition that you find in Annexure D, paragraph 2(g): that's where the definition is found. And it follows from this differentiation that the power plants addressed in Annexure E are not akin, formally speaking, to run-of-river HEPs in terms of their intended function and in other important respects.
We accept, of course -- we must do, on the face of the Treaty -- that you can have a power plant that's incorporated into a storage plant. But they are otherwise different.
And we say that this is highly material to your deliberative and adjudicatory task, as it would be --

16:08 and, Mr Minear, this comes to your question, I think -- or perhaps not to your question to Mr Fietta but to an underlying consideration that informed your question -- we think that it is highly material for your task, as we consider that it would be neither artificial, frankly, nor terribly difficult for the Court to ringfence your analysis and interpretation of the Annexure D criteria and other relevant associated provisions from any necessary and inevitable Annexure E effects.

In this regard, the approach of the Kishenganga Court may be a useful guide. Because the Kishenganga Court, in its partial award, addressed elements of Annexure E with a relatively broad brush for purposes of wrapping up a contextual interpretation of the Treaty, but that Court was seemingly not driven to undertake or reflect a detailed analysis of Annexure E for purposes of its analysis.

Mr Chairman, members of the Court, perhaps I'll just take you briefly to two of the paragraphs of the Kishenganga partial award. You will obviously be able to look at this yourselves in slower time. But just to underline this point about the way in which the Kishenganga Court addressed this.

The two paragraphs that I draw to your attention now

16:09 are paragraphs 504 and 506 of the Kishenganga partial award (PLA-3). As you go through the Kishenganga partial award, you will, of course, see many, many, many more references to Annexure E, but that's usually where the Court is describing the arguments of the parties. Because Kishenganga began its life, in India's conception, as an Annexure E storage work, there's quite a lot of discussion about those early origins.

I don't propose to read the whole of paragraph 504, which is quite a lengthy paragraph, but let me just read the first part of it. The Kishenganga Court says:

"First, one of the primary objectives of the Treaty is to limit the storage of water by India on the Western Rivers (and, correspondingly, to prohibit entirely the storage of water by Pakistan on the upper reaches of the Eastern Rivers)."

And then it goes on to say -- this is the relevant part:

"Annexure E to the Treaty strictly limits the volume of General Storage, Power Storage, and Flood Storage that India may develop on each of the Western Rivers."

It then goes on to say:

"For new Run-of-River Plants, Annexure D likewise restricts the permissible volume of pondage ..."

So the Court there drew the equation between the

16:11 purpose of Annexure E and Annexure D in terms of the restriction of the volume of water, but it made clear that the way in which this was done was rather different.

You will see in that paragraph the rather important footnote that I think my colleagues have drawn to your attention in their submissions. It's footnote 712 of the Kishenganga partial award, which records a file note from Mr Iliff of 19 April 1960, which talks about the negotiating process.

I then just cite very briefly paragraph 506 of the Kishenganga partial award. And again, I won't read the whole paragraph, but just the opening parts of it. The Court says:

"Second, the Court notes that in many instances the Treaty does not simply restrict the Parties from taking certain actions, but also constrains their entitlement to construct works that would enable such actions to be taken."

If I may, Mr Chairman, members of the Court, this brings me back to a point I made -- I forget when, but perhaps on Friday -- about the importance of capturing the restrictions on India at the design phase, not at the operation phase. Because once the plant is set in concrete, and India has the latitude to deploy it

16:12 perhaps away from the watching gaze of Pakistan, other than from downstream effects, it then becomes much more difficult to enforce.

So just to go back to what the Court in Kishenganga said:

"... the Court notes that in many instances the Treaty does not simply restrict the Parties from taking certain actions, but also constrains their entitlement to construct works that would enable such actions to be taken."

It then goes on:

"Thus, India is not only restricted in storing water on the Western Rivers; it is also prohibited from constructing Storage Works except within the limited capacity permitted by the Treaty."

And then it goes on to say:

"Annexure D in turn sets out the permissible operation of a Run-of-River Plant ..."

So the way in which the Kishenganga Court chose to deal with, no doubt, the issues that were before them, in exactly the way in which you are grappling with them, is to demonstrate the contrast between the way in which Annexure E and Annexure D goes about dealing with the constraints that are imposed.

There is a footnote (714) as well to that

paragraph 506 that reads as follows:

"Paragraph 11 of Annexure E includes similar physical restrictions on the design of any Storage Works that India may construct on the Western Rivers. As a matter of general approach, the Treaty appears to routinely reinforce operational limits on the conduct of the Parties with physical restrictions on the development of infrastructure."

Again, a point that I've made before, all these constraints and restraints have to be addressed at the design stage, not simply at the operational stage.

Now Mr Chairman, members of the Court, there is a further and narrower response to be given to your question of what kind of storage works are permitted in this regard. And the further and narrower response -- and not in any way inconsistent with what I've just said -- is that the kinds of power plants that are permitted to be incorporated in a storage work are, first of all, any power plant that was incorporated in a storage work and which was "in operation on the Effective Date" -- so this is a grandfather clause; that's at paragraph 3 of Annexure E -- and then in the case of power plants incorporated in a new storage work, those which fall within the aggregate storage capacity set out in paragraph 7 of Annexure E, and which comply

with the detailed design and operational requirements set out in paragraphs 10, 11, 18, 19, 21 and 24.

So I then turn to the first part of your question 8. This asks about the relationship between Annexure D and Annexure E to the Treaty for your task, for interpretative purposes. And the key elements of our response are as follows.

Both of them are part of the Treaty bargain. Both address an exception to India's no-storage obligation in Article III(4). Both impose tight constraints on India, although in different ways. Both types of plant may be used to generate hydroelectric power. Both annexures set out design and operation constraints. There are some points of overlap in the use of terms, but this is quite restricted. But they address two different types of plant.

The constraints are formulated differently. Pondage is defined in the same way -- by reference to the definition of "Pondage" in Annexure D, paragraph 8(c) -- but it is calculated differently. In Annexure D, it is calculated by reference to paragraph 8(c) and "Firm Power" in paragraph 2(i). That's "Firm Power" with a capital F, capital P. But in Annexure E, the calculation of pondage is addressed in paragraph 21(a), and it's described by reference to "firm power",

lower-case F, lower-case P. That's a point that I think we've discussed and which you have already, which is the normal use of "firm power".

Now I add one point just as a holding point, because, candidly, we're not -- or at least I'm not -- entirely clear on this. It's not entirely clear to us at this point whether "Pondage" as it's used in Annexure E corresponds to "Power Storage", which is defined in Annexure E, at subparagraph 2(h). But that's a point that we will explore further and come back to you insofar as that is relevant.

So I then come to the relevance of Annexure E for your interpretative task.

We say -- and this will follow very closely from what Professor Webb addressed you on, I think it was last Tuesday -- we say that Annexure E is relevant for the interpretative exercise because it forms part of the wider context of the Treaty. So as you're reading Annexure D, you have to go on and you have to read Annexure E as well.

It's also relevant because it informs the object and purpose of the Treaty. The tight constraints in Annexure E are going to inform your appreciation of the object and purpose of the Treaty.

So we say that an appreciation of Annexure E is

going to be relevant to your understanding of the Treaty bargain. But beyond this, we do not consider that Annexure E informs the detailed construction of the Annexure D design criteria.

So, Mr Minear, if I can come back again to your question to Mr Fietta. You may very well feel in your award in due course that you want to make reference to Annexure E. Our view is it's not going to be terribly difficult, nor terribly artificial, were the Court to say, either in terms of, "We are informed by, but Annexure D and E are separate, and therefore the Annexure E interpretation is not controlling"; or simply to adopt the kind of approach that the Court in Kishenganga did, which was to reference Annexure E for purposes of showing what the object and purpose was, the broad approach, which are consistent between the two, but actually not drawing any firm conclusions from Annexure E for purposes of your Annexure D interpretation.

I should say that we have all collectively, over the course of the last week, wondered whether we missed a trick somewhere in our 600 pages of pleadings in not having another 600 pages dealing with the interpretation of Annexure E. And I think the conclusion that we came to, particularly when we went back to the Kishenganga

award, was that, no, we didn't.

This is not to say that your questions are somehow misplaced. I don't for a moment believe that they are, because your adjudicatory task, particularly in a systemic context, is going to be to look at Treaty as a whole -- the context, the object and purpose, whether there is cross-referencing in the words. But we do not consider that Annexure D informs the detailed construction of the Annexure E design criteria. But it may very well be relevant and important and helpful to you in a contextual analysis or in an object and purpose analysis.

I just make two other points before I move on to another topic and pause to see whether you have any questions. And that is that Pakistan is aware of only one storage work currently in operation or under construction on the Western Rivers that incorporates or would incorporate a power plant, and that is Pakal Dul, which you've heard quite a lot about, in particular from Dr Morris. And details of Pakal Dul are set out at page 15 of Appendix C1 to Pakistan's Memorial.

I add, though, a further thought, and I do so simply because it joins up some of the dots on the discussion that we were having yesterday on information-sharing, that Pakistan is aware, but only from public reporting,

of two further planned storage works incorporating a power plant. And that is Bursar I and II and Gypsa I and II, of which Pakistan first became aware because, I think, they were reported in the press. I believe that there has been some subsequent correspondence on these issues in the context of the Commission, but that we do not have further information.

Pakistan has set out at a very high level the information that Pakistan has on these works in Appendix C1 to its Memorial at pages 17 and 18. But we note that India has not notified its "plan[] to construct" -- the language of Article VII, paragraph (2) -- its "plan[] to construct" these storage works in respect of these two projects.

Mr Chairman, members of the Court, I'm about to be move to another topic, which is the issues relating to competence of a Neutral Expert. But if you have any questions, I'd be happy to field them and to park them, as may be.

THE CHAIRMAN: Professor Buytaert.

PROFESSOR BUYTAERT: Sir Daniel, thank you very much.

I had a question, on which I actually think I know what your answer might be, based on what you just explained, but I think I'll ask it nevertheless.

If one is to decide that the impounded volume of

Kishenganga as a plant exceeds the limits, the pondage prescribed by Annexure D, would that automatically bring the plant into the realm of Annexure E, or might there be a scenario in which it neither falls under D nor under E?

SIR DANIEL: I think we would say that it would have to be pulled down because it wouldn't fall under E. We don't think that it complies to the design and construction and operation criteria of Annexure E.

If you would like, we can come back to that with chapter and verse. You will recall the bases of objection that I identified that Pakistan raised in the 1990s, when this was first floated as an Annexure E plant, and they were not related to the aggregate volume of water but they were relating to a range of other things.

So we would say that it would be inconsistent with the Treaty.

PROFESSOR BUYTAERT: Thank you.

THE CHAIRMAN: Sir Daniel, I think you made this point, but I'd just like to hear you perhaps reaffirm it in a little bit more depth. You were talking about the significance of location with respect to the constraints of Annexure E, and you took us to different provisions, including paragraph 7.

As one looks at those location provisions, arguably they are pushing you in the direction of storage plants being upstream. The paragraph 7 table, for example, says that on the Jhelum Main, there will be no general storage capacity or power storage capacity; by contrast, on the Jhelum excluding the Main, there would be such capacity.

So just looking at some of those provisions -- and you also took us, I think, to perhaps ...

SIR DANIEL: Subparagraph (iv).

THE CHAIRMAN: Yes, subparagraph (iv) of paragraph 7.

Arguably it's pushing you in that direction of upstream storage works. Is that correct?

SIR DANIEL: That's exactly correct. And I hope I wasn't swallowing my words when I made the point. But that's, I think, exactly the purpose: that these dams, which would impound more water than you would otherwise get in pondage, would be upstream, and they would then be used -- as they can be used, if it's a multipurpose dam -- for agricultural purposes as well, but for the release of water downstream, often into a cascade of HEPs.

THE CHAIRMAN: And you didn't address this, but it seems to me a possible further consequence of that analysis would be that if the Annexure D HEPs are downstream, with

16:27 a relatively limited pondage of the type that Pakistan is advocating for, that in some respects it doesn't quite matter how much storage is upstream in terms of the possibility of so-called "weaponisation", in the sense that if you're going to try to do this in a cascading effect, you must be able to pass that very large upstream storage through a downstream dam, and that that might be difficult if the dam is designed in accordance with Annexure D, in not allowing certain things such as low-level outlets.

Would that be correct?

SIR DANIEL: Absolutely. I think this is a point that Dr Morris has made on more than one occasion. If you've got downstream HEPs in a cascade which have low-level outlets, and those low-level outlets are of a maximum size rather than a minimum size, so that they can pass the water, then it makes it much more challenging.

And if memory serves me, when you put a question to Dr Morris about this -- if you like, what's the pecking order of the concerns -- his response was, if I recall: first, floods; second, drought; third, sediment. So there is that kind of concern.

And that's one of the reasons -- it's certainly not the only reason, but that's certainly one of the reasons why Pakistan considers that it needs to stand on its

16:28 rights about the location, the "plus more" of outlets, and about their size.

THE CHAIRMAN: Right. I think what I was pondering was flipping it around a bit. Assuming that the Annexure D downstream dams are Treaty-compliant, arguably it matters less how extensive the storage is upstream, because of an inability to pass the water through the lower-stream dams; and therefore, whatever the magnitude might be of storage upstream is of less significance?

SIR DANIEL: I think that that's correct. And that may go to your quiet calculation of million acre-feet and the quantum, the volume, of water that you were talking about. There is an aggregate storage limitation. But if that aggregate storage limitation, as it were, has to stay in the dam, or has to be managed responsibly because of the proper construction of the downstream dams, that obviously ameliorates Pakistan's concerns.

THE CHAIRMAN: Connecting that observation to the actual calculations one might make, when I looked at your Memorial at paragraphs 5.1.3 through to 5.2.2, I think, you tried to assess the gross storage capacity of the Indian potential HEPs, the 200-some Annexure D Indian HEPs. And you, I think, came to a conclusion that, on my conversion to cubic metres, that there would be about 3.72 billion cubic metres if India built all of its

16:30 potential dams in the way that you think they might be doing it. When you add up the general storage and power storage of the Annexure E works, you come to a total storage capacity of something in the order of 3.5 billion cubic metres.

So these calculations could be rechecked, but it seems as though the concern about the total storage capacity of the Annexure D HEPs is of a magnitude of the permitted storage of water for Annexure E works. And so part of what I think I was trying to assess is: to the extent that Pakistan has allowed that volume of storage in Annexure E, how do we think about that in relation to the concern of what looks to be a comparable storage in Annexure D?

But part of the answer to that might be: to the extent that the Annexure E works are upstream of Annexure D works and that you can't actually pass that water through, then perhaps that, in part, explains why there is a concern about the active storage in the Annexure D works, with somewhat less concern about -- I won't say "less concern"; there's obviously concern that Annexure E be followed. But even if it was followed within its terms, the magnitude of storage in Annexure E should be thought about in those terms.

SIR DANIEL: Mr Chairman, that's probably correct, and

16:32 we'll reflect further on whether that captures our thinking about it as well. But from what you say, and as I think about it here on my feet, that's probably correct. But I'd make a number of observations.

The first observation is that India is getting an enormous amount of water from the Western Rivers, including the Eastern Rivers, when it's impounding that volume of water in the storage works.

Second, you've heard from us quite a lot, I think in particular from Dr Morris, our concern that if the methodology of Professor Lafitte somehow takes root, we will then find that run-of-river HEPs are impounding more water in their pondage pools than storage dams may be impounding behind their works. And it may be that you then have to redo the calculation that you've done; I'm not entirely sure.

But certainly -- and this comes to our point about pondage -- and I know, Mr Minear, I think you were addressing this question to Dr Miles, and I appreciate that it was, if you like, a kind of throw-away observation and you covered it very quickly by saying that Pakistan is making its case -- but I think the words that you used were something along the lines of you consider that Pakistan is making a very stringent case in terms of the volume of pondage that India is

16:34 permitted to have. And if memory serves me, Dr Miles said, well, that's what's agreed in the Treaty, and we think that obviously our interpretation is Treaty-compliant.

But when I then come back to the calculation of pondage, if you are with us that pondage is to be calculated in respect of run-of-river HEPs in a restrictive way, precisely because India has lots of other avenues to impound water -- in its storage dams; it can build run-of-river dams wherever it wishes to, as long as they are Treaty-compliant -- India has quite a latitude in respect of the waters of the Western Rivers. We have no latitude whatsoever in respect of the waters of the Eastern Rivers.

And we do urge you that when you come to look at the hydro bargain, that you do keep very much in the forefront of your minds the Treaty bargain and the peace bargain. Because you may very well feel, absent the Treaty bargain and the peace bargain, that you would like to tinker a little bit here and there with the hydro bargain to give India just a little bit more pondage, because they deserve a little bit more pondage to run their run-of-river HEPs. But frankly, that will tear asunder the Treaty bargain. So we really do urge you to keep the Treaty bargain absolutely at the

16:36 forefront of your minds as well.

Dr Blackmore.

THE CHAIRMAN: Dr Blackmore.

DR BLACKMORE: Just an observation first and then a question.

So the observation was that with the storage dams, we're worried about releasing water once we've stored it. But the converse is true too, and that is that once you've emptied them in the dry season, they do provide a fair bucket of opportunity to store water and extend the period of low flow or no flow passing down those rivers. So both sides of that equation.

SIR DANIEL: Dr Blackmore, perhaps I could just sort of intercede there, because that's obviously a hugely important point. And that will depend on India's compliance with its Treaty obligations, because filling of those storage dams is limited, under the Treaty, to those summer months.

Apologies for interrupting you.

DR BLACKMORE: No, no, that's okay.

That's the question I was coming to, which was, under clause 18 of Annexure E, we've got these time periods to fill. So I just want to understand some more information.

So we go to fill the dam, and we have to do it --

16:37 just take the Indus -- 1 July to 20 August. So once I've filled the dam, even though there's plenty of water in the river for me to be able to operate over an operating range -- and I just want to understand -- am I now restricted to -- once I've drawn it down, for whatever purpose, to support a run-of-river set of HEPs, I can't refill it at all?

SIR DANIEL: Well, I think that that will take you to paragraph 21(b), which is the operation of the power plant that's associated with the storage work. And it says:

"... except during the period in which a filling is carried out in accordance with the provisions of Paragraph 18 or 19, the volume of water delivered into the river below the work during any period of seven consecutive days shall not be less than the volume of water received in the river upstream ... in that seven-day period."

Now you will have in your mind that this provision is somewhat analogous to paragraph 15 of Annexure D; but you'll also recall that paragraph 15 of Annexure D provides the flexibility to vary the flow in any seven-day period between 30% and 130%. Here there isn't such a restriction: it's just a seven-day restriction.

DR BLACKMORE: Yes. So once you start to release the volume

16:38 to support whatever you've got downstream, within the seven-day rule, you are still reducing, basically: you can't recoup to full supply level?

SIR DANIEL: If you're complying with the Treaty, yes.

DR BLACKMORE: If you're complying with the Treaty.

SIR DANIEL: Yes.

DR BLACKMORE: We'll get to how you understand where that information comes from another time. But okay, thank you.

SIR DANIEL: Your closing comment is obviously very important because it goes to the wider issues about information. And Article VI of the Treaty, which I referred you to yesterday, provides for exchange of data particularly with regards to the hydrology of the rivers and the use of the waters of those rivers.

DR BLACKMORE: So I was looking at this the other day and saying: well, okay, technology has not been static. There's provisions of the Treaty that are static, because they were written to set things at a point of time. But the technology of data transfer, remote sensing, a whole heap of others, are really not bounded by the geographical national boundaries now. If you want to find something out, my organisation could reproduce the hydrology of Africa without ever going to Africa, right? So all of that is possible now.

16:40 I'm just wondering, when you look at this and you're looking at the way Treaty compliance is informed by getting information, whether anything that's happened within the Commission to modernise the automatic transfer of information, whether that's a real possibility or it's just not being considered at the moment.

SIR DANIEL: Dr Blackmore, let me give you an initial response, a holding response. It may be that we can come back to that if there are post-hearing submissions.

But you've heard quite a lot, both from the Commissioner in his evidence and also more generally, that in fact this information-sharing requirement of the Treaty has essentially stalled. I mean, it stalled at the level of provision of information; it stalled at the level of requests for tours of inspection so that Pakistan can go and get the information itself.

You saw most recently in the submissions that I made to you yesterday about compliance with the Kishenganga award, and what information Pakistan has on the flow of the Kishenganga-Neelum River as it enters Pakistan, that there is some limited information, but just for a period of two or three years.

So I suspect that there is a very big challenge that Pakistan faces here. You will also recall that the

16:41 Commissioner said that on occasion, Pakistan has to resort to trying to get access to websites of the Indian CWC or elsewhere, and sometimes it's just not able to. So there is a very big challenge, I think, when it comes to information acquisition.

THE CHAIRMAN: We are getting low on time, but I don't want to cut you off.

I don't think we have any questions for you, Sir Daniel, so please proceed.

SIR DANIEL: Thank you, Mr Chairman. I am going to go perhaps a little bit faster on my next part, because I'm about halfway through, but about three quarters of the way through my time. But I think the issues I'm going to come on to address you've heard me on before, so I may just be giving you the outline of it.

Mr Chairman, may I just clarify: I believe that the guillotine comes down at 5.15, if that's correct? And I need to allow 15-20 minutes or so for Mr Murtaza. So I have about 15-20 minutes or so of my time remaining.

So I'd like then to turn to questions 7(a) and (b), which is the issues relating to the competence of the Neutral Expert.

You raised two questions there. Question 7(a):

"In the event that a party considers that a neutral expert has exceeded his competence:

16:43 (a) How, procedurally, could a party 'appeal' or challenge that decision before a Court of Arbitration? Is there any time limit to such challenge and, if so, from where does [that] limit arise?"

You will find elements of this response at the following transcript references: Day 1, page 41, line 23 to page 51, line 9 and page 51, line 21 to page 58, line 23; Day 3, page 180, line 1 to page 181, line 3.

And then question 7(b):

"If a party elects not to raise the issue of a neutral expert exceeding his/her competence with a Court of Arbitration, do the matters on which the neutral expert potentially exceeded his competence become binding on a Court of Arbitration (i) with respect to issues concerning the plant in respect of which the neutral expert decision was rendered; or (ii) more generally?"

You'll find elements of the response to this at transcript Day 3, page 180, lines 1-10, and page 182, lines 5-16.

And I have to say, much of what I will say now in an abbreviated form has already been said. So this is really pulling the threads together and trying to package them in a more coherent fashion. And in the interests of time, I won't actually take you to the

16:44 detail of the provisions, but just cite them.

First of all, the Treaty addresses the competence of both the Court of Arbitration and the Neutral Expert. And the framing provision is Article IX, paragraph (1), which talks about:

"Any question which arises between the Parties concerning the interpretation or application ... or the existence of [a] fact which, if established, might constitute a breach of [the] Treaty ..."

So that's the gateway for the competence provision.

The competence of the Neutral Expert is then addressed in Article IX, paragraph (2)(a) and in Part 1 of Annexure F. You know these provisions well from the Competence Award. There's a long list, I think of 23 subparagraphs, but it's very tightly limited.

In contrast, the competence of the Court of Arbitration is addressed in Article IX, paragraph (2)(b): any other difference that may arise, or if a Neutral Expert so determines that a matter is not within his competence.

Now the Court of Arbitration's competence is hinged on Article IX(1) and the proper observance of the relevant procedural conditions. So the competence of a Court of Arbitration, if it's properly constituted, ratione materiae, is essentially very broad indeed: to

16:46 the four corners of the Treaty. You obviously can't assert your competence in respect of matters that fall outside of the Treaty, demonstrably so, but otherwise your competence extends to the four corners of the Treaty.

We then come to a number of other provisions. Article IX(6) is important because that provides that the relevant gateway provisions to the Court are closed "while [any difference] is being dealt with by a Neutral Expert". And again, these are provisions that you're familiar with from the Competence Award.

And I note that the word "while" is important, because it provides a purely temporal limitation in Article IX(6). But that has to be read in the light of other provisions of the Treaty, notably paragraph 11 of Annexure F, which provides that:

"The decision of the Neutral Expert on all matters within his competence shall be final and binding, in respect of the particular matters on which decision is made, including ... upon any Court of Arbitration ..."

Paragraph 7 of Annexure F then addresses the procedure for a competence determination by the Neutral Expert. And I would contrast the formulation of paragraph 7 with the formulation of paragraph 16 of Annexure G. That's the formulation that drives you,

16:47 because paragraph 16 of Annexure G is effectively a compétence de la compétence provision: you have the competence to determine your competence. The Neutral Expert has the competence to determine whether a matter is within the framework of Annexure F, Part 1.

And there is an evident reason for the different approach to the competence question for the Court and for the Neutral Expert, and that is that the competence ratione materiae, the material competence, of the Neutral Expert is very heavily and very presumptively limited, whereas the material competence of the Court of Arbitration is not presumptively limited as long as it's within the scope of Article IX, paragraph (1).

And one might anticipate that the determination of competence is likely to become very quickly heavily legal and contextual, a matter which a Court of Arbitration will be well placed to address because it will include certainly, at a very minimum, a number of lawyers; rather than for a Neutral Expert, whose task is focused on the construction of engineering issues.

So we then turn to the scheme and scope of the Neutral Expert's competence ratione materiae. And if we take our case from the public information as a yardstick, paragraph 1(11) of Annexure F -- I took you to this on the very first day -- addresses:

16:49 "Questions arising under the provisions of ... Paragraph 11 ... of Annexure D."

I hope this will be clearer when it comes to the transcript, rather than just when I speak it.

But paragraph 11 of Annexure D then talks about:

"If a question arises as to whether or not the design of a Plant conforms to the criteria set out in Paragraph 8, then either Party may proceed to have the question resolved in accordance with the provisions of Article IX(1) and (2)."

And I add that nothing in Part 1 of Annexure F, that deals with the competence of the Neutral Expert, encompasses systemic questions of legal interpretation.

So this brings us to paragraph 13 of Annexure F:

"Without prejudice to the finality of the Neutral Expert's decision, if any question ... which is not within the competence of the Neutral Expert should arise out of his decision, that question shall, if it cannot be resolved by agreement, be settled in accordance with the provisions of Article IX (3), (4) and (5)."

So we say that if a Neutral Expert exceeds his or her competence, this necessarily engages paragraph 13 of Annexure F. Because even at a most basic level, the application of a Neutral Expert's determination will give rise to questions that go beyond the competence of

16:50 the Neutral Expert. So we see paragraph 13 as a gateway.

We also say that in the unusual circumstances of this case, in which the Court has affirmed its competence over the entirety of the dispute addressed in Pakistan's Request for Arbitration, if a question arises that is beyond the competence of the current Neutral Expert, it is presumptively within the competence of this Court. Now that may require you to address, as a preliminary matter, whether the question was indeed within the competence of the Neutral Expert.

This brings me to your questions.

On question 7(a), there are two journeys to address, but this can be done succinctly. This was the question of:

"In the event that a party considers that a neutral expert has exceeded his competence:

(a) How, procedurally, could a party 'appeal' ...?"

So there are two journeys to address.

In the abstract -- so away from the details of this case -- a challenge would have to go back to the Commission and work its way through the Article IX process.

In our case, we consider that a challenge could properly be raised with you in the form of a request

16:51 concerning the application of the decision of the Neutral Expert, and that this would inevitably require you to address both the issue of the Neutral Expert's competence and the substance of his decision.

Then question 7(b) raises the issue of, if there is a failure to challenge any decision, can that or should that be construed as acquiescence or, in legal parlance, as an estoppel, precluding the issue being raised subsequently, and in respect of what issues?

We accept that if, after the passage of a reasonable period, a party has or may reasonably be deemed to have a claimed basis for challenge, and that party does not pursue it, that will stand against the dilatory party. In the absence of specific rules addressing timing, principles of reasonable appreciation and acquiescence or estoppel will operate, and we consider that the test will properly be one of a reasonable period. I don't think that we can put any more flesh on that.

The consequence of this, though, would be that the issue of the Neutral Expert's competence would become binding on the Court, unless there was a Court that was already established and seised of the issues, as in your case, which concluded that it was entitled to raise a question of the competence of the Neutral Expert proprio motu, of its own motion.

16:53 So, in the present proceedings, it may not only be a matter for us to raise a question of the competence of the Neutral Expert. You may feel that you are entitled to do so as well. I make no other point about that.

Last point on this. The acquiescence that would bind the dilatory party would attach to the Neutral Expert's competence decision and to his or her plant-specific determination, but it would not and it could not in some way turbocharge the plant-specific determination so as to widen its scope of application beyond the plant in question. In other words, a failure to challenge the Neutral Expert's competence could not result in that competence becoming greater than it would otherwise be under the Treaty.

And to take the Baglihar example as the hard example, the fact that Pakistan did not challenge the competence of the Neutral Expert under paragraph 13, following the Baglihar case, stands against Pakistan. It cannot now reopen the Baglihar case through a competence challenge under paragraph 13.

The Baglihar determination by Professor Lafitte applies to the Baglihar plant, and we've accepted that throughout. But that's not to say that the Baglihar determination somehow becomes larger than life, and that the analysis that drove his interpretation, the

16:54 plant-specific determination, somehow applies more generally.

So I think that's all that I will say on that. And I will move rapidly on, unless you have any other questions.

THE CHAIRMAN: No questions, Sir Daniel. Please proceed.

SIR DANIEL: Thank you, Mr Chairman.

Mr Chairman, I was going to turn -- and with apologies and embarrassment, because this is a question that you put, not part of the written questions -- but I was going to come to the five sequential steps for applying sources of law or practice that you put on Day 3.

We have lots of transcript references. If it would assist, the court reporter does have all the transcript references, because he has a text just to assist him. I'm not going to read those into the record; it would take me a little bit too long. I will just make a number of telegraphic points about this, so that I can come to some very succinct concluding remarks that I would like to make.

[Transcript references:

Day 1, page 72, line 6 to page 78, line 9; page 77, line 18 to page 78, line 9; page 93, line 12 to page 94, line 20; page 94, line 21 to page 95, line 10.

16:56 Day 2, page 85, line 22 to page 86, line 18; page 92, line 17 to page 94, line 7; page 107, line 15 to page 113, line 7; page 118, line 13 to page 120, line 11; page 121, line 25 to page 123, line 2.

Day 3, page 211, line 24 to page 219, line 13; page 223, lines 6-19.

Day 4, page 108, line 20 to page 110, line 4; page 125, line 5 to page 126, line 2; page 128, line 12 to page 129, line 4; page 147, lines 4-12; page 166, line 12 to page 168, line 23.

Day 5, page 148, line 22 to page 149, line 9; page 262, line 5 to page 264, line 11.]

On your first step, Mr Chairman -- and you will find the question at Day 3, page 221, line 7 to page 222, line 22 -- we agree with your first step. I won't say anything more about it. There's a little bit perhaps more to unpack, but we agree broadly with that.

On your second step, which deals with:

"... [the] Treaty requirements sometimes allow for construction of a hydroelectric plant on the Western Rivers by India by reference to design or customary accepted practice ... But this will often depend on a plant-by-plant analysis, such as the materials you would use to construct a spillway gate, or something like that."

16:56 Once again, we agree with that approach, and that approach in the sequence, and Professor Webb addressed that in her submissions.

Third, you addressed that:

"... it's possible for Treaty rights and obligations to be informed by, but not negated by, customary international law."

And you referenced the Kishenganga Court approach.

Mr Chairman, we agree with this as a general proposition, but we consider that this proposition needs to be qualified. Because we consider that the threshold for the incorporation of customary international law, set out in paragraph 29 of Annexure G, is controlling, and that the language used in paragraph 29 of Annexure G talks about resort to customary international law when this is "necessary" for purposes of interpretation or application, but "only to the extent necessary".

We consider that the approach taken by the Kishenganga Court in paragraph 112 of its final award is the correct approach with regard to that issue. We consider that there would be a risk in enlarging the concept of resort to customary international law beyond the framework of that paragraph.

Then, Mr Chairman, with regards to your fourth and fifth points in the sequence, both of which we agree

16:58 with, but both of which we also consider -- as you yourself addressed -- we consider that they don't come within the scope of the Treaty because they really talk about having regard to standards that are found in customary international law or in other instruments.

So, Mr Chairman, with apologies for not doing more justice on my feet to those questions, I then turn to my concluding observations. And I will just be another two minutes, in case Mr Murtaza is getting anxious that he will have to speak as fast as I'm speaking now.

So my concluding observations.

Mr Chairman, members of the Court, I'd like just to conclude by recalling eight points from our submissions over the past seven days. And they are very briefly stated.

First, sediment management will be or should be a driving imperative in the design of a run-of-river hydroelectric plant in the Himalaya. You heard this from Dr Morris in full detail.

Second, there will inevitably be a choice of site.

Third, India has to locate its Western Rivers run-of-river HEPs at sites that will enable it to comply with its Treaty obligations, including with respect to the mandatory design criteria, for example, in paragraphs 8(d), (e) and (f) of Annexure D.

17:00 Fourth, there will always be engineering workarounds, if there has been a reasonable choice of site.

Fifth, India is obliged to share information with Pakistan as soon as its plan to construct a run-of-river HEP can be said to have crystallised under Article VII(2). And to correct a misspeak from yesterday on my part, we say that this is no later than the draft engineering design stage; not the end of the process but the beginning of the process.

Sixth, the calculation of pondage under paragraph 8(c) of Annexure D is driven by the hydrology of the river.

Seventh, the calculation of pondage cannot be driven either by the installed capacity of the proposed HEP or by the proposed contribution of that HEP to the load, as this would leave the matter entirely to India's discretion.

And eighth, pondage in Annexure D can only be used for power generation. It cannot be used for other purposes, such as agricultural use. This follows from the definition of "Pondage" in paragraph 2(c) of Annexure D.

Mr Chairman, members of the Court, that concludes my submissions.

17:01 I had some thanks to make. I know that Mr Murtaza will make his own thanks. Perhaps when I come back to deal with the housekeeping issues, I will record the thanks on the part of the counsel team who have been standing at this microphone for the last seven days.

But subject to any questions you may have, that concludes my submissions.

THE CHAIRMAN: Thank you, Sir Daniel. I don't think we do have any questions, so thank you very much for your concluding observations.

I invite to the podium now Mr Murtaza for his final submissions. And while he's coming to the podium, I will note that the Court is prepared to sit as long as it requires for Mr Murtaza to make his remarks. So please don't rush yourself; take the time that you need. We very much look forward to hearing from you.

(5.02 pm)

Final submissions on behalf of the Islamic Republic of Pakistan

MR MURTAZA: Mr Chairman, members of the Court, I'm the Secretary of the Ministry of Water Resources, Government of Pakistan, which is the ministry of the Government that has primary responsibility for Indus Waters issues.

I am honoured to be here today to close Pakistan's case, and only regret that, for reasons of my

17:02 governmental responsibilities, I have not been able to be here throughout the hearing.

I will shortly, as a matter of formality, read Pakistan's final submissions, which I understand Sir Daniel Bethlehem, Pakistan's lead counsel, took you through on Friday. They are essentially unchanged from Pakistan's Memorial, but for updating to take account of the hearing and any post-hearing submissions that you may direct.

Before I turn to this task, however, let me make one or two brief observations that are appropriately stated by a senior Pakistani government official.

The Indus Waters Treaty stands as a cornerstone in Pakistan-India relations. It divided the waters of the Indus Basin between us after a challenging period. And for the first time, it gave Pakistan water security on the basis of an international treaty in which both parties had a stake.

As the lower riparian, but the home to the largest area -- by some margin -- of the Indus Basin, Pakistan was acutely vulnerable from its earliest days. Ensuring respect for the terms of Treaty is of paramount importance to Pakistan, and we put our faith in the Treaty's dispute settlement mechanisms.

This is why, notwithstanding our warranted criticism

17:03 of India's conduct that brought us to the point of two parallel settlement mechanisms, we have resolved to participate in both proceedings. The first is the proceedings before you, which Pakistan commenced in good faith with a view to addressing and resolving a long-festering dispute over the interpretation and application of the Treaty, of both systemic and plant-specific focus. The second is the proceeding which India purported to commence before the Neutral Expert as a spoiling tactic to derail Pakistan's case before the Court.

Subject to issues of the Neutral Expert's competence, which remain to be addressed, despite its misgivings, Pakistan has resolved to participate in that process for the simple reason that it believes in the Treaty and hopes to believe that India may also become a purposeful partner under the Treaty. Pakistan will live with the outcome of your award, as it will with the outcome of the Neutral Expert determination, exercised within his ostensible competence. This remains to be determined and, as Pakistan's counsel have informed you, Pakistan retains a caveat in respect of the competence of the Neutral Expert.

We are invested in the Treaty because it is -- or it should be -- a pillar of stability in the relationship

17:04 between the two states. We are invested in it because it apportions the water of the Indus Basin, on which Pakistan depends, and promises us security. We are invested in it because if we were to look to address with our neighbour issues that arise beyond the Treaty -- the challenges of climate change, innovations in water security and more -- we must do so from a foundation of stability, respecting what has been agreed in the past.

As you heard from Pakistan's counsel, Pakistan is concerned that India makes little effort to comply with its obligations under the Treaty. It presents Pakistan with template HEP designs that could have been prepared for a hydroelectric plant to be constructed on any river anywhere in India, without regard to India's Treaty commitments to Pakistan. It has refused Pakistan's access to HEP sites by way of tours of inspection. It has been wanting in the sharing of information.

Mr Chairman, members of the Court, Pakistan has turned to you to address the issue of systemic interpretation of the Treaty in the hope not simply that you will endorse Pakistan's understanding of how the Treaty works, but that, by clarifying once and for all the meaning of key provisions of the Treaty, you will bring about a return to legality under the Treaty.

17:06 Mr Chairman, members of the Court, with this said, I will turn to read out formally Pakistan's final submissions. These will thereafter be transmitted to the registry under the signature of Pakistan's Deputy Agent.

Final submissions.

Having regard to the submissions advanced and evidence adduced in the Memorial, and to the submissions advanced and evidence adduced during the hearing, and to any submissions that may be advanced and evidence adduced in any post-hearing submissions that may be directed by the Court, Pakistan respectfully requests the Court in one or more partial awards:

(A) To set out its findings on the issues engaged by this first phase on the merits of the proceedings in a narrative dispositif that elaborates in detail, and in prescriptive terms, the overall interpretation and application of Article III and paragraph 8 of the Treaty; and, in particular, what is required for purposes of compliance with the design criteria of paragraph 8 of Annexure D, and other relevant and related provisions of the Treaty;

(B) Having regard to the facts, evidence and law adduced in the Memorial and its associated appendices and accompanying exhibits and annexes, in the hearing

and its accompanying exhibits and annexes, and in any post-hearing submissions that may be directed by the Court to adjudge and declare:

(i) the nature and character of the Treaty, and the bargains reflected in the Treaty in terms addressed in chapter 7 of, and elsewhere in, the Memorial, in the hearing and in any post-hearing submissions that may be directed by the Court;

(ii) the binding or otherwise controlling effect of the decisions of past dispute resolution bodies in terms addressed in chapter 8 of, and elsewhere in, the Memorial, in the hearing, and in any post-hearing submissions that may be directed by the Court with respect to:

(a) the parties;

(b) the present proceedings before the Court;

(c) the present proceedings before the Neutral Expert; and

(d) future proceedings before a Court of Arbitration or a Neutral Expert;

(iii) the relationship, for interpretative purposes, between (a) the headline obligations contained in Article III(1), the chapeau to Article III(2) and Article III(4) of the Treaty, and (b) the exception thereto contained in Article III(2)(d) and Part 3 of

Annexure D, in terms addressed in chapters 8 and 9 of, and elsewhere in, the Memorial, in the hearing, and in any post-hearing submissions that may be directed by the Court;

(iv) that engineering "best practices" can and must be used for the purposes of complying with the design criteria and operational constraints in Part 3 of Annexure D of the Treaty, but that "best practices" cannot be relied upon to circumvent the requirements of the Treaty, in terms addressed in chapter 9 of, and elsewhere in, the Memorial, in the hearing, and in any post-hearing submissions that may be directed by the Court;

(v) with respect to the interpretation and application of paragraph 8(d) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of designing low-level sediment and other outlets for an Annexure D.3 HEP in terms addressed in chapter 10 of, and elsewhere in, the Memorial, in the hearing, and in any post-hearing submissions that may be directed by the Court;

(vi) with respect to the interpretation and application of paragraph 8(e) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of designing gated spillways

for an Annexure D.3 HEP in terms addressed in chapter 10 of, and elsewhere in, the Memorial, in the hearing, and in any post-hearing submissions that may be directed by the Court;

(vii) with respect to the interpretation and application of paragraph 8(f) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of designing power intakes for an Annexure D.3 HEP in terms addressed in chapter 10 of, and elsewhere in, the Memorial, in the hearing, and in any post-hearing submissions that may be directed by the Court;

(viii) with respect to the interpretation and application of paragraph 8(c) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of calculating maximum pondage for an Annexure D.3 HEP in terms addressed in chapter 11 of, and elsewhere in, the Memorial, in the hearing, and in any post-hearing submissions that may be directed by the Court.

(ix) with respect to the interpretation and application of paragraph 8(a) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of designing the freeboard for an Annexure D.4 HEP in terms addressed in chapter 12 of,

and elsewhere in, the Memorial, in the hearing, and in any post-hearing submissions that may be directed by the Court;

(x) any other findings as the Court may consider to be necessary or warranted for purposes of providing controlling guidance on the interpretation and application of, and relationship between:

(a) Article III of the Treaty;

(b) Paragraph 8(a) of Annexure D of the Treaty;

(c) Paragraph 8(c) of Annexure D of the Treaty;

(d) Paragraph 8(d) of Annexure D of the Treaty;

(e) Paragraph 8(e) of Annexure D of the Treaty;

(f) Paragraph 8(f) of Annexure D of the Treaty; and

(xi) Such other findings as the Court may consider to be necessary or warranted.

(2) Pakistan further requests the Court:

A. To convene a case management conference of the parties for purposes of considering:

(i) the status of the parallel proceedings before the Neutral Expert;

(ii) what engagement, if any, the Court should undertake with respect to the Neutral Expert and his proceedings, having regard in particular to the general duty of mutual respect and comity applicable to both the proceedings before the Court and the proceedings before

the Neutral Expert;
(iii) the need for directions for the conduct of further phases of these proceedings;
B. To give such directions as may be necessary and warranted for the scheduling and conduct of further phases of the proceedings before the Court;
C. To reserve any issues of costs in respect of the present phase of the proceedings for decision by the Court in due course;
D. To remain seised of the dispute.
Mr Chairman, members of the Court, it remains only for me to express the thanks and appreciation of the Islamic Republic of Pakistan to you, Mr Chairman, and the members of the Court for your expeditious engagement on the issues presented to you for decision. We appreciate the courtesy and kindness you have shown to Pakistan's representation here in The Hague, and the rigorous scrutiny with which you have and will be addressing our submissions.
I would also like to express my thanks, and that of my Government, to the Registry, the Permanent Court of Arbitration: to Mr Schofield, Mr Williams, Mr King and Ms Blink, and all the PCA staff who have contributed to welcoming us to the Peace Palace and have facilitated our work here over the past ten days.

I would also like to express our thanks and appreciation to Mr Trevor McGowan, the court reporter, and to the sound and technical engineers who have facilitated Pakistan's submissions over the past ten days. We appreciate the professionalism and personal engagement of them all.
Mr Chairman, members of the Court, it remains only to wish you wisdom in the period to come, and safe travels back to your home and loved ones.
Thank you.
THE CHAIRMAN: Thank you very much, Mr Murtaza.
And on behalf of the Court, let me assure you that there should be no concerns about your inability to be here throughout the hearing. We very much appreciate your ability to be here today to provide both important observations about the case and also to formally and orally submit Pakistan's final submissions for this phase of the hearing. We do look forward to receiving the written form of the final submissions signed by the Deputy Agent, but we really do appreciate your ability to be here today.
So that brings us almost to the end of our process, but I do think we have a few housekeeping matters that we might take advantage of attending to. So, Sir Daniel, perhaps we should embark on that.

Did you have some opening thoughts of your own, or were you hoping that I would jump in?
SIR DANIEL: Absolutely hoping that you would jump in.
THE CHAIRMAN: In that case, I have about, I don't know, five or six things that I think we probably should discuss a little bit.
The first is that, as you know, pursuant to Procedural Order 11, there is a production of documents process that we have unleashed. Some documents have come in already from Pakistan: the Kishenganga proceedings; many, most perhaps, of the Baglihar proceedings, with a few bits and pieces more coming in that regard. But then a series of categories that I won't read out of other documents that, pursuant to the Court's instruction, you are going to attempt to compile and submit by September 30.
I think at the outset of this hearing, we noted that there will be some relevance analysis that the counsel for Pakistan will need to engage in, in sifting through those documents. I suppose I would observe that in the course of this hearing, issues arose that may help you see some aspects of that relevance that perhaps were not previously apparent.
Obviously there's an interest in pondage calculations relating not just to the plants that we

have typically been discussing but really across the board. If, in the course of documents you're going through, there are methods of calculation that have been discussed and reacted to, all of those I think would be of relevance to the Court as it tries to proceed with the issues before it.
We've talked quite a bit about Annexure E. That probably wasn't as much on your radar screen before as it is now. It seems again that as you're going through your document collection process, you might have an eye to that.
And there may be other issues as well. I just thought I would note that the hearing may be giving you some greater insights into that process that you're about to engage on.
The one additional aspect that I thought I would raise with respect to Pakistan's document collection process is that if it is the case you're doing a relevance review, I'll call it, to sift out things that are worth putting forward and things that really aren't of great significance, if it's possible for Pakistan to do some kind of index that would attempt to indicate why particular documents are relevant, perhaps even organising them into broad categories -- you know, freeboard-related documents, and here's the ones that

rose up in your mind in that regard; outlet documents.
We're not looking for any particular organisation of an index in that regard. But if, in the process of assessing on your own why particular documents are of relevance, it's possible to generate something of that kind, I do think the Court would find that helpful.
SIR DANIEL: Mr Chairman, perhaps I might just intercede there.
Obviously, certainly for your purposes but also for our purposes, we would want to try and do that. I do note that with regard to very many of the documents that we've already put before you, there are a number of issues which are commingled in a single document. For example, if it's a PIC report, it may be covering the ground. So there may be an element where that becomes a little bit artificial.
I don't think -- I certainly don't, but I don't think that we yet have a sense of how many documents there are, because we're still going through the process of identifying the documents. There is then going to be a need either to digitise them for purposes of our review or for one or more members of the legal team in fact to go out to Pakistan and undertake a review there. But if it's going to be done here, but also for purposes of providing documents to you, we're going to have to

digitise those and collate those.
So I expect that it's going to be quite a big exercise, and now especially that we are going to be looking at Annexure E; and then we say that Annexure E has got roots in Annexure C, so there may be all sorts of questions. But that's precisely the purpose of proposing that we submit under a post-hearing brief, so that we can at least identify for you the task that we have undertaken.
THE CHAIRMAN: Yes. And to the extent that you're not entirely sure what's in the documents out there, certainly the Court is also not at all aware, and therefore this idea of some kind of index may or may not prove fruitful in due course. I just wanted to flag that as something that would be of interest if it was easily generated, sensibly generated in the course of the process.
I anticipate that we would probably issue a procedural order after the hearing that would deal with a few different issues, one of which could be this procedural order document production process. We already have Procedural Order 11, but it might be that there is some value in some further guidance.
One is your request that you be able to at least explain the process for -- I'll call it the September 30

filing. It seems to me in our procedural order we could certainly flag that as something that we would approve if, after discussion as a Court, we've decided to approve it. So that's one possibility. And another would be to indicate the desire, if it proves feasible, of an index relating to the documents broken down by issues to which they relate.
SIR DANIEL: Thank you, Mr Chairman. I'm sure that any further guidance that you can give would be welcome.
And we very much appreciate your approach, when it comes to these procedural orders, to include those concluding paragraphs with a latitude to apply. And if there is anything in a procedural order which we perceive will cause great burdens, then we will come back to you on that.
But just perhaps two points to raise as you think about that.
The first one is that you described the post-hearing submission, under the cover of which the documents might be submitted, as a post-hearing submission that would "explain the process". There's also another issue, because it may be that we discover documents which are substantively material. So the question may then be: would you wish the post-hearing submission to address the substance of those documents, or would you expect us

to make an application in respect of any documents that we think do warrant further submissions from us? That's the first point.
The second point is that I'm assuming -- and I can't immediately identify in my own mind whether there is going to be a category of such documents, but I'm assuming that none of the documents that you have identified would properly include draft documents, what in American legal parlance might be described as "work product" or something of that nature. So that if there are draft documents of PIC reports or something like that, what we will provide you with is the final version, not the manuscript annotations or anything of that nature. I think that may also be something to clarify.
THE CHAIRMAN: I think I would propose the following, if it seems feasible for Pakistan. It would be useful for the Court to receive from Pakistan by letter, sometime, end of this week -- perhaps you need a bit of relaxation before sending it in, but sometime in the coming days or weeks -- a letter that indicates two different things.
One is the type of submission you have in mind that would accompany the September 30 documents. That could include the process by which you engage in the document production. It could include what types of documents

17:23 were not included, such as, say, work product-related documents. It could include an indication of the standards you use for what's relevant and what's not relevant. It could include some sort of index of the kind that I indicated. So that's one issue that the letter might address.

The second issue leads into what I understood to be your request earlier today that there might be a post-hearing substantive brief of some kind. I think you mentioned as one issue Pakistan's method of calculating pondage relating to Baglihar; perhaps more as a second issue, on the method of calculation that you are currently advancing in this proceeding; and then I think a third issue that you raised related to Annexure E.

I don't know if there are other issues that, over the course of today, have risen to a level that you think might be worthy of a post-hearing submission. But the fourth one you mentioned, I think, was: anything on the Court's mind. And certainly we will be discussing that and reaching our own conclusions as to whether there is something more that we would like to hear from you on.

But that's the second thing you could address in the letter, perhaps indicating with somewhat greater

17:25 specificity what the scope is that you would be interested in submitting to us on.

SIR DANIEL: Mr Chairman, we are certainly happy to do that. And perhaps if you give us a little bit more of a latitude beyond this week, that would be much appreciated.

But I do raise a question on which it would be helpful to have your guidance, insofar as you're able to give it.

We came to the view, which I expressed this morning, that a post-hearing submission may be useful and relevant partly because we wanted to be responsive to the Court.

So, for example, on Annexure E, you have raised quite a number of issues there. You may feel, having heard me for an hour or so on Annexure E, that you don't feel you need any more. If you think that it would be helpful to have something more, we would be more than willing to offer it; indeed, we would be eager to offer it, in particular on the relevance of Annexure E for the purposes of the interpretation of Annexure D. And it doesn't have to be, intuitively, a very lengthy document.

But we, I think, would be disinclined, of our own motion, just to follow that piper and say, "We're happy

17:26 to give you a post-hearing submission without limits". We feel that we've put quite a lot in front of you. So if there were any issues that you were able to give us guidance on, either now or at the end of the week, and we would then come back to you with a considered view as to what we would propose, that would also be helpful.

I don't know whether that would work. We can't look into your minds at the moment and see exactly where you think there's a paucity of information.

THE CHAIRMAN: So it's a question of who goes first in this process.

I think the way I'm thinking of it is: if Pakistan feels it's had the opportunity to say everything that it would like to say in the course of this hearing, that's completely fine; and that you're not looking for any particular opportunity in a post-hearing submission to address in greater depth a particular issue, that's completely fine. The Court will then be contemplating whether we feel we would like to have something further, and we in due course would then let you know that, and it would ultimately be included in a procedural order.

So I guess I am throwing the ball back to you in the first instance to assess, after things have settled down a bit, whether you feel there's something more you wish to bring to us. If not, we'll let you know if we think

17:28 there's something more you should bring.

SIR DANIEL: Well, I think that's one of the advantages of the upstream and the downstream: you can deliver to me and I will have to respond.

But we will come back to you, may we say, by the end of July with that correspondence? It will allow us to reflect, away from The Hague, on those issues. And we will certainly come back to you on all of that.

THE CHAIRMAN: Okay. So end of July, a letter from Pakistan on the issue of both the September 30 submission, what that would look like, and whether there are any particular issues you would like to follow up with us on.

SIR DANIEL: Yes, indeed.

THE CHAIRMAN: In addition to that set of issues, we would, in a procedural order, want to give India an opportunity to comment on any materials that have already been submitted post-Memorial, let's say, materials relating to the hearing; and then separate from that, an opportunity to comment on materials submitted later in the process, September 30.

I will note that I keep saying "September 30". If there are tranches of materials that can be sent in, the Court would certainly welcome receiving it at whatever pace is possible. But I leave that to you to --

17:29 SIR DANIEL: We have that very much in mind, and we will obviously wish to get whatever we can to you earlier on.

And of course, on India having an opportunity to comment, we of course completely agree with that. And I note, Mr Chairman, that you, as it were, bifurcated that process: that the Court will afford India an opportunity to comment on the documents that have been adduced in the hearing by some specified date; and then the 30 September -- for shorthand -- documents in due course.

I presume, just anticipating a more substantive post-hearing submission that deals with the documents, India would not be provided with an opportunity to comment on the substance of any documents that we may adduce on 30 September in advance of any opportunity that we may have to comment on the substance. Because at the moment, what we are addressing is simply the production of documents and a mere description of the relevance review that will be undertaken. But no doubt that's an issue that you will address with us in due course.

THE CHAIRMAN: Yes, I think as a general proposition, it would be a parallel opportunity on the part of India to comment on whatever the scope is of information and submissions that you have been entitled to make.

17:30 If a post-hearing substantive submission on some number of issues is ultimately decided upon, do you have a sense of the timing within which Pakistan would be able to do that submission?

SIR DANIEL: Mr Chairman, we have reflected on this on the basis of the three categories of the Baglihar methodology, any residual points that we might wish to address on the calculation of pondage and Annexure E, leaving aside the unknown unknowns of whether there are any questions that you would want to put to us, and we would hope to get that to you relatively quickly. I mean, we would have our eyes sighted on 30 September as well, because that would seem to be sensible.

But we're also conscious that we have -- as is on the public record -- a hearing in a parallel proceeding that's coming up in early September as well, so we will be preoccupied on that. But we don't want to deny you a full docket of submissions for longer than is absolutely necessary.

THE CHAIRMAN: So we also have an issue of a press release for the hearing. It's our intention to issue a press release, as we've done in the past, that would include both an indication that the hearing took place and photos from the hearing. So our plan is to have the Registry circulate a draft of that press release to the

17:32 parties, to give you a chance to look at it prior to issuance.

SIR DANIEL: Thank you.

THE CHAIRMAN: Transcript corrections, pursuant to Procedural Order 12, need to be done in 14 days. So I assume that's on your radar screen.

SIR DANIEL: It is.

THE CHAIRMAN: And we have an issue with respect to the publication of documents from the hearing. As I think you will recall, the Supplemental Rules of Procedure leave open the question of publication of the submissions that have been made to the Court until the hearing to which they relate. Now, Procedural Order 12 provided that we would revisit this issue in the course of the hearing, so that's why I raise it now.

The issue, I think, is whether Pakistan is agreeable to the publication of its Memorial; and then beyond that, the hearing transcripts; and then beyond that, other materials.

Now, I would note that with respect to the hearing on competence, we made public Pakistan's submission on competence and we made public the Court's questions to Pakistan and we made public the hearing transcript. So a question is whether a mutatis mutandis approach would be taken here; or whether, in addition to that, slides

17:34 might be made public, whether exhibits to Pakistan's Memorial might be made public, appendices. I think these are issues that it would be worth hearing from Pakistan on.

I guess I might, as you're pondering this, note that there were issues in the competence hearing context where Pakistan preferred that certain -- that all exhibits actually not be made public because of the different types of information that were found within them. And so it's a question in part whether that holds true today, or whether we're in a different place.

SIR DANIEL: Thank you, Mr Chairman. I think I'm not in a position to give you a comprehensive and formal answer on that now. But that's perhaps something that we can come back to even more quickly than the end of July correspondence that deals with post-hearing submissions, because I don't think that will take terribly long to resolve.

My recollection is that Pakistan also made a proposal at the time of the competence hearing for the publication of certain other materials which the Court, for its own reasons, decided that you would not wish to put on the website. So it may be that there are issues that exercise you as well.

As an initial observation, the exhibits and the

17:35 legal authorities are obviously -- there's a very big volume of them, and some of those do address -- not the legal authorities, but certainly some of the exhibits do address wider issues. So I expect that the same kinds of sensitivities may arise with respect to the exhibits and with respect to the legal authorities. Those tend to be available publicly in any event, so there may not be so much of an issue there.

There's also an issue with regard to the four appendices that we've put forward.

And I note in this regard: I think there would also be an issue about the site visit, because there was a press release with respect to the site visit, but I don't believe that the transcripts or, for that matter, the video recording of the site visit has been -- that there's been any suggestion that they be put online just at the moment.

Pakistan's temperament from the first procedural meeting through to the competence hearing, and I expect now, will be to err on the side of publication, but there may be some documents that we would wish to persuade you shouldn't be published. But if I may, we'll come back to you on that formally, rather more quickly than the end of July.

THE CHAIRMAN: Well, that would be fine.

17:37 Next on my list was the site visit that you just raised. We do have a protocol relating to the site visit where there were certain redacted portions, out of a sense of security. One possibility is that we now take away those redactions and place the full protocol up on the website.

So that's one issue relating to the site visit; the other is the transcript from it; and a third is the Court's questions that were put pre site visit to Pakistan. All of those are possibilities for posting on the website.

There's also a possibility of posting the video, but that's, I think, in a different category perhaps. It's really the other items that one might want to seriously consider making public.

SIR DANIEL: We certainly will do so, as I intimated just a moment ago.

I may be misremembering: I had thought that the Site Visit Protocol was now published, but the version that had -- with all the dates. But the version with the amendments, because of the weather-related issues and so on, I had thought that was on the website, but Mr Schofield will instantaneously be able to access the website and confirm that. That doesn't of course mean that you may not want to publish the preliminary

17:39 version, which did have the redactions, but there may not be much utility to that.

But we'll come back on the transcripts and the questions and the videos as well as part of that response.

THE CHAIRMAN: Yes. In any event, we will look forward to hearing from you both on the materials relating to this hearing and the materials relating to the site visit.

SIR DANIEL: The site visit, yes.

THE CHAIRMAN: A further issue is that we're going to review the finances of the proceedings with our treasurer after this hearing is concluded, and we will likely need to request a further deposit of funds to address the costs associated with things principally going forward: the deliberations and preparations of an award or awards in due course. So I just wanted to flag that for you as something that may well be coming soon.

SIR DANIEL: Thank you, Mr Chairman. Happily that's far above my pay grade, but let me make an observation, and that is that I'm sure that my colleagues in Pakistan would appreciate that when that request for funds comes, that it perhaps doesn't necessarily come on the usual arbitral sort of 30-day turnaround, and that you also look at the process going forward, simply because there are procedures to procure funds as well. So the more

17:40 time that you can give us in terms of telegraphing that, in terms of the amounts to be paid and so on, that would be helpful.

I note also that if the past is a guide to the future, we are unlikely to get contributions from India. So when the date arises where India does not make a payment of funds, realising that my colleagues in Pakistan will have to make a fresh request for funds, it may be something that should be borne in mind.

But if you are content with this, it may be most convenient if I just engage informally with Mr Schofield on these issues, so that we can work out that agenda.

THE CHAIRMAN: I think that's fine. And I don't see any difficulty in being sensitive to the concerns that you've just raised.

So I think that's it for my list of housekeeping items, with the principal takeaway being that we'll hear from you sooner rather than later about the materials concerning the hearing and the site visit; a little bit later, but no later than the end of the month, on post-hearing submissions.

I have taken your interest in the Court possibly signalling the things that the Court is interested in, and if we are able to convey any of that to you, even before the end of the month, we will do that. But

17:42 otherwise, we'll regard the ball as in your court.
SIR DANIEL: Thank you.
We know, because you've said this on the record, that you will be deliberating tomorrow. If there are issues that come out of that that you can indicate -- that you would find it helpful to have, for example, Annexure E addressed, or that you think that your concerns or your enquiry has been addressed -- that would be helpful.
The only other point on my agenda is just to recall the point that I raised this morning about the possibility of more than one partial award. I don't think that that's something that needs to be addressed in any correspondence. You may have detected from the final version of the final submissions that Mr Murtaza read out formally that we have included there language to say "in one or more partial awards", and that's obviously going to be a matter entirely within the discretion of the Court. So I don't think that there's anything more that I need to say on that.
So that would be my agenda. I would, before the microphone is turned off, like to express thanks, but I defer to you.
THE CHAIRMAN: Well, just on that last point, the Court hasn't yet deliberated on that issue of one or more

17:43 awards, and indeed it may not be a matter that we can resolve until we get further along in our process. But I would just say that, as a general proposition, I think Pakistan can proceed on the assumption that there would be a single award, unless the Court informs you that we've decided we will do something different; and we would let you know that, and the timeframe you might expect for at least an initial or partial award coming out.
SIR DANIEL: Thank you very much.
THE CHAIRMAN: So I think that's it. Did you have some thoughts of thanks?
SIR DANIEL: Well, I do indeed.
Mr Murtaza has formally expressed the thanks on the part of the Government of the Islamic Republic of Pakistan and all of those who are here as its counsel and experts and representatives and those assisting in the process, but I would also simply like to echo my thanks and the thanks of those people who have been speaking from the podium.
We appreciate very much the engagement of the Court, particularly as we don't have the engagement of the Respondent, to be able to gauge your reactions to the strengths or weaknesses or challenges or complexity of the case. It would have been much more challenging to

17:45 be standing here for seven days without any response at all from the bench. So we do appreciate that. We know that Mr Minear has an experience of an even more robust procedure, over 15 minutes or 30 minutes or whatever, but this has taken a little bit longer.
So it's really to express our thanks to you, Mr Chairman, for the meticulous way in which you've organised and run the proceedings; to all the members of the Court for your courtesy and engagement with us; and to the members of the Secretariat, both those in the room and I know that there are many others who are not in the room; to the court reporter; to the technicians; to those who have provided us with sustenance over the course of the last days. We very much appreciate it.
We are very much always in awe of being in the Japanese Room at the Peace Palace: I think it's something that is conducive to the settlement of international disputes. So thank you very much.
THE CHAIRMAN: Well, thank you for that, Sir Daniel.
I think I will add to the words of thanks that have been expressed so far.
First, to the representatives of Pakistan who are here: we very much your value your presence, both coming from Islamabad and coming from The Hague. It's an important case that we know the Government cares

17:46 deeply about, and it's been a pleasure to have you here among us.
Also thanks to the counsel and advocates and technical advisors for a whole series of excellent presentations that provided us with quite a bit of information, not just bringing back in front of us the Memorial materials but extending it a little bit deeper, providing us a sense of the nuances of the issues before us.
Our questions, to the extent that they may have felt pushing back, perhaps even raising issues that perhaps India would raise if it was here, were all designed to simply make this proceeding as fruitful as possible in looking at the issues carefully, so that we can reach a well-reasoned decision.
I too also want to thank our Registrar and the rest of the PCA staff who have been so helpful to us in working through this hearing. And I know they have provided a lot of assistance not just to the Court but to Pakistan as well, and we don't take that for granted.
Thank you, too, to our court reporter for excellent service throughout the hearing, both in providing us with the live transcript but also in a very speedy turnaround of the final daily transcript at the end of the day, which has been of great value certainly to the

17:47 Court, and I'm sure to Pakistan as well.

There's a lot of work that remains to be done. Some of it is for Pakistan, in terms of post-hearing submissions, but much of it is for the Court. We will be fully engaged on this as we move forward. As I think I've said on other occasions, and multiple times in this hearing, we are not driven by speed; we're driven by cogent and clear analysis of the matter. But we also have a desire to bring the decisions out in a timely manner. So we will be guided by all of those elements as a North Star for us.

So that's all I wanted to say in closing. I wish everyone safe travels back to whatever you're coming from, and I certainly look forward to seeing everyone in due course.

With that, we are concluded.

(5.49 pm)

(The hearing concluded)