

**PCA Case No. 2023-01**

**IN THE MATTER OF  
THE INDUS WATERS WESTERN RIVERS 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**

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**AWARD CONCERNING MAXIMUM PONDAGE  
SUPPLEMENTAL TO THE AWARD ON  
ISSUES OF GENERAL INTERPRETATION  
OF THE INDUS WATERS TREATY**

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Professor Jeffrey P. Minear  
Judge Awn Shawkat Al-Khasawneh  
Dr. Donald Blackmore

**SECRETARIAT:**

The Permanent Court of Arbitration

**15 May 2026**

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<b>Adjustable Operating Pool Table</b>	The Microsoft Excel table dated 9 December 2025, reproducing the operating pool calculations table for the Kiru HEP contained in Appendix VII of Exhibit P-0546
<b>Annexure D, Part 3 HEP</b>	A new Run-of-River Plant under Part 3 of Annexure D to the Treaty, excluding Small Plants as defined in Paragraph 18 of Annexure D
<b>Award on Competence</b>	Award on the Competence of the Court dated 6 July 2023
<b>Award on Issues of General Interpretation</b>	Award on Issues of General Interpretation of the Indus Waters Treaty dated 8 August 2025
<b>Baglihar Determination</b>	<i>Baglihar Hydro-electric Plant (Pakistan v. India)</i> , Neutral Expert Determination on the Baglihar Hydro-electric Plant dated 12 February 2007 ( <b>PLA-0002</b> )
<b>Baglihar Neutral Expert Proceedings</b>	<i>Baglihar Hydro-electric Plant (Pakistan v. India)</i> , Neutral Expert proceedings
<b>Capacity/Load/Pondage Calculation Issues</b>	The issues for determination in the Second Phase on the Merits concerning the basis upon which India must determine the installed capacity and anticipated load of a proposed Annexure D, Part 3 HEP, and, once determined, how these elements are to be taken into account for purposes of the calculation of maximum Pondage
<b>CM</b>	Cubic meters
<b>Commission</b>	The Permanent Indus Commission established by Article VIII of the Treaty, comprised of India's Commissioner and Pakistan's Commissioner
<b>Court</b>	The Court of Arbitration in these proceedings, constituted pursuant to Article IX(5) and Annexure G to the Treaty
<b>Decision on the Request for Clarification</b>	Decision on Pakistan's Request for Clarification of the Award on Issues of General Interpretation dated 8 November 2025
<b>Eastern Rivers</b>	The Sutlej, the Beas, and the Ravi Rivers and their tributaries
<b>First Phase on the Merits</b>	The first phase on the merits of these proceedings, concerning the overall interpretation or application of Article III of the Treaty, and Paragraph 8 of Annexure D thereto, in addition to a related question concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty
<b>Hearing for the Second Phase on the Merits or Hearing</b>	The oral hearing in the Second Phase on the Merits, held from 2 to 3 February 2026 in the Peace Palace, The Hague, the Netherlands
<b>HEP</b>	Hydro-Electric Plant
<b>India</b>	The Republic of India

<b>India’s Commissioner or ICIW</b>	Commissioner for Indus Waters appointed by India pursuant to Article VIII(1) of the Treaty
<b>KHEP or Kishenganga Plant</b>	Kishenganga Hydro-Electric Plant
<b>Kishenganga Court</b>	The Court of Arbitration in the <i>Kishenganga</i> Arbitration
<b>Kishenganga Final Award</b>	Final Award in the <i>Kishenganga</i> Arbitration dated 20 December 2013 ( <b>PLA-0004</b> )
<b>Kishenganga or Kishenganga Arbitration</b>	<i>Indus Waters Kishenganga Arbitration (Pakistan v. India)</i> , PCA Case No. 2011-01
<b>Kishenganga Partial Award</b>	Partial Award in the <i>Kishenganga</i> Arbitration dated 18 February 2013 ( <b>PLA-0003</b> )
<b>Kishenganga/Neelum River</b>	The river called the “Kishenganga” by India and the “Neelum” by Pakistan
<b>KW</b>	Kilowatts
<b>MCM</b>	Million cubic meters
<b>Minimum Flow Issue</b>	The issue for determination in the Second Phase on the Merits concerning whether maximum Pondage under Paragraph 8(c) of Annexure D must be calculated in a manner that satisfies any applicable minimum downstream flow obligation arising under the Treaty and customary international law
<b>MMD</b>	Minimum mean discharge, as defined in Paragraph 2(i) of Annexure D to the Treaty
<b>MW</b>	Megawatts
<b>Neutral Expert</b>	Mr. Michel Lino, the Neutral Expert appointed on 13 October 2022 by the World Bank further to India’s Request to the World Bank for the Appointment of a Neutral Expert dated 4 October 2016 ( <b>P-0156</b> )
<b>Neutral Expert Proceedings</b>	The proceedings conducted by the Neutral Expert
<b>NRG</b>	Northern Region Grid of India
<b>Pakistan</b>	The Islamic Republic of Pakistan
<b>Pakistan’s Commissioner or PCIW</b>	Commissioner for Indus Waters appointed by Pakistan pursuant to Article VIII(1) of the Treaty
<b>Pakistan’s Final Submissions</b>	Pakistan’s Final Submissions (Second Phase on the Merits) dated 3 February 2026
<b>Pakistan’s Further Phases Submission</b>	Pakistan’s Submission on Further Phases of the Proceedings dated 1 February 2026

<b>Pakistan's Pondage Utilization Submission</b>	Pakistan's Analysis of Actual Pondage Utilisation at the Baglihar and Kishenganga HEPs dated 16 March 2026
<b>Pakistan's Second Phase Memorial</b>	Pakistan's Memorial for the Second Phase on the Merits dated 19 January 2026
<b>Parties</b>	The Parties to these proceedings, namely the Islamic Republic of Pakistan and the Republic of India
<b>PCA</b>	Permanent Court of Arbitration
<b>Pondage Logbooks</b>	Logbook data for the Operating Pools of the Baglihar HEP and the Kishenganga HEP ( <b>P-0739</b> and <b>P-0740</b> )
<b>Pondage Utilization Materials</b>	Pondage Logbooks first introduced by India into the Neutral Expert Proceedings and the accompanying analysis by Pakistan submitted in those Proceedings
<b>Procedural Order No. 6</b>	Procedural Order No. 6 (Decision on Further Proceedings) dated 6 July 2023
<b>Procedural Order No. 11</b>	Procedural Order No. 11 (Production of Papers and Other Evidence) dated 27 May 2024
<b>Procedural Order No. 13</b>	Procedural Order No. 13 (Post-Hearing Procedure for the First Phase on the Merits) dated 13 August 2024
<b>Procedural Order No. 14</b>	Procedural Order No. 14 (Further Directions Regarding the Production of Papers and Other Evidence; Further Comments by the Parties on Particular Matters) dated 6 December 2024
<b>Procedural Order No. 15</b>	Procedural Order No. 15 (Recent Developments that May Bear on Matters Before the Court) dated 16 May 2025
<b>Procedural Order No. 16</b>	Procedural Order No. 16 (Directions on Further Proceedings) dated 8 November 2025
<b>Procedural Order No. 17</b>	Procedural Order No. 17 (Second Phase on the Merits) dated 21 November 2025
<b>Procedural Order No. 18</b>	Procedural Order No. 18 (Organization of the Hearing for the Second Phase on the Merits) dated 24 January 2026
<b>Procedural Order No. 19</b>	Procedural Order No. 19 (Request by Pakistan for Guidance regarding Disclosure of Information) dated 29 January 2026
<b>Procedural Order No. 20</b>	Procedural Order No. 20 (Submission of Pondage Logbooks from the Neutral Expert Proceedings) dated 12 March 2026
<b>Request for Arbitration</b>	Pakistan's Request for Arbitration dated 19 August 2016
<b>Request for Clarification</b>	Pakistan's Request for Clarification dated 19 September 2025, pursuant to Paragraph 27 of Annexure G to the Treaty

<b>Required Documents</b>	The papers and other evidence falling within specified categories that the Court requested to be produced by Pakistan on 27 May 2024 pursuant to Paragraph 20 of Annexure G to the Treaty and Article 22(3) of the Supplemental Rules of Procedure
<b>RHEP or Ratle Plant</b>	Ratle Hydro-Electric Plant
<b>Run-of-River Plant or Run-of-River HEP</b>	As defined at Paragraph 2(g) of Annexure D to the Treaty, “a hydro-electric plant that develops without Live Storage as an integral part of the plant, except for Pondage and Surcharge Storage”
<b>Second Phase on the Merits</b>	The second phase on the merits of these proceedings, specific to resolving the basis upon which India must determine the installed capacity and anticipated load of a proposed Annexure D, Part 3 HEP, and, once determined, how these elements are to be taken into account for purposes of the calculation of maximum Pondage
<b>Supplemental Award on Competence</b>	Supplemental Award on the Competence of the Court dated 27 June 2025
<b>Supplemental Rules of Procedure</b>	Supplemental Rules of Procedure dated 31 March 2023
<b>Treaty</b>	<i>Indus Waters Treaty 1960 Between the Government of India, the Government of Pakistan and the International Bank for Reconstruction and Development</i> , signed at Karachi on 19 September 1960 (PLA-0001)
<b>VCLT</b>	<i>Vienna Convention on the Law of Treaties</i> , opened for signature at Vienna on 23 May 1969 (PLA-0005)
<b>Western Rivers</b>	The Indus, the Jhelum, and the Chenab Rivers and their tributaries
<b>World Bank</b>	International Bank for Reconstruction and Development

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## I. INTRODUCTION

1. The present Award concerns certain discrete issues with respect to the calculation of pondage for run-of-river hydro-electric plants (“**Run-of-River Plants**” or “**Run-of-River HEPs**”) as regulated under the Indus Waters Treaty of 1960 (“**Treaty**”) between the Islamic Republic of Pakistan (“**Pakistan**”) and the Republic of India (“**India**”) (together, the “**Parties**”).<sup>1</sup>
2. Specifically, these issues principally concern how—when designing any new Run-of-River HEP under Part 3 of Annexure D (“**Annexure D, Part 3 HEP**”)—India’s calculation of the maximum Pondage of the hydro-electric plant (“**HEP**”) is to take account of, *inter alia*, two elements: (1) the installed capacity of the HEP, meaning the maximum aggregate capacity of the power units of the HEP; and (2) the anticipated load, meaning the pattern of power demand for which the HEP is designed. Pakistan has also sought an acknowledgment by this Court of Arbitration (“**Court**”) that such calculation is also to take account of a third element, which is the maintenance of a minimum downstream flow as necessary for environmental purposes.
3. Decisions reached in this Award on these issues are supplemental to the Award on Issues of General Interpretation of the Indus Waters Treaty dated 8 August 2025 (“**Award on Issues of General Interpretation**”),<sup>2</sup> which, *inter alia*, broadly addressed the calculation of maximum Pondage under Annexure D, Part 3 of the Treaty.<sup>3</sup> Thus, this Award should be read in conjunction with the Award on Issues of General Interpretation.
4. In general, the present proceedings concern certain disputes that have arisen between the Parties concerning the interpretation or application of the Treaty, which sets forth the respective rights and obligations of the two States concerning the use of the waters of the Indus, the Jhelum, and the Chenab Rivers and their tributaries (“**Western Rivers**”) and the waters of the Sutlej, Beas, and Ravi Rivers and their tributaries (“**Eastern Rivers**”). These disputes concern portions of the Treaty that permit India to generate hydro-electric power by constructing Run-of-River HEPs on the Western Rivers, subject to restrictions. Pakistan contends that the design and operation of Indian Annexure D, Part 3 HEPs are not in keeping with the provisions of the Treaty and have the

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<sup>1</sup> **PLA-0001**, *Indus Waters Treaty 1960 Between the Government of India, the Government of Pakistan and the International Bank for Reconstruction and Development*, signed at Karachi on 19 September 1960, 419 U.N.T.S. 126. The Treaty entered into force on 12 January 1961, with retroactive effect from 1 April 1960.

<sup>2</sup> Award on Issues of General Interpretation of the Indus Waters Treaty dated 8 August 2025 (“**Award on Issues of General Interpretation**”).

<sup>3</sup> Award on Issues of General Interpretation, Pt. XI.

effect of enabling India to exercise greater control over the waters of the Western Rivers than is envisaged or permitted by the Treaty. The disputes crystalized in the context of two specific Indian HEPs—the Kishenganga Hydro-Electric Plant (“**KHEP**” or “**Kishenganga Plant**”) on the Kishenganga/Neelum River (a tributary of the Jhelum River);<sup>4</sup> and the Ratle Hydro-Electric Plant (“**RHEP**” or “**Ratle Plant**”) on the Chenab River—but are raised by Pakistan as broader legal disputes over the interpretation and application of the Treaty with implications not limited to those specific Run-of-River HEPs.

5. Pakistan initiated the present arbitration proceedings by way of a Request for Arbitration dated 19 August 2016 pursuant to Article IX and Paragraph 2(b) of Annexure G to the Treaty (“**Request for Arbitration**”).<sup>5</sup> The proceedings commenced and the Court was constituted only after the International Bank for Reconstruction and Development (“**World Bank**”) imposed a lengthy pause. Thereafter, the Court detailed in two awards why it was competent to address the issues raised in the Request for Arbitration; those awards are the Award on the Competence of the Court dated 6 July 2023 (“**Award on Competence**”)<sup>6</sup> and the Supplemental Award on the Competence of the Court dated 27 June 2025 (“**Supplemental Award on Competence**”).<sup>7</sup>
6. Having determined its competence, but prior to addressing issues of interpretation and application specific to the KHEP and the RHEP, the Court determined that there were certain issues of general interpretation that should be addressed as an initial matter. To that end, the Court conducted a phase of the proceedings addressing certain issues that arise from the Request for Arbitration concerning the overall interpretation or application of Article III of the Treaty, and Paragraph 8 of Annexure D thereto, in addition to a related question concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty (“**First Phase on the Merits**”), which led to the issuance of the Award on Issues of General Interpretation.

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<sup>4</sup> The Kishenganga Plant was the subject of previous arbitration proceedings between Pakistan and India, leading to a partial award in February 2013 and a final award in December 2013. See **PLA-0003**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Partial Award, 18 February 2013, 31 Rep. of Intl. Arb. Awards 55 (“**Kishenganga Partial Award**”); **PLA-0004**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Final Award, 20 December 2013, XXXI UNRIAA 309 (“**Kishenganga Final Award**”).

<sup>5</sup> Pakistan’s Request for Arbitration dated 19 August 2016 (“**Request for Arbitration**”). In July 2023, the Court granted leave to Pakistan to amend its Request for Arbitration. See Procedural Order No. 7. Pakistan thereafter filed its Amended Request for Arbitration dated 28 July 2023.

<sup>6</sup> Award on the Competence of the Court dated 6 July 2023 (“**Award on Competence**”).

<sup>7</sup> Supplemental Award on the Competence of the Court dated 27 June 2025 (“**Supplemental Award on Competence**”).

Among other issues addressed in that Award, Part XI provided the Court's general interpretation of Annexure D, Paragraph 8(c) of the Treaty on the calculation of maximum Pondage.

7. On 19 September 2025, Pakistan transmitted a letter to the Court pursuant to Paragraph 27 of Annexure G to the Treaty, in which it sought “the Court’s clarification of a number of points arising out of the Award [on General Interpretation]” (“**Request for Clarification**”).<sup>8</sup> On 8 November 2025, the Court issued a Decision on Pakistan’s Request for Clarification of the Award on Issues of General Interpretation (“**Decision on the Request for Clarification**”).<sup>9</sup> While the Court in that Decision provided clarifications with respect to some aspects of the Request for Clarification, the Court declined to provide clarifications with respect to other aspects of Pakistan’s Request, considering them to raise issues that the Court had not yet decided.
8. Of relevance to the present Award, the Court declined to clarify how the Treaty regulates the basis upon which India must determine the installed capacity and anticipated load of a proposed Annexure D, Part 3 HEP, and, once determined, how these elements are to be taken into account for purposes of the calculation of maximum Pondage (“**Capacity/Load/Pondage Calculation Issues**”). Even so, the Court noted that it was open to Pakistan to pursue a further phase in these proceedings to address that issue.
9. On 13 November 2025, Pakistan requested such a further phase to address the Capacity/Load/Pondage Calculation Issues, which then resulted in written and oral submissions to the Court. In the course of those submissions, Pakistan further requested that the Court acknowledge that the calculation of maximum Pondage must abide by any applicable obligation to maintain a minimum flow downstream of a Run-of-River HEP for environmental protection (“**Minimum Flow Issue**”).<sup>10</sup> This Award, therefore, is supplemental to the Award on Issues of General Interpretation and addresses the relevance to the calculation of maximum Pondage of both the Capacity/Load/Pondage Calculation Issues and the Minimum Flow Issue.
10. **Part II** recounts the procedural history of this Award. **Part III** identifies the issues for determination before the Court in this phase of the proceedings. **Part IV** addresses certain preliminary matters by: recounting some general considerations; identifying the relevant law to be applied by the Court; addressing aspects of the Award on Issues of General Interpretation that

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<sup>8</sup> Pakistan’s Request for Clarification dated 19 September 2025, pursuant to Paragraph 27 of Annexure G to the Treaty (“**Request for Clarification**”), para. 1.

<sup>9</sup> Decision on Pakistan’s Request for Clarification of the Award on Issues of General Interpretation dated 8 November 2025 (“**Decision on the Request for Clarification**”).

<sup>10</sup> Tr., Day 1, 2 February 2026, pp. 45:20–46:03.

are pertinent to this Award, specifically the controlling effect of prior dispute settlement decisions, the overall approach when interpreting Article III and Annexure D, Part 3, of the Treaty, salient engineering concepts and terminology in relation to Run-of-River HEPs, the Court's overall interpretation of Annexure D, Paragraph 8(c), and cooperation and information sharing under the Treaty; and explaining the Court's Decision on the Request for Clarification in that regard.

11. **Part V** recounts the positions of the Parties on the Capacity/Load/Pondage Calculation Issues and the Minimum Flow Issue. **Part VI** provides the Court's analysis and determinations on those issues and, in light of the Court's determinations, emphasizes certain points with respect to cooperation and information sharing in relation to the calculation of maximum Pondage. In light of the foregoing, **Part VII** recalls the decisions taken in the Award on Issues of General Interpretation and the Decision on the Request for Clarification, and it sets out the Court's decision on the issues before it in this Award.

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## II. PROCEDURAL HISTORY

12. The detailed history of the origin of the present dispute and the procedural history of these proceedings is set out in the previous awards of the Court, including the Award on Competence and the Award on Issues of General Interpretation, as well as the Court's subsequent procedural orders and decisions.

### A. INITIATION OF THE ARBITRATION AND PRELIMINARY PHASE ON THE COMPETENCE OF THE COURT

13. On 19 August 2016, Pakistan initiated this arbitration by way of its Request for Arbitration, served upon India pursuant to Article IX and Paragraph 2(b) of Annexure G to the Treaty.

14. On 31 March 2023, the Court issued Supplemental Rules of Procedure, further to Paragraph 16 of Annexure G to the Treaty ("**Supplemental Rules of Procedure**").

15. On 6 July 2023, following written submissions and an oral hearing, the Court issued the Award on Competence, finding that the Court is competent to consider and determine the disputes set forth in Pakistan's Request for Arbitration.

### B. FIRST PHASE ON THE MERITS

16. On 6 July 2023, the Court also issued Procedural Order No. 6 (Decision on Further Proceedings) ("**Procedural Order No. 6**"), determining that the Court would conduct these proceedings in a phased manner, and that the First Phase on the Merits would address certain questions that arise from the Request for Arbitration concerning the overall interpretation or application of Article III of the Treaty, and Paragraph 8 of Annexure D thereto, in addition to a related question concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty.

17. On 10 August 2023, the Court issued Procedural Order No. 8 (Application to Amend the Request for Arbitration), granting an application from Pakistan to amend its Request for Arbitration. Thereafter, Pakistan filed its Amended Request for Arbitration.

18. On 22 March 2024, pursuant to paragraph 2.1 of Procedural Order No. 7, Pakistan submitted its Memorial for the First Phase on the Merits, and its accompanying documents.

19. From 23 to 29 April 2024, the Court conducted a site visit to the Neelum Jhelum HEP, located in the Jammu and Kashmir region administered by Pakistan, solely for the purpose of familiarizing

the Court with general aspects of the design and operation of run-of-river hydro-electric plants along the Indus system of rivers.

20. On 27 May 2024, the Court issued Procedural Order No. 11 (Production of Papers and Other Evidence) (“**Procedural Order No. 11**”), in which the Court ordered Pakistan to produce several categories of documents from its records in order to assist the Court in its deliberations on the First Phase of the Merits (“**Required Documents**”). Thereafter, Pakistan began producing such documents on a timetable established by the Court.
21. From 8 to 16 July 2024, the Hearing for the First Phase on the Merits took place at the Peace Palace in The Hague in accordance with paragraph 1.1 of Procedural Order No. 12 (Organization of the Hearing for the First Phase on the Merits).
22. On 13 August 2024, the Court issued Procedural Order No. 13 (Post-Hearing Procedure for the First Phase on the Merits) (“**Procedural Order No. 13**”), in which the Court, *inter alia*, ordered Pakistan to file certain post-hearing submissions addressing issues that arose during the course of the Hearing for the First Phase on the Merits. On 30 September 2024, Pakistan submitted an Explanatory Memorandum describing the scope of the searches it had carried out pursuant to Procedural Order No. 11 and the categories of documents that had been excluded from production. On 14 October 2024, Pakistan applied to submit a short Supplementary Memorandum regarding the content of the Required Documents, which the Court granted. On 1 November 2024, Pakistan submitted its Post-Hearing Submission pursuant to Procedural Order No. 13. On 8 November 2024, Pakistan submitted its Supplementary Memorandum and accompanying Appendix.
23. On 6 December 2024, the Court issued Procedural Order No. 14 (Further Directions Regarding the Production of Papers and other Evidence; Further Comments by the Parties on Particular Matters) (“**Procedural Order No. 14**”), in which the Court, *inter alia*, invited the Parties to comment on the historic practice of the Parties when calculating maximum Pondage, as well as the relationship of Pondage to sedimentation and the possible “weaponization” of the Western Rivers.
24. On 23 April 2025, following an attack by armed individuals in India-administered Jammu and Kashmir, the Foreign Secretary of India issued a statement about a decision of the Cabinet Committee on Security, indicating, *inter alia*, that “[t]he Indus Waters Treaty of 1960 will be held in abeyance with immediate effect, until Pakistan credibly and irrevocably abjures its support for cross-border terrorism”. On 24 April 2025, India’s Secretary of the Ministry of Jal Shakti sent a

letter to Pakistan’s Secretary of the Ministry of Water Resources communicating a decision that the Treaty “will be held in abeyance with immediate effect”.

25. On 27 June 2025, the Court issued the Supplemental Award on Competence, finding *inter alia* that India’s position on “abeyance” of the Treaty does not limit the competence of the Court over this dispute, which the Court had previously affirmed in the Award on Competence, and finding that the Court has a continuing responsibility to advance these proceedings in a timely, efficient, and fair manner, notwithstanding India’s position on “abeyance”.

**C. AWARD ON ISSUES OF GENERAL INTERPRETATION**

26. On 8 August 2025, the Court issued the Award on Issues of General Interpretation, in which the Court made determinations with respect to certain questions concerning the overall interpretation and application of the Treaty, including questions with respect to Article III and Paragraph 8 of Annexure D, as well as a related general question concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty.
27. Part I of the Award set out an introduction. Part II recounted the procedural history leading to the Award on Issues of General Interpretation. Part III set forth the relevant facts that served as the foundation for resolving the issues placed before the Court in the First Phase on the Merits. Part IV addressed three preliminary matters relating to the parallel proceedings before the Neutral Expert and to the relevance of India’s non-appearance in these proceedings. Part V outlined the issues for determination in the First Phase on the Merits. Part VI identified the law applicable when addressing those issues. Part VII addressed the legally binding (*res judicata*) effects of dispute resolution decisions under the Treaty.
28. Part VIII assessed the overall approach to be taken when interpreting Article III and Part 3 of Annexure D to the Treaty, in light of the object and purpose of the Treaty as it related to the Western Rivers. Part IX identified the basic elements of run-of-river HEP design and operation relevant to understanding the Parties’ positions with respect to the interpretation of specific provisions of Part 3 of Annexure D to the Treaty.
29. On the basis of those considerations, the Award interpreted the Treaty provisions governing the components of Run-of-River HEP design and operation at issue in the First Phase on the Merits. Part X analyzed the meaning of Paragraphs 8(d), 8(e), and 8(f) of Annexure D to the Treaty, addressing in turn: outlets located partially or entirely below the Dead Storage Level of the HEP’s reservoir; gated spillways located at the crest of the dam structure; and intakes for the turbines located below the Dead Storage Level. Part XI then analyzed the meaning of Annexure D,

Paragraph 8(c), concerning the maximum Pondage permitted above the Dead Storage Level. Finally, Part XII analyzed the meaning of Annexure D, Paragraph 8(a), concerning the artificial raising of the water level above the Full Pondage Level (including the use of freeboard).

30. Part XIII highlighted the critical role of cooperation within the scheme of the Treaty. Part XIV concluded with the decision of the Court, setting out the findings of the Court.

**D. DECISION ON THE REQUEST FOR CLARIFICATION**

31. On 19 September 2025, Pakistan transmitted a letter to the Court pursuant to Paragraph 27 of Annexure G to the Treaty, in which it sought “the Court’s clarification of a number of points arising out of the Award [on Issues of General Interpretation]”. Of relevance to the present phase of the proceedings, Pakistan requested:

the Court’s clarification on how the Treaty regulates the basis upon which India must determine the installed capacity and anticipated load of a proposed Annexure D, Part 3 HEP, including the limits, if any, arising from the Treaty on the determination of such installed capacity and anticipated load. Further, Pakistan requests the Court’s clarification of how, once the installed capacity and anticipated load of the proposed Plant have been determined, these elements are to be taken into account for purposes of the calculation of maximum Pondage.

32. On 8 November 2025, the Court issued its unanimous Decision on the Request for Clarification. Part I of the Decision set out an introduction. Part II recounted the background to Pakistan’s Request for Clarification, including the procedural history following the issuance of the Award on Issues of General Interpretation. Part III found that Pakistan’s request was timely, explained the Court’s mandate to clarify its Award and the binding effect thereof, and, after recounting the Parties’ positions, provided the Court’s legal analysis with respect to Pakistan’s requests for clarification. Part IV concluded with the decision of the Court.

33. Several of the clarifications provided were unrelated to the present phase of the proceedings, but the Court provided three clarifications in its Decision on the Request for Clarification that do have a material bearing on this phase.<sup>11</sup> Further, the Court recalled its conclusion in its Award on Issues of General Interpretation that, with respect to whether and how the Treaty regulates the basis upon which India may determine such installed capacity and anticipated load, “Pakistan or India may seek to pursue the matter through the Treaty’s dispute resolution procedures, including a further phase of these proceedings”. The Court further stated as follows:

Were either Party to seek leave in that regard, the Court is open to conducting a further phase of these proceedings on this issue. Such a phase would provide an opportunity for written submissions from both Parties on this issue that, *inter alia*, identify the relevant Treaty

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<sup>11</sup> See paras. 93–97, *infra*.

provisions, the relevant documents in the record, and the Parties' current and past positions and practice, including in the *Baglihar* Neutral Expert Proceedings. The Court takes note in this regard of Pakistan's statement at the Case Management Conference that:

We would much rather that you deliberate fully and properly, and that you come to the best reliable conclusions that you can come to. And if that means on this particular issue that there needs to be another procedure, well, of course, then there absolutely needs to be another procedure.

**E. SECOND PHASE ON THE MERITS**

34. On 8 November 2025, the same date as the Decision on the Request for Clarification, the Court issued Procedural Order No. 16 (Directions on Further Proceedings) ("**Procedural Order No. 16**"), in which the Court, *inter alia*, confirmed its intention to continue these proceedings in a phased manner, bearing in mind the status of, and developments concerning, the parallel proceedings before the Neutral Expert appointed pursuant to Annexure F of the Treaty ("**Neutral Expert Proceedings**"). The Court therefore invited each Party to provide written submissions regarding the status of the Neutral Expert Proceedings and regarding its views as to a further phase or phases in these proceedings in respect of matters raised in Pakistan's Request for Arbitration that were not resolved in the Award on Issues of General Interpretation. The Court also indicated that either Party could request a further phase of the proceedings specific to "resolving the basis upon which India must determine the installed capacity and anticipated load of a proposed Annexure D, Part 3 HEP, and, once determined, how these elements are to be taken into account for purposes of the calculation of maximum Pondage" (the Capacity/Load/Pondage Calculation Issues).
35. On 13 November 2025, Pakistan requested a further phase of the proceedings specific to the Capacity/Load/Pondage Calculation Issues.
36. On 21 November 2025, the Court issued Procedural Order No. 17 (Second Phase on the Merits) ("**Procedural Order No. 17**"), in which the Court determined to conduct a further phase of the proceedings specific to resolving the Capacity/Load/Pondage Calculation Issues ("**Second Phase on the Merits**"), and envisaged that an oral hearing for the Second Phase on the Merits would be held in the Peace Palace, The Hague, the Netherlands ("**Hearing for the Second Phase on the Merits**" or "**Hearing**"). Further, in the event that India did not inform the Court of its intention to participate in the Second Phase on the Merits, the Court determined that the Hearing would take place from 2 to 3 February 2026.
37. India did not indicate an intention to submit a Counter-Memorial or otherwise participate in the Second Phase on the Merits by the deadline fixed by the Court, nor has it done so to date.

38. On 9 December 2025, the Court transmitted to the Parties an Excel table reproducing the operating pool calculations table for the Kiru HEP contained in Appendix VII of Exhibit P-0546 (the “**Adjustable Operating Pool Table**”), and it invited the Parties to address several questions relating to the table in their written and/or oral submissions.
39. On 9 January 2026, pursuant to paragraph 2.1 of Procedural Order No. 16, Pakistan provided its submission addressing the status of the Neutral Expert Proceedings. In the same communication, Pakistan applied to the Court for directions regarding the Adjustable Operating Pool Table as well as the disclosure of information in its possession from the Neutral Expert Proceedings with respect to the following two categories:
- (1) *first*, information that Pakistan considered “directly relevant and material to the issues engaged by the Court’s enquiry in its Second Phase on the Merits” (namely, logbook data for the Operating Pools of the Baglihar HEP and the KHEP (“**Pondage Logbooks**”), as well as Pakistan’s analysis of this data, as submitted in the Neutral Expert Proceedings) (collectively, the “**Pondage Utilization Materials**”); and
  - (2) *second*, information “that would be highly material to issues that Pakistan anticipates bringing to the Court shortly by way of urgent application that (a) go beyond questions in respect of which the NE is seised or would be competent, and (b) fall properly within the scope of the Court’s competence in the present proceedings”.
40. On 17 January 2026, the Court provided further details regarding the Adjustable Operating Pool Table. Further, in relation to the Pondage Utilization Materials, the Court invited Pakistan to provide, by 23 January 2026, a request to introduce specific information arising in the Neutral Expert Proceedings (in as much detail as possible, subject to any duty of confidentiality), indicating, *inter alia*, “the relevance of such information to the issues before the Court in the Second Phase on the Merits”. Finally, the Court indicated, in relation to the second category of documents, that the Court “is not inclined to decide the matter until a decision is reached as to the nature of the issues before the Court in such future phases of these proceedings”.
41. On 19 January 2026, pursuant to paragraph 2.2 of Procedural Order No. 17, Pakistan submitted its Memorial for the Second Phase on the Merits, and its accompanying documents (“**Pakistan’s Second Phase Memorial**”).
42. On 23 January 2026, Pakistan clarified that the Pondage Utilization Materials it sought to be entered into the record of these proceedings included “a handful of exhibits and appendices, or portions thereof, filed by India in the Neutral Expert proceedings, and the analyses thereof

undertaken by Pakistan”. Further, Pakistan reiterated its request to the Court for urgent directions or guidance on the disclosure of information from the Neutral Expert Proceedings, as raised in its letter dated 9 January 2026.

43. On 24 January 2026, the Court issued Procedural Order No. 18 (Organization of the Hearing for the Second Phase on the Merits) (“**Procedural Order No. 18**”) addressing the organization of the Hearing.
44. On 29 January 2026, the Court issued Procedural Order No. 19 (Request by Pakistan for Guidance regarding Disclosure of Information) (“**Procedural Order No. 19**”), in which the Court, *inter alia*, directed India to produce the Pondage Logbooks identified by Pakistan, or otherwise contest the scope of the Pondage Logbooks. With respect to the analysis from the Neutral Expert Proceedings, the Court observed that once the underlying Pondage Logbook data had been entered into the record, it was open to Pakistan to analyze such data in its submissions in these proceedings as it considered appropriate. Further, the Court deferred its decision relating to the production of documents concerning a potential future phase of these proceedings, including a possible request for interim measures of protection, until such a future phase had commenced.
45. On 1 February 2026, Pakistan transmitted its Submission on the Further Phases of the Proceedings pursuant to paragraph 3.1 of Procedural Order No. 16 (“**Pakistan’s Further Phases Submission**”).

#### **F. HEARING FOR THE SECOND PHASE ON THE MERITS**

46. The Hearing for the Second Phase on the Merits took place at the Peace Palace in The Hague from 2 to 3 February 2026, in accordance with paragraph 2.1 of Procedural Order No. 18. The following persons were present:

##### **Court of Arbitration**

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

##### **Representatives of Pakistan**

Mr. Mansoor Usman Awan, Agent, Attorney-General for Pakistan  
Mr. Syed Muhammad Mehar Ali Shah, Pakistan Commissioner for Indus Waters  
H.E. Mr. Syed Haidar Shah, Ambassador of Pakistan to The Netherlands  
Mr. Jamal Nasir, First Secretary, Embassy of Pakistan to The Netherlands  
Sir Daniel Bethlehem KC, Counsel for Pakistan  
Professor Philippa Webb, Counsel for Pakistan  
Dr. Cameron Miles, Counsel for Pakistan  
Ms. Charlotte Westbrook, Counsel for Pakistan

Mr. Abdullah Tariq, Counsel for Pakistan  
Mr. Peter J. Rae, Technical Adviser and Advocate  
Dr. Gregory L. Morris, Technical Adviser and Advocate

**India**

*No Agent or representatives present*

**The Secretariat**

Mr. Garth Schofield, Registrar and Deputy Secretary-General of the PCA  
Mr. Bryce Williams, Treasurer and Legal Counsel  
Mr. Sebastian King, Legal Counsel

**Court Reporter**

Mr. Trevor McGowan

**Assistant to Judge Al-Khasawneh**<sup>12</sup>

Ms. Fedelma C. Smith-Ruiz

47. The following persons presented oral arguments before the Court on behalf of Pakistan:

Mr. Mansoor Usman Awan, Agent  
Sir Daniel Bethlehem KC, Counsel for Pakistan  
Professor Philippa Webb, Counsel for Pakistan  
Dr. Cameron Miles, Counsel for Pakistan  
Dr. Gregory L. Morris, Technical Adviser and Advocate  
Mr. Peter J. Rae, Technical Adviser and Advocate

48. India did not appear at, or participate in, the Hearing.

49. On 3 February 2026, Pakistan's agent, Mr. Mansoor Usman Awan, Attorney-General for Pakistan, formally presented Pakistan's Final Submissions (Second Phase on the Merits) ("**Pakistan's Final Submissions**").

50. Following the Hearing, the Court distributed the verbatim transcript for the Hearing, signed by the Chairman of the Court, which constituted minutes for the purpose of Paragraph 19 of Annexure G to the Treaty.

**G. POST-HEARING PROCEDURES**

51. On 3 February 2026, following the conclusion of the Hearing, the Court held a case management conference to discuss, *inter alia*, the issues raised in Pakistan's Further Phases Submission, including the timing of Pakistan's requests for further phases of the proceedings. India did not appear at, or participate in, the case management conference.

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<sup>12</sup> The Court authorized the appointment of Ms. Fedelma C. Smith-Ruiz as an assistant to Judge Al-Khasawneh, following a request for additional administrative support on a temporary basis.

52. On 9 February 2026, the Court wrote to the Parties with respect to further phases of the proceedings, noting that “the Court will issue directions for any such phase upon receipt of an application from Pakistan”, including “mak[ing] orders with respect to any ancillary issues, such as the production of documents”.
53. On 5 March 2026, Pakistan informed the Court that the Neutral Expert had granted an application made by Pakistan for the disclosure to the Court of the Pondage Logbooks, “subject to drawing the attention of the Court to the confidentiality of these documents, which should be maintained in the Court proceedings”. Pakistan further informed the Court of its intention to submit to the Court the Pondage Logbooks, and Pakistan’s analysis thereof, in the following days.
54. On 12 March 2026, the Court issued Procedural Order No. 20 (Submission of Pondage Logbooks from the Neutral Expert Proceedings) (“**Procedural Order No. 20**”), by which the Court granted Pakistan leave to submit the Pondage Logbooks into the record of these proceedings. The Court requested the Parties to submit any written submissions analyzing the Pondage Logbooks as they pertain to the issues before the Court in the Second Phase on the Merits. The Court further ordered that the Pondage Logbooks, and the Parties’ written submissions analyzing the Pondage Logbooks, shall be kept confidential in the present proceedings.
55. On 16 March 2026, Pakistan submitted to the Court its Analysis of Actual Pondage Utilisation at the Baglihar and Kishenganga HEPs (“**Pakistan’s Pondage Utilization Submission**”), in addition to the Pondage Logbooks.
56. On 10 April 2026, the Court directed Pakistan to submit certain data arising from the calculations set out in Pakistan’s Pondage Utilization Submission, and to confirm the methodology used by Pakistan in calculating the volume of the Baglihar HEP and KHEP Operating Pools in its analysis.
57. On 20 April 2026, Pakistan submitted the data arising from the calculations set out in Pakistan’s Pondage Utilization Submission and provided clarifications with respect to its calculation methodologies.

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### III. ISSUES FOR DETERMINATION IN THIS PHASE OF THE PROCEEDINGS

#### A. PAKISTAN'S REQUEST FOR RELIEF

58. By Procedural Order No. 17, the Court defined the present phase of the proceedings as being directed specifically to “resolving the basis upon which India must determine the installed capacity and anticipated load of a proposed Annexure D, Part 3 HEP, and, once determined, how these elements are to be taken into account for purposes of the calculation of maximum Pondage”.<sup>13</sup> The present Award therefore principally concerns the lacuna expressly identified by the Court in its Award on Issues of General Interpretation, namely whether, and if so how, the Treaty regulates India’s determination of those elements.

59. Against that background, in its Second Phase Memorial, Pakistan requested that the Court adjudge and declare the following relief:

When designing an Annexure D, Part 3 HEP, India is limited to a maximum Pondage pursuant to Paragraph 8(c) of Annexure D of the Indus Waters Treaty taking into account the following restrictions and interpretative principles:

- (1) “Firm Power”, shall be calculated as the hydro-electric power corresponding to the minimum mean discharge at the site of the Plant, calculated in accordance with Paragraph 2(i) of Annexure D;
- (2) “Pondage required for Firm Power” shall be calculated based on the water that can be accumulated and released at the site of India’s proposed Annexure D, Part 3 HEP during the course of no more than a seven-day period, within the following constraints:
  - (a) Pondage required for Firm Power shall be calculated based on what can be accumulated during that period when the stream flow of the river is at the MMD, as set forth in Paragraph 2(i) of Annexure D;
  - (b) “Pondage required for Firm Power” shall be calculated based on a realistic, well-founded and defensible projection of the proposed HEP’s installed capacity and anticipated load, reflecting the fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the Plant, as set forth in Paragraph 2(c) of Annexure D;
  - (c) A “realistic, well-founded, and defensible” projection of the proposed HEP’s installed capacity and anticipated load:
    - (i) must correspond to how the HEP will actually be operated once constructed;
    - (ii) cannot be hypothesised in a manner that serves to inflate the maximum Pondage; and
    - (iii) must be established by India on the basis of the information that it is required to communicate to Pakistan with respect to the HEP pursuant to Paragraph 9 and Appendix II of Annexure D;

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<sup>13</sup> Procedural Order No. 17, para 1.2.

- (d) The question of how the HEP will actually be operated must be determined by reference to the hydrology of the HEP site and the needs of the power system to which it will be expected to contribute during the dry season;
  - (e) The needs of the power system will be determined by reference to a load curve representative of typical demand during the dry season;
  - (f) When determining the installed capacity and anticipated load in light of the needs of the power system during the dry season, account must be taken of, *inter alia*:
    - (i) distribution of demand as between weekends and weekdays within the power system;
    - (ii) the need for the HEP to make a meaningful contribution to the power system on a daily and weekly basis at times of peak demand, and that the daily dispatch schedule be realistic considering the operation of the HEP within the overall system; and
    - (iii) the operational requirements of the HEP's turbines, including the need for:
      - α. ramp-up and ramp-down time;
      - β. operation at the best efficiency point; and
      - γ. maintenance;
  - (g) "Pondage required for Firm Power" shall be calculated in a manner that abides by:
    - (i) the daily and weekly release requirements set out in Paragraph 15 of Annexure D; and
    - (ii) India's obligation to prevent significant harm to the environment through provision of an environmental flow specific to each HEP site; and
- (3) "maximum Pondage" shall be no more than twice the Pondage calculated in accordance with the above requirements.<sup>14</sup>

60. On 3 February 2026, Mr. Mansoor Usman Awan, Attorney-General for Pakistan, formally presented Pakistan's Final Submissions, which outlined Pakistan's requests to the Court on the Second Phase on the Merits as follows:

Having regard to the Court's analysis and findings in its Award on General Issues of Interpretation of the Indus Waters Treaty and its Decision on Pakistan's Request for the Clarification of the Award on General Issues of Interpretation, Pakistan requests the Court to adjudge and declare:

1. That the Treaty contains limits on the projection of installed capacity and anticipated load of an Annexure D, Part 3 HEP in Paragraphs 8(a), 8(b), 8(c), and 15 of Annexure D, and Appendix II to Annexure D of the Indus Waters Treaty.
2. That India must communicate to Pakistan, as part of its Annexure D, Paragraph 9 notification of the design of a proposed Annexure D, Part 3 HEP, information and

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<sup>14</sup> Pakistan's Second Phase Memorial, para. 5.7.

explanation relating to India's calculation for maximum Pondage, and that such information and explanation must include the following:

- a. A representative weekly load curve for the dry season in the Northern Region Grid based on historical load demand data, accompanied by the underlying data;
  - b. Information on the anticipated future load, including any underlying data, if India desires to account for such future load in its projection of the anticipated load of a proposed Annexure D, Part 3 HEP;
  - c. A justification for the projection of the installed capacity of a proposed Annexure D, Part 3 HEP, having regard to the hydrology at the HEP site and the anticipated load.
3. In the event that India fails to provide the information in paragraph (2) above, or provides materially insufficient information, there will be a presumption that India's projection of the proposed Annexure D, Part 3 HEP's installed capacity and anticipated load is not realistic, well-founded, and defensible and does not accord with the anticipated actual operation of that HEP.
  4. For purposes of India's projection of a proposed Annexure D, Part 3 HEP's installed capacity and anticipated load, India must take account of and base such projection, *inter alia*, on the information identified in paragraph (2) above.
  5. Having so determined its proposed Annexure D, Part 3 HEP's anticipated load and installed capacity, India must account for the projection of installed capacity and anticipated load in its calculation for maximum Pondage:
    - a. in a manner that enables a proposed Annexure D, Part 3 HEP to make a meaningful contribution to the Northern Region Grid on a daily and weekly basis at times of peak demand, including by setting a daily dispatch schedule, comprising its duration and capacity, that is realistic considering the operation of the HEP within the Northern Region Grid and allocates a distribution of demand as between weekends and weekdays that corresponds to the actual demand on the power system; and
    - b. in a manner that corresponds with the operational requirements of the proposed Annexure D, Part 3 HEP's turbines.
  6. Paragraph 15 of Annexure D does not function as an *ab initio* design criterion, to be applied at the outset of the design process, but is rather an operational constraint that is relevant for purposes of the design process that must be applied to ensure that Pondage required for Firm Power shall be calculated in a manner that abides by the daily and weekly release requirements set out in Paragraph 15 of Annexure D.
  7. Having regard to India's obligation under customary international law to prevent significant harm to the environment through provision of an environmental flow specific to the site of a proposed Annexure D, Part 3 HEP site, Pondage required for Firm Power shall be calculated in a manner that abides by such obligation.<sup>15</sup>

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<sup>15</sup> Pakistan's Final Submissions (Second Phase on the Merits) dated 3 February 2026 ("**Pakistan's Final Submissions**").

**B. THE ISSUE OF INSTALLED CAPACITY**

61. The first issue for determination in Pakistan's request for relief is how the Treaty regulates the basis upon which India must determine the installed capacity of a proposed Annexure D, Part 3 HEP, given the constraints on maximum Pondage imposed by Paragraph 8(c) of Annexure D to the Treaty. As a general matter, installed capacity refers to the maximum aggregate capacity of the power units of the planned HEP. The issue for determination is the basis upon which India must determine and take into account the projected installed capacity of a planned Annexure D, Part 3 HEP when calculating maximum Pondage under Paragraph 8(c) of Annexure D.

**C. THE ISSUE OF ANTICIPATED LOAD**

62. The second issue for determination in Pakistan's request for relief is how the Treaty regulates the basis upon which India must determine the anticipated load of a proposed Annexure D, Part 3 HEP, given the constraints on maximum Pondage imposed by Paragraph 8(c) of Annexure D to the Treaty. As a general matter, the anticipated load refers to the pattern of power demand for which the plant is designed, and in particular, how that demand is scheduled over a critical daily or weekly period. The issue for determination is the basis upon which India must determine and take into account the anticipated load of a planned Annexure D, Part 3 HEP when calculating maximum Pondage under Paragraph 8(c) of Annexure D.

**D. THE ISSUE OF MINIMUM FLOW**

63. The third issue for determination in Pakistan's request for relief is whether and, if so, how any obligation to ensure a minimum flow downstream in the river from an Annexure D, Part 3 HEP, so as to prevent significant environmental harm, features in the course of calculating the maximum Pondage under Paragraph 8(c) for an Annexure D, Part 3 HEP. The Court notes that Pakistan does not request the Court in this phase of the proceedings to determine the precise quantum of, or methodology for determining, an environmental flow for any particular HEP. Rather, Pakistan only requests acknowledgement that, in addition to compliance with Paragraph 15 of Annexure D, India may be required to abide by an obligation for a minimum environmental flow downstream of a proposed Annexure D, Part 3 HEP, and that such requirement operates as a further limitation when calculating maximum Pondage under Paragraph 8(c) of Annexure D.

#### IV. PRELIMINARY MATTERS

##### A. GENERAL CONSIDERATIONS

64. When addressing the issues for determination, the Court considers it appropriate to recall the following overarching considerations concerning its Award on Issues of General Interpretation.
65. *First*, the decisions reached in this Award on the issues for determination are supplemental to the Award on Issues of General Interpretation, which, *inter alia*, broadly addressed the calculation of maximum Pondage under Annexure D, Part 3 of the Treaty. Thus, this Award must be read in conjunction with the Award on Issues of General Interpretation. In the Award on Issues of General Interpretation, the Court for convenience referred to “Annexure D, Part 3 HEPs”, but expressly excluded from its analysis those HEPs defined in Paragraph 18 of Annexure D as “Small Plants”. The same is true with respect to the present Award; a reference to Annexure D, Part 3 HEPs in this Award is to the exclusion of Small Plants.
66. *Second*, in accordance with the dispute resolution architecture of the Treaty,<sup>16</sup> the Court is constrained to address only those issues that arise from the actual disputes between the Parties that have been submitted to it in this arbitration. The task of the Court is not to deliver an advisory opinion addressing hypothetical or future disputes, but rather to address the live issues presently in dispute between the Parties.<sup>17</sup>
67. *Third*, the issues concerning the specifics of the design, construction, and operation of the KHEP and the RHEP are not matters for decision *in this phase* of the proceedings.<sup>18</sup> As outlined in Procedural Order No. 6, the Court, being mindful of the general duty of mutual respect and comity owed between dispute resolution bodies, considered it appropriate to address in the first instance certain issues presented to it by Pakistan of a more general nature, noting that issues specific to the design, construction, and operation of the KHEP and the RHEP are also currently before the Neutral Expert.<sup>19</sup> The Court reaffirms that any such questions relating to further phases of these proceedings, including the exercise of this Court’s competence in respect of the KHEP and the

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<sup>16</sup> **PLA-0001**, Treaty, Art. IX, Annexures F, G.

<sup>17</sup> See Award on Issues of General Interpretation, para. 253.

<sup>18</sup> See Award on Issues of General Interpretation, para. 252.

<sup>19</sup> Procedural Order No. 6, paras. 5, 32.

RHEP design, construction, and operation issues, shall be determined as necessary in a subsequent phase of the proceedings, after seeking the views of the Parties.<sup>20</sup>

**B. LAW TO BE APPLIED WHEN ADDRESSING THE ISSUES FOR DETERMINATION**

68. The Treaty establishes the law to be applied by the Court of Arbitration when addressing the issues for determination in this phase of the proceedings. Specifically, Paragraph 29 of Annexure G to the Treaty provides:

Except as the Parties may otherwise agree, the law to be applied by the Court shall be this Treaty and, whenever necessary for its interpretation or application, but only to the extent necessary for that purpose, the following in the order in which they are listed:

- (a) International conventions establishing rules which are expressly recognized by the Parties.
- (b) Customary international law.

69. As noted in the Award on Issues of General Interpretation,<sup>21</sup> Paragraph 29 of Annexure G to the Treaty establishes a hierarchy of applicable legal sources to be applied by a court of arbitration, which prioritizes the application of the Treaty while permitting, in order of hierarchy, recourse to international conventions and customary international law.

70. Thus, the primary source of law to be applied by the Court in this Award is the Treaty. While the Court may look beyond the terms of the Treaty to other sources, it may do so only when this is “necessary” for the interpretation or application of the Treaty, and then “only to the extent necessary for that purpose”.<sup>22</sup> An especially pertinent source of customary international law to be applied in this Award are the rules on the method for treaty interpretation as codified in the Vienna Convention on the Law of Treaties (“VCLT”).<sup>23</sup>

**C. INDIA’S CONTINUED NON-PARTICIPATION IN THESE PROCEEDINGS**

71. While India is not participating in this arbitration, in assessing the merits of the positions of the Parties, the Court has sought to take into account India’s positions to the extent they are

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<sup>20</sup> Procedural Order No. 6, paras. 32, 34.

<sup>21</sup> See Award on Issues of General Interpretation, Pt. VI.

<sup>22</sup> See, e.g., Award on Issues of General Interpretation, para. 261.

<sup>23</sup> **PLA-0005**, *Vienna Convention on the Law of Treaties*, 23 May 1969, 1155 U.N.T.S. 331 (“VCLT”), Arts. 31–32. On the various elements of the VCLT rules, including good faith interpretation of the terms in their context and in light of the treaty’s object and purpose, together with the subsequent practice of the parties in the application of the treaty, other relevant rules of international law applicable in the relations between the parties, and supplementary means of interpretation (including the *travaux préparatoires*), see Award on Issues of General Interpretation, paras. 270–272.

discernible from the statements and conduct of India available to the Court. India previously has stated its positions in relation to the issues before the Court in various fora including, *inter alia*, within the Permanent Indus Commission (“**Commission**”), during the *Baglihar* Neutral Expert Proceedings, and during the *Indus Waters Kishenganga Arbitration* proceedings (“**Kishenganga Arbitration**”). In the Parts that follow below, the Court draws upon those statements to comprehend India’s positions on the issues for determination, in accordance with the Court’s standing duty to satisfy itself that Pakistan’s claims are well founded in fact and law.<sup>24</sup>

**D. ASPECTS OF THE AWARD ON ISSUES OF GENERAL INTERPRETATION THAT ARE RELEVANT TO THE ISSUES FOR DETERMINATION**

72. In the First Phase on the Merits, the Court addressed certain questions that arise from the Request for Arbitration concerning the overall interpretation or application of Article III of the Treaty, and Paragraph 8 of Annexure D thereto, in addition to a related question concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty. The principal findings of the Court’s Award on Issues of General Interpretation relevant to the issues in this Second Phase on the Merits are recalled below.

**1. Binding or Otherwise Controlling Effect of Prior Dispute Settlement Decisions under the Treaty**

73. In Part VII of the Award on Issues of General Interpretation, the Court examined the binding or otherwise controlling effect of decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty upon the Parties and upon subsequent dispute resolution bodies, including: (1) an award of a court of arbitration established under the provisions of Article IX(5) and Annexure G to the Treaty; and (2) a decision of a neutral expert appointed in accordance with the provisions of Article IX(2) and Annexure F to the Treaty.<sup>25</sup>

74. The Court commenced by examining the meaning and effect of the phrase “final and binding” in the context of the Treaty as a whole, before turning to consider the extent to which decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty are binding or otherwise controlling on the Parties and subsequent dispute resolution bodies under the Treaty.<sup>26</sup> In sum, the Court held that decisions of a court of arbitration are “final and binding” on the Parties,

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<sup>24</sup> Supplemental Rules of Procedure, Art. 25(2).

<sup>25</sup> Award on Issues of General Interpretation, Pt. VII. See also **PLA-0001**, Treaty, Art. IX, Annexure G, para. 23; **PLA-0001**, Treaty, Annexure F, para. 11.

<sup>26</sup> Award on Issues of General Interpretation, paras. 294–303.

as are decisions of a neutral expert where they fall within his or her competence.<sup>27</sup> This binding effect precludes re-litigation of decided issues by the Parties and generates an “otherwise controlling effect” on subsequent dispute resolution bodies, which must apply the law in force between the Parties.<sup>28</sup>

75. With respect to a court of arbitration constituted pursuant to Article IX(5) and Annexure G of the Treaty, the Court unanimously held as follows:

- (1) the awards of a court of arbitration are final and binding upon the Parties, and otherwise have a controlling legal effect upon a subsequent neutral expert, upon a subsequent court of arbitration, and upon the court of arbitration that issued the awards;
- (2) the awards of a court of arbitration are final and binding, or otherwise have a controlling legal effect, whether they be awards on competence, partial awards, or final awards, and whether they concern competence, matters of fact, the interpretation of the Indus Waters Treaty 1960, or the application of the Treaty in particular factual circumstances;
- (3) the binding or otherwise controlling effect associated with a court of arbitration’s awards relates not only to the ultimate decisions reached in the awards (often referred to as the *dispositif*), but also to the reasoning that underlies those decisions in so far as that reasoning clarifies the scope and meaning of those decisions;
- (4) a court of arbitration is not limited to issuing decisions in its awards that only govern the particular HEP that is the subject of a dispute between the Parties, but extends as well to decisions that are “systemic” or “generic” in nature, in other words, decisions that relate generally to how a provision of the Indus Waters Treaty 1960 is to be interpreted; and
- (5) to the extent that a court of arbitration and a neutral expert are both operating at the same time on related matters, it is incumbent on both to pay attention to any awards or decisions rendered by the other that have a binding or otherwise controlling effect.<sup>29</sup>

76. With respect to a neutral expert appointed in accordance with the provisions of Article IX(2) and Annexure F to the Treaty, the Court unanimously held as follows:

- (1) the decision of the neutral expert on all matters within his or her competence is final and binding, in respect of the particular HEP for which the decision is made, upon the Parties and upon any court of arbitration;
- (2) for a matter to be within the competence of a neutral expert:
  - (i) the neutral expert must have been appointed in a manner consistent with the terms of the Indus Waters Treaty 1960;
  - (ii) the matter must concern a difference that was referred to the neutral expert; and

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<sup>27</sup> See, e.g., Award on Issues of General Interpretation, paras. 305, 363–364, 366–369.

<sup>28</sup> See, e.g., Award on Issues of General Interpretation, paras. 340–362, 382–396.

<sup>29</sup> Award on Issues of General Interpretation, para. 811(A).

(iii) the matter must fall within the scope of Annexure F, Part 1; and

(3) a decision on a matter that is not within the competence of a neutral expert has no final and binding effect.<sup>30</sup>

77. Thus, when addressing the supplemental issues of general interpretation for determination in this phase of the proceedings, the Court shall regard any relevant decisions reached either by the Kishenganga Court of Arbitration (“*Kishenganga Court*”) or by this Court, such as in its Award on Issues of General Interpretation, as having a controlling legal effect.

## 2. Overall Approach when Interpreting Article III and Annexure D, Part 3

78. In Part VIII of the Award, the Court addressed the overall approach to be taken when interpreting Article III and Part 3 of Annexure D to the Treaty, in light of the object and purpose of the Treaty as it relates to the Western Rivers.<sup>31</sup> With regard to the object and purpose of the Treaty, the Court unanimously found:

[D]ue to the vulnerability of Pakistan as the downstream riparian of a critical but shared natural resource, and the potential for serious conflict between India and Pakistan in this regard, the object and purpose of the Indus Waters Treaty 1960, including as it relates to the Western Rivers, is to delimit the two States’ respective rights and obligations when utilizing the Indus system of rivers, in conjunction with mutual cooperation between the Parties and effective dispute resolution procedures for whenever questions of interpretation or application of such rights and obligations arise.<sup>32</sup>

79. In its analysis, the Court highlighted that “the Treaty does not provide for the maximum development of the resources of the Indus system of rivers by one Party or the other” and, in this regard, was not intended “to accord either Party absolute rights, but to delimit rights and obligations within a framework of cooperation, so that the interests of both Parties would be secured”.<sup>33</sup> The Court further recalled that the object and purpose of the Treaty is not to address “the question of sovereignty over the territory of Jammu and Kashmir through which some of” the Indus system of rivers transit.<sup>34</sup>

80. In light of the object and purpose of the Treaty as it relates to the Western Rivers, the Court turned to consider the overall approach to be taken when interpreting Article III and Annexure D,

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<sup>30</sup> Award on Issues of General Interpretation, para. 811(B).

<sup>31</sup> Award on Issues of General Interpretation, Pt. VIII.

<sup>32</sup> Award on Issues of General Interpretation, para. 811(C). See also Award on Issues of General Interpretation, paras. 420–438.

<sup>33</sup> Award on Issues of General Interpretation, para. 428.

<sup>34</sup> Award on Issues of General Interpretation, para. 438.

Part 3.<sup>35</sup> In this regard, the Court recognized the “tension between, on one hand, the provisions of Article III that express India’s obligation ‘to let flow’ the waters of the Western Rivers and Pakistan’s right to receive those waters ‘for unrestricted use’, and on the other hand, the provisions contained in Article III and in Annexures C, D, and E that allow India to use such waters for certain purposes”.<sup>36</sup> Following an analysis of the text and structure of Article III and the Annexures to the Treaty, particularly (in this context) Annexure D, the Court concluded that the overall approach to be taken when interpreting Article III and Annexure D, Part 3 is to acknowledge:

- (1) there is a general rule that India shall “let flow” the waters of the Western Rivers for Pakistan’s unrestricted use;
- (2) there are certain specified exceptions to the general rule, one of which allows India to use the Western Rivers to generate hydro-electric power;
- (3) this exception is to be strictly construed, in the sense that it does not permit India to generate hydro-electric power on the Western Rivers based on what might be the ideal or best practices approach for engineering a Run-of-River HEP but, rather, only allows the design and operation of Run-of-River HEPs that hew strictly to the requirements set forth in Article III and Annexure D, Part 3;
- (4) those requirements cannot be so strictly construed as to deny to India the capacity to generate electricity from HEPs on the Western Rivers provided they are built in conformity with [the] Indus Waters Treaty 1960; and
- (5) in furtherance of the objective of the Indus Waters Treaty 1960 and the Parties’ obligations of mutual cooperation, any questions concerning the balance in these rights and obligations are to be identified through the Treaty’s procedures for notification and objection, and addressed through the Treaty’s procedures for resolving such questions.<sup>37</sup>

81. Given that, in this phase of the proceedings, the Court is interpreting terms found in Annexure D, Part 3 of the Treaty, the Court will maintain this overall approach to interpretation in addressing the issues for determination.

### **3. Engineering Concepts and Terminology in Relation to Run-of-River HEPs**

82. Pakistan’s request for relief must be understood in the context of certain engineering concepts and terminology, which were explained in Part IX of the Award on Issues of General Interpretation both in relation to run-of-river hydro-electric plants generally and to Run-of-River HEPs under Annexure D, Part 3 of the Treaty. In Part IX, the Court explained how such HEPs use the flow of the river for power demand and how, in the low-flow (dry) season, pondage permits storage of

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<sup>35</sup> Award on Issues of General Interpretation, paras. 439–459.

<sup>36</sup> Award on Issues of General Interpretation, para. 440.

<sup>37</sup> Award on Issues of General Interpretation, para. 811(D).

water during certain periods of the day or week for use in other periods where power demand is greatest.

83. In particular, the Court noted that a Run-of-River HEP, during the dry season, utilizes pondage by periodically reducing or stopping the flow of water through the turbines during periods of low power demand and instead accumulating the water in the HEP’s reservoir, effectively storing the “fuel” for the turbines, so that the stored water can be released periodically to drive the turbines when power demand is higher.<sup>38</sup> A “load curve”—which is a “curve of demand versus time showing in chronological sequence the magnitude of the load for each unit of time of the period covered”—can graphically illustrate this process, showing the storing and release of water from a HEP’s pondage over the course of a week to capture the power in the river flow.<sup>39</sup>

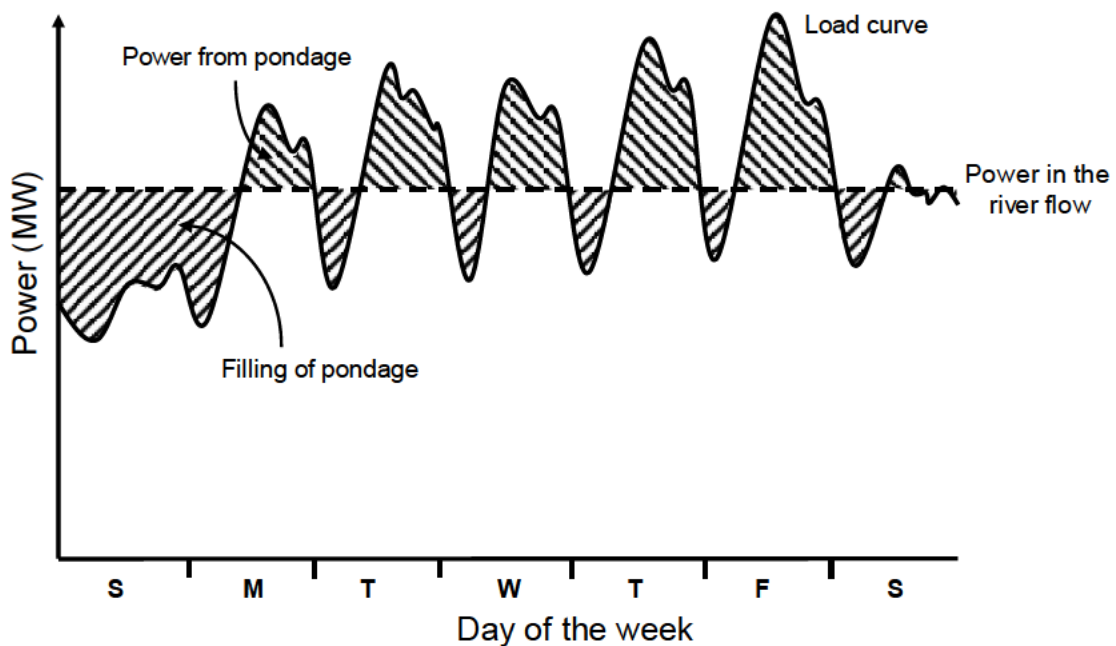


Figure 1: Weekly load curve showing pondage accumulation and discharge

84. The Court then provided a general interpretation of Annexure D, Paragraph 8(c) with respect to the calculation of maximum Pondage, as discussed below.

<sup>38</sup> Award on Issues of General Interpretation, paras. 465–470.

<sup>39</sup> Adapted from P-0302, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, pp. 2-13, 5-73; Award on Issues of General Interpretation, para. 468.

#### 4. General Interpretation of Annexure D, Paragraph 8(c) on Maximum Pondage

85. In Part XI of the Award on Issues of General Interpretation, the Court analyzed the meaning of Annexure D, Paragraph 8(c), concerning the maximum Pondage permissible under the Treaty for an Annexure D, Part 3 HEP.<sup>40</sup>
86. As explained therein, Pakistan and India disagreed on the proper interpretation of the Treaty's provisions for calculating "maximum Pondage" under Paragraph 8(c) of Annexure D of the Treaty.<sup>41</sup> That Paragraph provides that "[t]he maximum Pondage in the Operating Pool shall not exceed twice the Pondage required for Firm Power". Reduced to its essence, Pakistan urged that the requirement under Paragraph 8(c) that "maximum Pondage" shall not exceed "twice the Pondage required for Firm Power" identifies a specific volume of Pondage that depends solely on the hydrology of the river at the plant site, specifically the "minimum mean discharge" ("MMD"), as defined in Paragraph 2(i) of Annexure D to the Treaty.<sup>42</sup> By contrast, India had long relied on a methodology for determining "maximum Pondage" under Paragraph 8(c) that also took account of the HEP's installed capacity and anticipated load to be placed on the plant. Thus, while India used MMD at the site of the HEP as part of its calculations of maximum Pondage, as well as the mandatory operational constraints of Annexure D, Paragraph 15, its methodology also included as additional variables the installed capacity and anticipated load for that particular HEP.<sup>43</sup>
87. After a detailed analysis of the Treaty, in light of the overall approach to be taken when interpreting Article III and Annexure D, Part 3 to the Treaty, and in accordance with Articles 31 and 32 of the VCLT, including the Treaty's text,<sup>44</sup> relevant context,<sup>45</sup> the Treaty's object and purpose,<sup>46</sup> the subsequent practice of the Parties,<sup>47</sup> and the negotiating history,<sup>48</sup> the Court determined "that the calculation of 'maximum Pondage' in Paragraph 8(c) requires, *inter alia*,

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<sup>40</sup> Award on Issues of General Interpretation, Pt. XI.

<sup>41</sup> Award on Issues of General Interpretation, paras. 612–648.

<sup>42</sup> Award on Issues of General Interpretation, para. 651.

<sup>43</sup> Award on Issues of General Interpretation, para. 652.

<sup>44</sup> Award on Issues of General Interpretation, paras. 656–676.

<sup>45</sup> Award on Issues of General Interpretation, paras. 677–700.

<sup>46</sup> Award on Issues of General Interpretation, paras. 701–707.

<sup>47</sup> Award on Issues of General Interpretation, paras. 708–731.

<sup>48</sup> Award on Issues of General Interpretation, paras. 732–736.

consideration of the proposed HEP's installed capacity and anticipated load".<sup>49</sup> As such, the Court determined that, when designing an Annexure D, Part 3 HEP, India shall calculate the maximum Pondage pursuant to Paragraph 8(c) by taking into account the following restrictions:

- (1) *First*, "Firm Power", shall be calculated as the hydro-electric power corresponding to the MMD at the site of the plant, calculated in accordance with Paragraph 2(i) of Annexure D.
- (2) *Second*, "Pondage required for Firm Power" shall be calculated based on the water that can be accumulated and released at the site of the plant during the course of no more than a seven-day period, within the following constraints:
  - (i) Pondage required for Firm Power shall be calculated based on what can be accumulated during that period when the stream flow of the river is at the MMD, as set forth in Paragraph 2(i) of Annexure D.
  - (ii) Pondage required for Firm Power shall be calculated based on a realistic, well-founded, and defensible projection of the proposed Annexure D, Part 3 HEP's installed capacity and anticipated load, reflecting the fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant, as set forth in Paragraph 2(c) of Annexure D.
  - (iii) Pondage required for Firm Power shall be calculated in a manner that abides by the daily and weekly release requirements set forth in Paragraph 15 of Annexure D.
- (3) *Third*, the maximum Pondage shall be no more than twice the Pondage calculated in accordance with the above requirements.<sup>50</sup>

88. As Pakistan had maintained that the proposed HEP's installed capacity and anticipated load is not relevant to the determination of "maximum Pondage", the Court did not address in detail in the Award on Issues of General Interpretation how the Treaty regulates the basis upon which India may determine such installed capacity and anticipated load.<sup>51</sup> At the same time, the Court indicated that Pakistan or India may seek to pursue the matter through the Treaty's dispute resolution procedures, including a further phase of these proceedings.<sup>52</sup>

## **5. Cooperation and Information Sharing on Maximum Pondage**

89. In the Award on Issues of General Interpretation, the Court reached three conclusions concerning cooperation and information sharing that are relevant to the effective operation of Paragraph 8(c) on maximum Pondage.

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<sup>49</sup> Award on Issues of General Interpretation, para. 741.

<sup>50</sup> Award on Issues of General Interpretation, paras. 746–748; see also Award on Issues of General Interpretation, para. 811(O); Decision on the Request for Clarification, paras. 82, 88(H).

<sup>51</sup> Award on Issues of General Interpretation, para. 743.

<sup>52</sup> Award on Issues of General Interpretation, para. 743.

90. *First*, in considering the overall operation of the Treaty, including the operation of Article III and Annexure D, Part 3, the Court concluded that the principle of cooperation between India and Pakistan must be seen as essential.<sup>53</sup> In doing so, the Court observed that the “Treaty recognizes this, not merely as a procedural formality, but repeatedly as a substantive obligation of the Parties central to the object and purpose of the Treaty”.<sup>54</sup> In the Court’s view, the Treaty strikes an “equipoise” between “Pakistan’s general right to the use of the waters of the Western Rivers” and “India’s limited right to use the waters of those rivers for hydro-electric power generation”, provided that the relevant HEP complies strictly with the provisions contained in Annexure D.<sup>55</sup> To maintain this equilibrium, the Treaty lays out “an integrated framework that requires continuous bilateral cooperation between the Parties so that any questions concerning the balance in these rights and obligations can be identified through the Treaty’s procedures for notification and objection, and addressed through the Treaty’s procedures for resolving such questions”.<sup>56</sup> On that basis, the Court concluded that cooperation in information-sharing was required “from the outset of the design process”, throughout the design and construction, and into the operation of the HEP.<sup>57</sup>
91. *Second*, consistent with Appendix II of Annexure D, the Court acknowledged that India is under an obligation, *inter alia*, to convey to Pakistan, at an early stage, the “[o]bserved or estimated daily river discharge data”, “the calculations for the Operating Pool”, and the “particulars of design”, including the dimensional plan, the “[d]ischarge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and weekly load fluctuations”, and the “[m]aximum aggregate capacity of power units ... for Firm Power and Secondary Power”.<sup>58</sup> The Court determined that, to fulfill its Treaty obligations, India must include information and an explanation of why the proposed maximum Pondage meets the requirements set forth in Paragraph 8(c),<sup>59</sup> and that India’s notification must give Pakistan sufficient time to respond.<sup>60</sup> In this respect, the Court observed that “the deadline of at least six months before construction in Paragraph 9 of Annexure D should be seen as a minimum, and

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<sup>53</sup> Award on Issues of General Interpretation, para. 804.

<sup>54</sup> Award on Issues of General Interpretation, para. 804.

<sup>55</sup> Award on Issues of General Interpretation, para. 804.

<sup>56</sup> Award on Issues of General Interpretation, para. 805.

<sup>57</sup> Award on Issues of General Interpretation, para. 805.

<sup>58</sup> Award on Issues of General Interpretation, paras. 742, 811(P)(1).

<sup>59</sup> Award on Issues of General Interpretation, paras. 742, 811(P)(2).

<sup>60</sup> Award on Issues of General Interpretation, paras. 742, 811(P)(3).

notification provided earlier (indeed, potentially much earlier) as necessary to enable India still to modify its design in the face of valid concerns”.<sup>61</sup> Furthermore, in the event that Pakistan raises timely objections, India must give them careful consideration and both Parties must proceed in a spirit of cooperation and good faith required by the Treaty.<sup>62</sup> In the event a difference emerges, the Court stated it is for India, as the proponent of the design and construction of the HEP, to establish that the proposed maximum Pondage satisfies Paragraph 8(c), bearing in mind any Pakistani position that a more Treaty-compliant alternative exists.<sup>63</sup>

92. *Third*, in the context of the critical role that cooperation of the Parties plays for effective implementation of the Treaty, the Court stressed that cooperation by the Parties with respect to India’s notification of information pertinent to the application of Paragraph 8(c) to Annexure D, Pakistan’s response, and dialogue within the Commission on any questions that may arise, are critical for Paragraph 8(c) to operate as the Parties intended.<sup>64</sup> Speaking to these types of notification/response/dialogue provisions, the Court stated:

These provisions cannot function as intended if they are seen as a mechanical exercise of one Commissioner notifying the other of a decision already effectively taken or of a design for a HEP that is all but finalized, with preparation underway for the imminent commencement of construction. They are, rather, the beginning of a dialogue between the two Parties that will normally include the exploration by the Commission of design choices advanced by India and, potentially, the consideration of alternative approaches advanced by Pakistan. Accordingly, the deadline of six months before construction set out in Paragraph 9 of Annexure D should be seen as a minimum, with much earlier engagement not only permitted by the Treaty, but expressly envisaged by Article VII(2). Far from imposing an additional burden on India, early engagement through the Commission in respect of contemplated HEPs, well before design choices are complete and contract tenders are prepared for issuance, maximizes the likelihood that the Commission will resolve any questions without resort to third-party dispute resolution, thereby achieving the desired equipoise and enabling India to design and construct works for the generation of hydro-electric power within the limits it accepted under the Treaty.<sup>65</sup>

**E. ASPECTS OF THE DECISION ON THE REQUEST FOR CLARIFICATION THAT ARE RELEVANT TO THE ISSUES FOR DETERMINATION**

93. The Court provided the following three clarifications in its Decision on the Request for Clarification that have a material bearing on the calculation of maximum Pondage pursuant to

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<sup>61</sup> Award on Issues of General Interpretation, para. 742.

<sup>62</sup> Award on Issues of General Interpretation, paras. 742, 811(P)(4).

<sup>63</sup> Award on Issues of General Interpretation, paras. 742, 811(P)(4)–(5).

<sup>64</sup> Award on Issues of General Interpretation, para. 744.

<sup>65</sup> Award on Issues of General Interpretation, para. 807, citing **PLA-0003**, *Kishenganga Partial Award*, para. 443.

Paragraph 8(c) of Annexure D to the Treaty and thus are relevant to the issues for determination in this phase.

94. *First*, the Court clarified that its references in the Award on Issues of General Interpretation to “designing an Annexure D, Part 3 HEP” or to the “design” of such a HEP are references to design criteria that: (1) are mandatory in nature; (2) are to be applied at the outset, meaning at the time that the proposed HEP is being planned by India and prior to its construction; (3) are distinct from post-commissioning operational constraints on an Annexure D, Part 3 HEP; and (4) cannot be satisfied or accommodated simply by an acknowledgement of or commitment to operational restraint.<sup>66</sup>
95. *Second*, the Court clarified that its reference in the Award on Issues of General Interpretation to the data and information that India is required to convey to Pakistan was not comprehensive, whether as to the information that India is required to convey to Pakistan in relation to the calculation of maximum Pondage, in relation to Annexure D more generally, or in relation to the Treaty as a whole.<sup>67</sup>
96. *Third*, the Court clarified that in the *dispositif* of the Award on Issues of General Interpretation, at paragraph 811(O)(2)(ii), and the associated analysis, the Court decided that Pondage required for Firm Power shall be calculated based on a realistic, well-founded, and defensible projection of the proposed Annexure D, Part 3 HEP’s installed capacity and anticipated load, reflecting the fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant, as set forth in Paragraph 2(c) of Annexure D.<sup>68</sup>
97. In accordance with its limited mandate pursuant to Paragraph 27 of Annexure G to the Treaty, the Court nevertheless declined Pakistan’s request for a clarification with respect to the Capacity/Load/Pondage Calculation Issues, which the Court held had not been conclusively decided in the Award on Issues of General Interpretation and therefore fell outside the permissible scope of clarification.<sup>69</sup> The Court recalled its conclusion in its Award on Issues of General Interpretation that “Pakistan or India may seek to pursue the matter through the Treaty’s dispute resolution procedures, including a further phase of these proceedings” and further confirmed that the Court was open to conducting a further phase of these proceedings on the

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<sup>66</sup> Decision on the Request for Clarification, paras. 47, 88(F).

<sup>67</sup> Decision on the Request for Clarification, paras. 73, 88(G).

<sup>68</sup> Decision on the Request for Clarification, paras. 82, 88(H).

<sup>69</sup> Decision on the Request for Clarification, paras. 87, 88(B)(3).

Capacity/Load/Pondage Calculation Issues.<sup>70</sup> The Court now turns to consider these issues, as well as the Minimum Flow Issue.

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<sup>70</sup> Decision on the Request for Clarification, paras. 85, 88(I).

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## V. THE PARTIES' POSITIONS

### A. PAKISTAN'S POSITION

98. At the outset, Pakistan frames its submissions in the context of its concerns as expressed in its written and oral submissions during the First Phase on the Merits. Those concerns included that “the installed capacity and anticipated load of a proposed HEP (a) were matters solely within India’s unilateral appreciation, (b) were variable and unconnected to the hydrology of the river, and (c) that they were accordingly open to abuse”.<sup>71</sup> Since the Court’s Award on Issues of General Interpretation—in which the Court did not accept Pakistan’s submissions on the methodology relevant to the calculation of maximum Pondage—Pakistan has acknowledged that it “fully and unreservedly accepts the Award in all of its aspects”, including “the Court’s determination that the installed capacity and anticipated load of a proposed HEP are relevant to the calculation of maximum Pondage”.<sup>72</sup> Pakistan states that its submissions in the Second Phase on the Merits seek “to provide the Court with the most complete information available ... to enable the Court to complete its analysis of the issues that remain unaddressed from the First Phase concerning the calculation of maximum Pondage”.<sup>73</sup>
99. Accordingly, Pakistan urges that the Court, having already accepted installed capacity and anticipated load as relevant to the calculation of maximum Pondage under Paragraph 8(c) of Annexure D, must tightly constrain these variables, and “close off as many avenues of uncertainty” as possible,<sup>74</sup> to ensure “certainty and clarity in the rules and obligations that bind [the Parties]”.<sup>75</sup> Without this, Pakistan submits, “there is a real risk that this test identified by the Court—‘realistic, well-founded, and defensible’— ... will simply be warm words, hortatory but with few teeth, and operating as a fertile source for future dispute”.<sup>76</sup>
100. Against this background, Pakistan’s position is that India’s margin of appreciation in determining the “installed capacity” and “anticipated load” of a HEP is materially constrained by the framework provided by the Treaty—read in accordance with the Court’s Award on Issues of General Interpretation—as well as hydro-engineering practice relevant to the design and

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<sup>71</sup> Pakistan’s Second Phase Memorial, para. 1.19.

<sup>72</sup> Pakistan’s Second Phase Memorial, para. 1.18; Request for Clarification, para. 32.

<sup>73</sup> Pakistan’s Second Phase Memorial, para. 1.22. See also Tr., Day 1, 2 February 2026, p. 13:8–18.

<sup>74</sup> Tr., Day 1, 2 February 2026, p. 12:22–24.

<sup>75</sup> Tr., Day 1, 2 February 2026, pp. 12:3–7, 20:17–21:1, 39:5–14; Tr., Day 2, 3 February 2026, p. 150:6–14.

<sup>76</sup> Tr., Day 1, 2 February 2026, p. 39:9–14.

operation of a run-of-river HEP.<sup>77</sup> Pakistan’s position is that, for the purposes of calculating Pondage required for Firm Power, the installed capacity and anticipated load of an Annexure D, Part 3 HEP must be determined on the basis of a “realistic, well-founded, and defensible” projection.<sup>78</sup> In this regard, Pakistan contends that India’s projection of installed capacity and anticipated load must correspond to how the proposed HEP will actually be operated, in light of the hydrology of the river and the needs of the power system to which it will be expected to contribute.<sup>79</sup> Pakistan submits that India is therefore precluded from inflating or exaggerating the installed capacity and anticipated load of a HEP in order to maximize Pondage.<sup>80</sup>

## **1. Determination of the Installed Capacity and Anticipated Load of a Proposed Annexure D, Part 3 HEP**

### **(a) *Limitations imposed by the Treaty on installed capacity and anticipated load***

101. Pakistan asserts that India’s determination of installed capacity and anticipated load must be governed by the terms of the Treaty, which provide the controlling framework for interpreting Paragraph 8(c) of Annexure D.<sup>81</sup> In this regard, Pakistan submits that the “installed capacity” refers to the total power capacity of the HEP’s turbines, usually measured in megawatts (“MW”), which broadly corresponds to the concept of “[m]aximum aggregate capacity of power units ... for Firm Power and Secondary Power” used in Appendices I and II in Annexure D to the Treaty.<sup>82</sup> In turn, Pakistan submits that “anticipated load” denotes the load that the power system is expected to place on the HEP over daily and weekly time periods, which corresponds to the phrase “daily and weekly loads of the plant” used in the Treaty.<sup>83</sup>
102. Pakistan contends that, “[w]hile the Treaty does not expressly limit the installed capacity or anticipated load of an [Annexure D, Part 3] HEP, limitations do necessarily follow from the Court’s analysis with regard to other design features of the HEPs”.<sup>84</sup> Citing the Court’s Award on

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<sup>77</sup> Pakistan’s Second Phase Memorial, para. 1.13.6.

<sup>78</sup> Pakistan’s Second Phase Memorial, para. 1.13.6.

<sup>79</sup> Pakistan’s Second Phase Memorial, paras. 3.33, 3.51.

<sup>80</sup> Pakistan’s Second Phase Memorial, paras. 3.24, 4.13. See also Tr., Day 1, 2 February 2026, p. 37:7–14.

<sup>81</sup> Pakistan’s Second Phase Memorial, para. 3.3. See also Tr., Day 1, 2 February 2026, pp. 88:12–93:16.

<sup>82</sup> Pakistan’s Second Phase Memorial, paras. 3.11, 3.64(a), *referring to* PLA-0001, Treaty, Annexure D, Appendix II, para. 4(i); Tr., Day 1, 2 February 2026, p. 93:6–8.

<sup>83</sup> Pakistan’s Second Phase Memorial, paras. 3.9, 3.64(a), *referring to* PLA-0001, Treaty, Annexure D, para. 2(c); Tr., Day 1, 2 February 2026, p. 93:9–16.

<sup>84</sup> Tr., Day 1, 2 February 2026, p. 100:19–23. See also Pakistan’s Second Phase Memorial, paras. 3.26–3.31.

Issues of General Interpretation, Pakistan argues that these constraints arise not from “the application of unique formulas” but from “standards that must then be implemented in good faith by the Parties in the context of a specific HEP”, in light of the “interpretative prisms” of the Treaty’s “context” and “object and purpose”.<sup>85</sup>

103. Pakistan argues that the installed capacity and anticipated load of an Annexure D, Part 3 HEP must conform to, and are therefore implicitly constrained by, the design and operational requirements outlined in Paragraphs 8(a), 8(b), 8(c), and 15 of Annexure D to the Treaty.<sup>86</sup> By way of an example, Pakistan observes that the Treaty maintains a “difference between an Annexure D run-of-river HEP and an Annexure E storage work, so that the installed capacity and anticipated load of a proposed Annexure D HEP cannot, in effect, lead to a design outcome that is in fact closer in character to a storage work under Annexure E”.<sup>87</sup> Pakistan also contends that the installed capacity and anticipated load of an Annexure D, Part 3 HEP are additionally implicitly constrained by the information that India is required to communicate to Pakistan with respect to each HEP pursuant to Paragraph 9 and Appendix II of Annexure D.<sup>88</sup> This constraint arises because the projected installed capacity and anticipated load must be based on information that India is required to submit to Pakistan pursuant to Paragraph 9 of Annexure D. India must provide Pakistan with a sufficient basis to examine the proposed design, and Pakistan must then be able to determine whether to communicate any objection that it may have pursuant to Paragraph 10 of Annexure D to the Treaty.<sup>89</sup>
104. In this regard, Pakistan considers that the notification requirement concerning the “maximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power” requires India to provide a breakdown in capacity between Firm and Secondary Power for the relevant HEP.<sup>90</sup> This, Pakistan submits, is necessary to enable it to discern whether India’s calculations of maximum Pondage under Paragraph 8(c) are for “Pondage required for Firm

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<sup>85</sup> Pakistan’s Second Phase Memorial, paras. 3.28–3.30, *citing* Award on Issues of General Interpretation, para. 705.

<sup>86</sup> See Pakistan’s Second Phase Memorial, para. 3.30, *citing* **PLA-0001**, Treaty, Annexure D, paras. 8(a)–(c), 15; Award on Issues of General Interpretation, para. 705; Tr., Day 1, 2 February 2026, pp. 100:24–101:12.

<sup>87</sup> Tr., Day 1, 2 February 2026, p. 101:7–12.

<sup>88</sup> See Pakistan’s Second Phase Memorial, para. 3.31, *citing* **PLA-0001**, Treaty, Annexure D, para. 9, Appendix II, paras. 2–4.

<sup>89</sup> See Tr., Day 2, 3 February 2026, p. 19:11–23.

<sup>90</sup> Tr., Day 1, 2 February 2026, pp. 60:9–18, 64:3–7, 66:11–68:13; Tr., Day 2, 3 February 2026, p. 117:7–22.

Power”, and not the aggregate of Firm and Secondary Power.<sup>91</sup> Pakistan confirmed during oral submissions that it “does still regard the notification requirements in the Treaty as including the breakdown in capacity between firm power and secondary power”, and that one “[cannot] read this requirement and we should not read this requirement out of the Treaty”.<sup>92</sup>

105. Moreover, Pakistan submits that compliance with the express design and operational criteria of Annexure D is not solely determinative of whether the installed capacity and anticipated load of an Annexure D, Part 3 HEP is permissible under the Treaty.<sup>93</sup> Specifically, Pakistan emphasizes that, while the water-release requirements under Paragraph 15 operate as a constraint on the Pondage required for Firm Power, they do not operate as “a yardstick in the calculation of a HEP’s installed capacity and anticipated load that exists independently of the requirements of the power system”.<sup>94</sup> In other words, India is not permitted to generate power in *any* pattern simply because it conforms with the release requirements of Paragraph 15 of Annexure D to the Treaty for the purposes of calculating maximum Pondage.<sup>95</sup>
106. In addition to the constraints expressly imposed by the Treaty, Pakistan contends that, as the Court has reasoned in its Award on Issues of General Interpretation, the installed capacity and anticipated load of an Annexure D, Part 3 HEP must be calculated on the basis of a “realistic, well-founded and defensible” projection.<sup>96</sup> This means that “[a]s a general matter, the plant’s installed capacity and anticipated load must correspond to how the plant will actually be operated; it cannot be hypothesised in a manner that serves to inflate the amount of maximum Pondage”.<sup>97</sup> In other words, Pakistan submits that “India is not permitted Pondage for the sake of Pondage, or for the sake of assumed operational flexibility not evident in the actual anticipated load of the Plant”.<sup>98</sup> Pakistan submits that India therefore can “only generate power by reference to a

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<sup>91</sup> See Tr., Day 2, 3 February 2026, p. 117:3–25; Tr., Day 1, 2 February 2026, p. 67:3–14; Pakistan’s Second Phase Memorial, para. 2.20, *referring to P-0649.0787*, Letter No. WT(125)/(5350-A)/PCIW from the PCIW to the ICIW dated 24 May 1993, p. 5.

<sup>92</sup> Tr., Day 2, 3 February 2026, p. 117:9–16.

<sup>93</sup> Pakistan’s Second Phase Memorial, paras. 1.6, 2.28, 2.49, 2.61, 2.69, 3.24.

<sup>94</sup> Pakistan’s Second Phase Memorial, paras. 3.66–3.67, *citing* Award on Issues of General Interpretation, para. 681 (emphasis added).

<sup>95</sup> Pakistan’s Second Phase Memorial, paras. 3.66–3.68, 3.70, *citing* Award on Issues of General Interpretation, paras. 681, 811(O). See also Tr., Day 1, 2 February 2026, pp. 152:17–153:18.

<sup>96</sup> Pakistan’s Second Phase Memorial, paras. 3.32(b), 3.64(a), *citing* Award on Issues of General Interpretation, para. 747.

<sup>97</sup> Pakistan’s Second Phase Memorial, para. 3.23, *citing* Award on Issues of General Interpretation, para. 743; Tr., Day 1, 2 February 2026, pp. 151:14–152:16; Tr., Day 2, 3 February 2026, p. 15:4–11.

<sup>98</sup> Tr., Day 1, 2 February 2026, pp. 169:25–170:3; Pakistan’s Second Phase Memorial, para. 3.24.

justifiable conception, backed by evidence, of installed capacity and anticipated load, which reflects how the Plant will operate in the real world”.<sup>99</sup> Only then will the operational requirements in Paragraph 15 of Annexure D restrain that “justifiable conception” where the applicable daily and weekly limits are exceeded.<sup>100</sup>

107. In light of the above, and in accordance with the Court’s Award on Issues of General Interpretation, Pakistan contends that the Treaty constrains the projection of an Annexure D, Part 3 HEP’s installed capacity and anticipated load, such that the projection: (i) must correspond to how the HEP will actually be operated once constructed; (ii) cannot be hypothesized in a manner that serves to inflate the maximum Pondage; and (iii) must be established by India on the basis of the material that it is required to provide to Pakistan with respect to the HEP under Paragraph 9 and Appendix II of Annexure D.<sup>101</sup>

**(b) *Basis for the calculation of installed capacity and anticipated load by India***

108. Pakistan submits that the two key determinants of whether a projection of installed capacity and anticipated load is “realistic, well-founded, and defensible” derive from: (i) the hydrology of the river at the site of the HEP; and (ii) the needs of the power system to which the HEP will be expected to contribute.<sup>102</sup>
109. With respect to the hydrology of the river, Pakistan contends that the overall energy yield of a HEP, including its firm energy and secondary energy, will be limited by the hydrology.<sup>103</sup> Accordingly, Pakistan considers that a “realistic, well-founded, and defensible” projection of installed capacity (and anticipated load) cannot “be based on an assumed hydrological supply greater than the river at the HEP site could provide”.<sup>104</sup> Accordingly, an Annexure D, Part 3 HEP must be sited on a river with sufficient hydrology that will not leave surplus generation capacity idle for most of the year.<sup>105</sup> Pakistan further argues that the hydrology of the river is relevant when determining when the Annexure D, Part 3 HEP “will be expected to produce power as well as the

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<sup>99</sup> Pakistan’s Second Phase Memorial, para. 3.70.

<sup>100</sup> Pakistan’s Second Phase Memorial, para. 3.70; Tr., Day 1, 2 February 2026, pp. 177:9–178:12.

<sup>101</sup> Pakistan’s Second Phase Memorial, paras. 3.32, 3.64(b), *citing* Award on Issues of General Interpretation, para. 747; Tr., Day 1, 2 February 2026, pp. 169:25–170:3.

<sup>102</sup> Pakistan’s Second Phase Memorial, paras. 3.33, 3.51.

<sup>103</sup> Pakistan’s Second Phase Memorial, para. 3.35; Tr., Day 1, 2 February 2026, pp. 201:15–202:22.

<sup>104</sup> Pakistan’s Second Phase Memorial, para. 3.34.

<sup>105</sup> Pakistan’s Second Phase Memorial, para. 3.35.

amount of Firm Energy that can be produced at a site”.<sup>106</sup> Specifically, Pakistan characterizes the hydrology of the Western Rivers as “relatively stable” on an hour-to-hour basis, and therefore maintains that the hydrology at the site of a HEP on the Western Rivers would not justify an anticipated load of a HEP projected on the basis of sudden hourly increases in the flow of the river at the HEP site.<sup>107</sup>

110. With respect to the needs of the power system, Pakistan submits that the following factors are relevant when developing a “realistic, well-founded, and defensible” projection of a plant’s anticipated load and installed capacity for Pondage calculations.<sup>108</sup>
111. *First*, Pakistan maintains that the needs of the power system must be determined by reference to a load curve representative of typical demand during the dry season.<sup>109</sup> This is because, during the wet season, a Run-of-River HEP can be expected to supply base load power.<sup>110</sup> Specifically, when river flows equal or exceed installed capacity, the HEP will ordinarily operate continuously at or near full capacity—with surplus flows passing as spill—such that the plant cannot provide daily peaking. That peaking function must instead be met by other generating stations supplying the grid.<sup>111</sup> Since those same peaking stations remain available in the dry season, Pakistan submits that a Run-of-River HEP should not be modeled for Pondage purposes as a pure peaking station designed to meet short bursts of exceptional demand.<sup>112</sup> Rather, daily Pondage should be understood as regulating the available hydrology so that the HEP can be operated in a manner that corresponds to actual system needs.<sup>113</sup>
112. *Second*, Pakistan contends that the distribution of demand as between weekends and weekdays within the power system is relevant when determining the installed capacity and anticipated load during the dry season.<sup>114</sup> In the specific context of the Northern Region Grid of India (“**NRG**”), to which all Indian HEPs on the Western Rivers are connected, Pakistan contends that the average

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<sup>106</sup> Pakistan’s Second Phase Memorial, para. 3.36; Tr., Day 1, 2 February 2026, p. 201:2–14.

<sup>107</sup> Pakistan’s Second Phase Memorial, para. 3.36; Tr., Day 1, 2 February 2026, p. 120:14–21.

<sup>108</sup> Pakistan’s Second Phase Memorial, para. 3.87.

<sup>109</sup> Pakistan’s Second Phase Memorial, para. 3.64(d); Tr., Day 1, 2 February 2026, p. 162:19–24.

<sup>110</sup> Pakistan’s Second Phase Memorial, para. 3.50.

<sup>111</sup> Pakistan’s Second Phase Memorial, para. 3.50; Tr., Day 1, 2 February 2026, pp. 126:3–128:24; Tr., Day 2, 3 February 2026, p. 58:4–10.

<sup>112</sup> Pakistan’s Second Phase Memorial, para. 3.50, Appendix D, para. 15.

<sup>113</sup> Pakistan’s Second Phase Memorial, para. 3.50, Appendix D, paras. 25–26, 98–100.

<sup>114</sup> Pakistan’s Second Phase Memorial, para. 3.43.

“typical” load curve shows only an insignificant variation in demand during weekdays as opposed to the weekend.<sup>115</sup> Accordingly, Pakistan concludes that the plant should adopt the same operating pattern for each day of the week, and should not adopt a reduced power production schedule over the “low demand” weekend to enable increased production during the “high-demand” days of the week.<sup>116</sup>

113. *Third*, Pakistan considers that a further relevant factor is the “need for the HEP to make a meaningful contribution to the power system on a daily and weekly basis at times of peak demand”, including that the daily dispatch schedule be realistic considering the operation of the HEP within the overall system.<sup>117</sup> In this respect, Pakistan contends that a load duration<sup>118</sup> analysis of the NRG confirms there is a relative lack of variability in the power system during the dry season, when hour-to-hour variability is at its peak.<sup>119</sup> Specifically, Pakistan submits that recent NRG dry-season data shows that, although demand varies within each day, the system is characterized by a substantial and persistent base load, with average dry-season demand fluctuating broadly between about 35,000 MW and 65,000 MW, and displaying two daily peaks at approximately 11:00 and 20:00.<sup>120</sup> On this analysis, Pakistan further maintains that there is limited intra-week variation, with the average weekly load curve showing that weekend demand is approximately 99 percent of the weekly average, and weekday demand is approximately 101 percent of the weekly average, with individual weeks showing only small deviations from that pattern.<sup>121</sup> This implies that the plants supplying the NRG must be able to supply a large base load, with only a relatively small portion of total energy used for peaking.<sup>122</sup> Accordingly, to contribute meaningfully to meeting the consistent daily demand, a HEP should be block-loaded for several hours each day, and will thus not operate for only a single hour or less per day, which

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<sup>115</sup> Pakistan’s Second Phase Memorial, para. 3.55(c), Appendix D, para. 23. See also Tr., Day 1, 2 February 2026, p. 191:17–22.

<sup>116</sup> Pakistan’s Second Phase Memorial, para. 3.57.

<sup>117</sup> Pakistan’s Second Phase Memorial, para. 3.64(e)(ii); Tr., Day 1, 2 February 2026, p. 146:6–23.

<sup>118</sup> A load (or power) duration curve shows the relationship between generating capacity requirements and capacity utilization. See Pakistan’s Second Phase Memorial, Appendix D, para. 36, *citing* P-0302, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, pp. 5-6-5-10.

<sup>119</sup> Pakistan’s Second Phase Memorial, para. 3.55(d).

<sup>120</sup> Pakistan’s Second Phase Memorial, paras. 3.55(c)–(d); Appendix D, paras. 19–20.

<sup>121</sup> Pakistan’s Second Phase Memorial, para. 3.55(c), fn. 208; para. 3.57; Appendix D, paras. 21–24; Tr., Day 1, 2 February 2026, pp. 197:6–17, 231:5–232:8.

<sup>122</sup> Pakistan’s Second Phase Memorial, para. 3.55(d).

Pakistan submits “would be of no utility at all to the system dispatcher at the [national or regional grid operator]”.<sup>123</sup>

114. *Fourth*, when block loading, Pakistan maintains that it is unrealistic to assume the plant is either zero-loaded or operating all turbines at maximum installed capacity.<sup>124</sup> Rather, when the plant starts up, the flow rate of a HEP will typically ramp up from the minimum power to operation at the best efficiency point, which will typically be less than the maximum installed capacity.<sup>125</sup> Peaking time must therefore be adjusted to reflect daily ramp-up and ramp-down time, together with operation at optimum efficiency, which is about 75 to 90 percent of full turbine capacity for Francis turbines, in order to maximize energy production.<sup>126</sup> Pakistan further notes that the maximum number of hours the plant can operate in a day is limited by the minimum load capacity of a single turbine, which, for Francis turbines, will be 50 to 60 percent of their maximum capacity.<sup>127</sup> Finally, Pakistan contends that during the dry season—when Pondage is required—it is standard practice to take one unit offline for maintenance, and therefore, capacity available for peaking should be adjusted to account for turbines being out of service for annual maintenance during the dry season.<sup>128</sup>
115. Pakistan submits that the Treaty requires taking into account the above factors as to the likely operating rules of the HEP within the relevant power system, as they can have a significant impact on the installed capacity and anticipated load of an Annexure D, Part 3 HEP and, therefore, the maximum Pondage.<sup>129</sup> By way of practical illustration, Pakistan relies on the Kiru HEP to demonstrate how a more “realistic, well-founded, and defensible” projection of anticipated load materially reduces the resulting Pondage. Pakistan notes that India claimed a maximum Pondage for the Kiru HEP of 20.22 MCM, whereas a series of alternative scenarios, applying what Pakistan considers to be more likely operating rules of the HEP within the NRG (operation at reasonable

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<sup>123</sup> Pakistan’s Second Phase Memorial, para. 3.58(c). See also Pakistan’s Second Phase Memorial, paras. 3.46–3.47, 3.55, 3.59, Appendix D, paras. 19, 21–25, 31, 33, 38, 71, 76; Tr., Day 1, 2 February 2026, p. 130:14–17; Tr., Day 1, 2 February 2026, pp. 167:7–168:2.

<sup>124</sup> Pakistan’s Second Phase Memorial, para. 3.59; Tr., Day 1, 2 February 2026, pp. 259:10–260:10.

<sup>125</sup> Pakistan’s Second Phase Memorial, para. 3.59(a), Appendix D, para. 69; Tr., Day 1, 2 February 2026, p. 134:7–15.

<sup>126</sup> Pakistan’s Second Phase Memorial, para. 3.59(b), Appendix D, paras. 66–68; Tr., Day 1, 2 February 2026, p. 134:16–19.

<sup>127</sup> Pakistan’s Second Phase Memorial, para. 3.59(c), Appendix D, para. 69; Tr., Day 1, 2 February 2026, pp. 218:25–219:6.

<sup>128</sup> Pakistan’s Second Phase Memorial, para. 3.59(d), Appendix D, para. 72; Tr., Day 1, 2 February 2026, pp. 135:10–136:1; Tr., Day 2, 3 February 2026, p. 39:2–7.

<sup>129</sup> Pakistan’s Second Phase Memorial, para. 3.91.

efficiency, allowance for one turbine being offline for maintenance, compliance with Paragraph 15, and provision for environmental flow) produce markedly lower results, in the range of approximately 4.20 to 7.72 MCM.<sup>130</sup> In Pakistan’s submission, the Kiru HEP case study shows that, “within the boundaries of Paragraph 8(c), modifications to the anticipated load in accordance with the likely operating rules of the HEP within the relevant power system can have a significant impact on maximum Pondage”.<sup>131</sup>

116. In this regard, Pakistan characterizes India’s historical claims as to the maximum Pondage to which it says it is entitled as “wildly exaggerated”.<sup>132</sup> In Pakistan’s view, India does not determine the actual anticipated load for its Annexure D, Part 3 HEPs, but instead “relies on a hypothetical anticipated load, that is designed to achieve a maximal volume of permissible Pondage to allow for operational flexibility to deal with any unanticipated eventualities”.<sup>133</sup>
117. To that end, Pakistan has submitted copies of the Pondage Logbooks (originally created and submitted by India in the context of the Neutral Expert Proceedings) that record how the Operating Pools of the Baglihar HEP and KHEP have actually been used in practice.<sup>134</sup> According to Pakistan, an analysis of these data demonstrates that the actual utilization of pondage at the Baglihar HEP and the KHEP does not correspond to India’s projection of anticipated load at these plants (as set out in India’s original notification of these plants).<sup>135</sup> Rather, India actually uses far less pondage than projected in its notifications (and on many days, uses none at all), particularly where flow conditions are close to the MMD.<sup>136</sup> In the case of the Baglihar HEP, Pakistan contends that less than 30 percent of the volume of the Operating Pool is used 99 percent of the time.<sup>137</sup> Similarly, for the KHEP, Pakistan submits Pondage above 1 MCM in volume is required

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<sup>130</sup> Pakistan’s Second Phase Memorial, paras. 3.87–3.92, Appendix D, paras. 95–100.

<sup>131</sup> Pakistan’s Second Phase Memorial, para. 3.91. See also Tr., Day 1, 2 February 2026, pp. 222:16–223:24, 229:25–241:25.

<sup>132</sup> Pakistan’s Second Phase Memorial, para. 3.91. See also Tr., Day 1, 2 February 2026, p. 142:4–24.

<sup>133</sup> Pakistan’s Second Phase Memorial, para. 2.69; Tr., Day 2, 3 February 2026, p. 99:16–23.

<sup>134</sup> [REDACTED] (P-0739, Neutral Expert (*Indus Waters*), Item 7 R BHEP data (logbook of Baglihar HEP) submitted by India under cover of a letter to the Neutral Expert dated 21 January 2025), and [REDACTED] (P-0740, Neutral Expert (*Indus Waters*), Item 7 (logbook of KHEP) submitted by India under cover of a letter to the Neutral Expert dated 31 July 2024).

<sup>135</sup> Pakistan’s Pondage Utilization Submission, para. 1.12. Further to a request from the Court, Pakistan submitted the data arising from the calculations set out in Pakistan’s Pondage Utilization Submission and provided clarifications with respect to its calculation methodologies on 20 April 2026. See paras. 56–57, *supra*.

<sup>136</sup> Pakistan’s Pondage Utilization Submission, para. 4.1.

<sup>137</sup> Pakistan’s Pondage Utilization Submission, para. 2.36.

only 1 percent of the time.<sup>138</sup> For Pakistan, this highlights that India’s methodology for the calculation of Pondage required for Firm Power is not based on a “realistic, well-founded, and defensible” projection of the anticipated load.<sup>139</sup>

## 2. Calculation of Maximum Pondage under Annexure D, Paragraph 8(c)

118. Taking into account the above, Pakistan articulates the following approach to the calculation of maximum Pondage for an Annexure D, Part 3 HEP, including with respect to the manner in which the installed capacity and anticipated load of the plant are to be taken into account.<sup>140</sup>
119. *First*, the Treaty contains limits on the projection of installed capacity and anticipated load of an Annexure D, Part 3 HEP in Paragraphs 8(a), 8(b), 8(c), and 15 of Annexure D, and Appendix II to Annexure D to the Treaty.<sup>141</sup> In this context, Pakistan emphasizes that, for the reasons outlined above, the daily and weekly release requirements of Paragraph 15 of Annexure D do not function as an *ab initio* design criterion, to be applied at the outset of the design process, but are rather operational constraints that are relevant for purposes of the design process.<sup>142</sup> In other words, Pakistan regards Paragraph 15 of Annexure D as “relevant to the design issues, because ... it comes in as a guardrail once the installed capacity and anticipated load issues have been addressed and identified, and then you stress-test it by reference to whether it will work in terms of the operational elements”.<sup>143</sup>
120. Alongside the requirements stipulated in Paragraph 15 of Annexure D to the Treaty, Pakistan submits that India must, where relevant, integrate its obligation under customary international law to maintain environmental flows into the operational rules for relevant HEPs and incorporate such operation into its calculation of maximum Pondage under Paragraph 8(c) of Annexure D to the Treaty.<sup>144</sup> Although not expressly required by the Treaty, Pakistan notes that India already makes provision for “minimum environmental flow” when calculating maximum Pondage under Paragraph 8(c) of Annexure D.<sup>145</sup> In Pakistan’s view, this is because India is under a general

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<sup>138</sup> Pakistan’s Pondage Utilization Submission, para. 3.18.

<sup>139</sup> Pakistan’s Pondage Utilization Submission, para. 4.2.

<sup>140</sup> Pakistan’s Second Phase Memorial, paras. 3.61–3.92.

<sup>141</sup> Pakistan’s Final Submissions, para. 2.69; Pakistan’s Pondage Utilization Submission, paras. 1.12–1.29.

<sup>142</sup> Pakistan’s Final Submissions, para. 6; Tr., Day 1, 2 February 2026, pp. 38:7–39:19, 177:1–14.

<sup>143</sup> Tr., Day 1, 2 February 2026, p. 178:6–12.

<sup>144</sup> Pakistan’s Second Phase Memorial, paras. 3.70–3.71; Tr., Day 1, 2 February 2026, pp. 45:6–46:16.

<sup>145</sup> Pakistan’s Second Phase Memorial, para. 3.72.

obligation under customary international law to make provision for environmental flow for the purposes of avoiding significant harm to the environment downstream of a given HEP.<sup>146</sup> Pakistan notes that the *Kishenganga* Court determined that India had to operate the KHEP to account for a constant environmental flow and release all available flow when river levels fall below this amount.<sup>147</sup> Pakistan further submits that “India’s obligation to notify Pakistan of [a HEP’s environmental flow] is incorporated into paragraph 5(a) of Appendix II, which requires India to specify the ‘[e]stimated effect of a proposed development on the flow pattern below the last plant downstream (with details of estimation)’”.<sup>148</sup>

121. Pakistan clarifies that it does not request the Court to establish a specific methodology for calculating minimum environmental flow; rather, Pakistan requests that the Court acknowledge that the calculation of maximum Pondage must abide by India’s obligation to prevent significant harm through provision of an environmental flow tailored to each HEP site.<sup>149</sup>
122. *Second*, for purposes of India’s projection of a proposed Annexure D, Part 3 HEP’s installed capacity and anticipated load, India must take account of and base such projection, *inter alia*, on the following information:
- (1) a representative weekly load curve for the dry season in the NRG based on historical load demand data, accompanied by the underlying data;
  - (2) information on the anticipated future load, including any underlying data, if India desires to account for such future load in its projection of the anticipated load of a proposed Annexure D, Part 3 HEP; and
  - (3) a justification for the projection of the installed capacity of a proposed Annexure D, Part 3 HEP, having regard to the hydrology at the HEP site and the anticipated load.<sup>150</sup>

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<sup>146</sup> Pakistan’s Second Phase Memorial, para. 3.73. See also Tr., Day 1, 2 February 2026, pp. 45:6–48:7; Tr., Day 2, 3 February 2026, pp. 101:19–104:6.

<sup>147</sup> Pakistan’s Second Phase Memorial, para. 3.73, *citing* **PLA-0003**, *Kishenganga* Partial Award, para. 451; **PLA-0004**, *Kishenganga* Final Award, para. 112.

<sup>148</sup> Tr., Day 2, 3 February 2026, pp. 103:22–104:6.

<sup>149</sup> Pakistan’s Second Phase Memorial, para. 3.73. See also Tr., Day 1, 2 February 2026, pp. 45:20–46:16, 48:1–7.

<sup>150</sup> Pakistan’s Final Submissions, para. 2(b). See also Pakistan’s Pondage Utilization Submission, para. 4.3(a).

123. *Third*, India must account for the projection of installed capacity and anticipated load in its calculation for maximum Pondage:

- (1) in a manner that enables a proposed Annexure D, Part 3 HEP to make a meaningful contribution to the NRG on a daily and weekly basis at times of peak demand, including by setting a daily dispatch schedule, comprising its duration and capacity, that is realistic considering the operation of the HEP within the NRG and allocates a distribution of demand as between weekends and weekdays that corresponds to the actual demand on the power system; and
- (2) in a manner that corresponds with the operational requirements of the proposed Annexure D, Part 3 HEP's turbines.<sup>151</sup>

124. *Fourth*, Pakistan submits that India must communicate to Pakistan, as part of its Annexure D, Paragraph 9 notification of the design of a proposed Annexure D, Part 3 HEP, the information and explanation relating to India's calculation for maximum Pondage.<sup>152</sup> This information, Pakistan submits, includes "all data necessary for Pakistan to confirm that India's projections of [the plant's installed capacity and anticipated load] are realistic, well-founded and defensible".<sup>153</sup> Pakistan maintains that if it considers that the projection of installed capacity and anticipated load of a proposed Indian HEP is not "realistic, well-founded, and defensible", then the burden is on India to prove that it meets the necessary standard.<sup>154</sup> In support, Pakistan cites the Award on Issues of General Interpretation, in which the Court stated:

[I]f a difference emerges between the Parties, it is for India, as the proponent of the design and construction of the HEP, to establish that the proposed maximum Pondage satisfies the requirements of Paragraph 8(c), bearing in mind any Pakistani position that a more Treaty-compliant alternative exists.<sup>155</sup>

125. On Pakistan's interpretation, if India fails in its Paragraph 9 notification to provide the information and explanation relating to India's calculation for maximum Pondage, or provides materially insufficient information, there will be a presumption that India's projection of the proposed

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<sup>151</sup> Pakistan's Final Submissions, para. 5. See also Pakistan's Pondage Utilization Submission, para. 4.3(d); Tr., Day 2, 3 February 2026, pp. 17:18–18:8.

<sup>152</sup> Pakistan's Final Submissions, para. 2.

<sup>153</sup> Tr., Day 2, 3 February 2026, p. 88:6–14.

<sup>154</sup> Pakistan's Final Submissions, para. 3; Pakistan's Second Phase Memorial, para. 3.22.

<sup>155</sup> Pakistan's Second Phase Memorial, para. 3.21, *citing* Award on Issues of General Interpretation, para. 742.

Annexure D, Part 3 HEP's installed capacity and anticipated load is not realistic, well-founded, and defensible and does not accord with the anticipated actual operation of that HEP.<sup>156</sup>

**B. INDIA'S POSITION IN THE PERMANENT INDUS COMMISSION, THE *BAGLIHAR NEUTRAL EXPERT PROCEEDINGS*, AND THE *KISHENGANGA ARBITRATION***

126. India's position is that the Treaty grants India full operational freedom with regard to the installed capacity and the anticipated load of an Annexure D, Part 3 HEP, so that power generation may be varied to meet system demand.<sup>157</sup> In India's view, this operational freedom is limited only by the water-release obligations in Paragraph 15 of Annexure D to the Treaty, which India submits ensures the interests of Pakistan as the downstream riparian by regulating "interference with the waters" of the Western Rivers by India in accordance with Article III(2) of the Treaty.<sup>158</sup> Accordingly, India argues that, so long as the proposed HEP can be operated consistently with Paragraph 15 of Annexure D, Pakistan has no basis to challenge a proposed Annexure D, Part 3 HEP's Pondage as excessive or as founded on unrealistic data.<sup>159</sup>

**1. Determination of the Installed Capacity and Anticipated Load of a Proposed Annexure D, Part 3 HEP**

**(a) *Limitations imposed by the Treaty on installed capacity and anticipated load***

127. India contends that there "is no restriction in the Treaty on the installed capacity" of an Annexure D, Part 3 HEP or "on the turbine discharges to meet the variations in the daily and weekly loads of the Plant".<sup>160</sup>

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<sup>156</sup> Pakistan's Final Submissions, para. 3; Tr., Day 2, 3 February 2026, p. 141:11–18.

<sup>157</sup> **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 28, referring to **PLA-0002**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Expert Determination on points of difference referred by the Government of Pakistan under the provisions of the Indus Waters Treaty dated 12 February 2007 ("**Baglihar Determination**"); **P-0330**, Record of the 104th Meeting of the Permanent Indus Commission, 27 to 31 March 2010, pp. 5–6; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Chs. 2.5.1, 2.7.

<sup>158</sup> **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, paras. 18, 28, referring to **PLA-0002**, *Baglihar Determination*; **P-0330**, Record of the 104th Meeting of the Permanent Indus Commission, 27 to 31 March 2010, pp. 5–6; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Chs. 2.5.1, 2.7.

<sup>159</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, pp. 106–107.

<sup>160</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

128. With respect to the installed capacity of an Annexure D, Part 3 HEP, India argues that the Treaty regulates only the permissible use of water, and does not constrain the installed capacity of a HEP.<sup>161</sup> India considers that Pakistan fails to distinguish between firm power, which is a characteristic of the river and refers to the amount of energy that can reliably be produced under low-flow conditions, and installed capacity, which is a characteristic of a HEP and refers to the maximum output the turbines and generators can produce when sufficient water is available.<sup>162</sup>
129. In India's view, the installed capacity of an Annexure D, Part 3 HEP denotes the aggregate installed capacity for the generation of both Firm Power and Secondary Power, rather than a separate figure for Firm Power and Secondary Power.<sup>163</sup> In support of this position, India observes that for an Annexure D, Part 3 HEP, the total installed capacity is utilized throughout the year and remains constant.<sup>164</sup> Whenever discharges above the MMD are available, the HEP can operate at its installed capacity for longer hours; however, when discharge falls below the MMD, the operating hours will be reduced accordingly.<sup>165</sup> Relevantly, India contends that, in either case, the installed capacity of the HEP remains unchanged and cannot be divided into Firm Power and Secondary Power components.<sup>166</sup> Rather, what remains relevant in either situation, India submits, is compliance with the water release restrictions under Paragraph 15 of Annexure D to the Treaty.<sup>167</sup>
130. With respect to anticipated load, India similarly argues that the Treaty permits India to vary turbine discharges as per its needs, subject only to the mandated limits on the volume of releases into the river below the plant as set out in Paragraph 15 of Annexure D to the Treaty.<sup>168</sup>

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<sup>161</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.8.

<sup>162</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.8.

<sup>163</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.8.

<sup>164</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.8.

<sup>165</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.8.

<sup>166</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.8.

<sup>167</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.8.

<sup>168</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.7. **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013, para. 13.

Accordingly, although the Treaty imposes constraints on the maximum Pondage for Annexure D, Part 3 HEPs, India maintains that it does so in a manner that enables India to best utilize the plant's design capacity to meet actual load demands.<sup>169</sup> This is because, in India's view, load-curve considerations relate to the HEP's internal operational needs.<sup>170</sup> By contrast, the water release requirements under Paragraph 15 are designed solely to safeguard Pakistan's interests, as the downstream riparian, by regulating any "interference with the waters" of the Western Rivers by India in accordance with Article III(2) of the Treaty.<sup>171</sup> In order to protect Pakistan's interests in this context, India notes that the stringency of the release obligations increases with downstream proximity to the boundary between areas under Indian and Pakistani administration.<sup>172</sup> Accordingly, for run-of-river HEPs located on the Chenab above Ramban, the volume required for Firm Power corresponds to the water contained in the MMD over seven days; whereas for plants below Ramban, it corresponds to the MMD calculated over one day.<sup>173</sup> By contrast, India observes that Paragraph 8(c) of Annexure D (on maximum Pondage) applies to all Annexure D, Part 3 HEPs on the Western Rivers, including on the Chenab River, regardless of whether the plant is located above or below Ramban.<sup>174</sup>

131. India emphasizes that, unlike the detailed stipulations of Paragraph 15 of Annexure D to the Treaty regarding the releases of water, Annexure D otherwise contains no such constraints as to the timing or fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant.<sup>175</sup> In India's view, this contrast demonstrates that the anticipated load

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<sup>169</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Chs. 2.5.1, 2.5.2.

<sup>170</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, p. 106.

<sup>171</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, p. 106, *referring to* **PLA-0001**, Treaty, Arts. I(15), III(2) ("The term 'interference with the waters' means : (a) Any act of withdrawal therefrom ; or (b) Any man-made obstruction to their flow which causes a change in the volume (within the practical range of measurement) of the daily flow of the waters : Provided however that an obstruction which involves only an insignificant and incidental change in the volume of the daily flow, for example, fluctuations due to afflux caused by bridge piers or a temporary by-pass, etc., shall not be deemed to be an interference with the waters").

<sup>172</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, pp. 116–117.

<sup>173</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.4.

<sup>174</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.2.

<sup>175</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.13.

of an Annexure D, Part 3 HEP lies outside of the scope of issues regulated by the Treaty and, as such, remains solely a matter for India's determination.<sup>176</sup>

**(b) Basis for the calculation of installed capacity and anticipated load by India**

132. In light of the above, India contends that Pakistan's objections as to "hypothetical load curves" are based on an incorrect assumption that the Treaty requires load-curve-based Pondage or in any way restricts India's generation schedule.<sup>177</sup> Rather, India submits that the turbine discharge may be varied in accordance with Indian power system requirements, so long as India acts consistently with the operational restrictions imposed by Paragraph 15 of Annexure D.<sup>178</sup>
133. Furthermore, India argues that, for the reasons outlined above, flexibility to operate a HEP in accordance with Indian power system requirements is inherent in Paragraph 2(c) of the Treaty.<sup>179</sup> India submits that the inherent flexibility of the operation of HEPs derives from their quick start and stop capability and ability to respond quickly to varying system load demand.<sup>180</sup> Specifically, in India's view, the inherent flexibility of a HEP includes its ability: (i) to deliver capacity and energy benefits as planned under adverse changes in inflow; (ii) to modulate capacity and energy output as per changing system requirements (such as load crash, changes in demand pattern on account of weather and climatic conditions, changes in lifestyles etc.); and (iii) to meet system demand under contingencies such as unscheduled outages of generating units and transmission lines, and system contingencies such as system recovery after a grid failure.<sup>181</sup>
134. In this regard, India contends that the role of hydro-electric power in electricity generation is increasingly important. This is due to an increasing reliance on other renewable energy sources, such as wind and solar power, which supply variable and intermittent power, and thus create a greater need "for balancing power for stabilizing the grid and for successful integration of the

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<sup>176</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, pp. 106–107.

<sup>177</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, p. 106.

<sup>178</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

<sup>179</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, pp. 106–107.

<sup>180</sup> **P-0547 (BR-0009)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, India's Replies to Questions Posed by the Neutral Expert dated 30 November 2005, p. 132.

<sup>181</sup> **P-0547 (BR-0009)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, India's Replies to Questions Posed by the Neutral Expert dated 30 November 2005, p. 132.

renewables”.<sup>182</sup> In this context, India submits that the determination of whether a plant is needed to meet peak demand depends on various factors that take into account the overall grid, not just the shape of the overall demand curve.<sup>183</sup> India considers that Annexure D, Part 3 HEPs, which are “relatively small compared to the total system capacity”, are “used to cater to part(s) of the system demand which could vary from time to time and over the life of the Plant”.<sup>184</sup> Accordingly, India submits that a uniform plant-level operating rule, such as blocks of peaking on all the days of the week as suggested by Pakistan, is inappropriate for India’s operation of a single HEP as part of its management of all the power generation resources in the system, taking into account technical, operational, and economic characteristics of various power plants.<sup>185</sup>

135. As to the actual utilization of pondage at the Baglihar HEP and the KHEP, India was given an opportunity to file written submissions in response to Pakistan’s Pondage Utilization Submission,<sup>186</sup> but did not do so by the deadline fixed by the Court, nor has it done so to date.

## 2. Calculation of Maximum Pondage under Annexure D, Paragraph 8(c)

136. In light of the above, India maintains that the Treaty grants India operational freedom in relation to the turbine discharges of an Annexure D, Part 3 HEP to meet its power generation needs, subject only to the operational restrictions imposed by the Treaty.<sup>187</sup> Specifically, India’s proposed methodology for the calculation of maximum Pondage is constrained by a constant MMD, and reflects variations in turbine discharge corresponding to electricity consumption, including with respect to the peak load hours.<sup>188</sup> This approach, India contends, is in accordance with the purpose of Pondage in Paragraph 2(c) of Annexure D, which is to “meet variations in turbine discharge due to load variations”.<sup>189</sup> In short, India argues that it is entitled to a Pondage of a size that: (1) can be accumulated and discharged over a day or a week (typically a week) based on a constant

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<sup>182</sup> **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 31.

<sup>183</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, p. 120.

<sup>184</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.6.

<sup>185</sup> **P-0547 (BR-0009)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, India’s Replies to Questions Posed by the Neutral Expert dated 30 November 2005, pp. 106–107, 119–120.

<sup>186</sup> Procedural Order No. 20, para. 1.3.

<sup>187</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.7, pp. 106–107, 112; **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013, para. 13.

<sup>188</sup> See, e.g., **PLA-0002**, *Baglihar Determination*, pp. 78–80.

<sup>189</sup> **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013, para. 13.

stream flow at the MMD; (2) is used to satisfy India's choice of turbine size and its loading requirements, which will vary from plant to plant; (3) fits the downstream flow release operating constraints set out in Paragraph 15 of Annexure D; and (4) is then doubled.

137. In this regard, India argues that the provisions of Paragraphs 8 and 15 of Annexure D are complementary, such that the design criteria contained in Paragraph 8 are not premised on India's capability of violating the operational criteria of Paragraph 15.<sup>190</sup> To the contrary, India maintains that "Pondage is a function of MMD and operational restrictions", which are "quite restrictive".<sup>191</sup> Specifically, India submits that the MMD at the site of the plant—which provides the Treaty basis for calculating Firm Power and thus Pondage under Paragraph 8(c)—represents the minimum quantum of energy available to meet the energy component of power demand on all the days throughout the year.<sup>192</sup> India argues that this firm energy is utilized for meeting peak demands of the system by varying the turbine discharges (hourly loads of the plant) within the restrictions under Paragraph 15 on the volume of releases (energy) over a daily or weekly cycle.<sup>193</sup>
138. For its part, India does not appear to dispute that customary international law obliges a State to take steps to prevent transboundary environmental harm, which may require taking into account a "minimum environmental flow" when calculating the maximum Pondage of a given HEP. Indeed, in its Partial Award, the *Kishenganga* Court acknowledged "India's commitment to ensure a minimum environmental flow downstream of the KHEP at all times".<sup>194</sup> Since the *Kishenganga* Court's determination in its Final Award that "the requirement of an environmental flow (without prejudice to the level of such flow) is necessary in the application of the Treaty",<sup>195</sup> India has affirmed its commitment to adhere to the *Kishenganga* Court's determination with respect to the KHEP.<sup>196</sup> India has also incorporated minimum environmental flows in the Operating Pool calculations for the Kwar and Kiru HEPs and the RHEP, being the new plants in respect of which India has provided Operating Pool calculations pursuant to Paragraph 9 and Appendix II of

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<sup>190</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.6.

<sup>191</sup> **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013, para. 13.

<sup>192</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.1; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

<sup>193</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

<sup>194</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 453.

<sup>195</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 112.

<sup>196</sup> **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 50.

Annexure D.<sup>197</sup> It is unclear, however, whether India regards such flows as required under customary international law or under its national law or policy. In any event, on the information before the Court, India does not appear to dispute that, if a “minimum environmental flow” is required under customary international law, it must be included in the calculation of maximum Pondage under Paragraph 8(c) of Annexure D to the Treaty.

139. For the reasons outlined above, India submits that Pakistan cannot object to the operation of India’s Annexure D, Part 3 HEPs as being “arbitrary” if the operation of the HEP conforms to Paragraph 15 to Annexure D.<sup>198</sup> By questioning the sufficiency of the Pondage for the proposed peaking operation, India argues that Pakistan is attempting to dictate how India should operate its HEPs, including with regard to the use of certain assumed time blocks for peaking operation.<sup>199</sup> Such attempts, India says, transgress into issues that are for India’s exclusive determination and beyond the provisions of the Treaty.<sup>200</sup> Contrary to Pakistan’s position, India submits that the historical record demonstrates that it has not sought to maximize Pondage.<sup>201</sup> Rather, the Pondage that India has notified is generally even less than the maximum Pondage it has calculated as permissible under the Treaty.<sup>202</sup>

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<sup>197</sup> **P-0649.1718**, Letter No. 3/7/2007-IT/ 21 June 2023; **P-0077**, Letter No. 3/5/2007-IT/1947 (with enclosures), 16 August 2012; c.f., **P-0649.1449**, Letter No. Y-20016/2/2015-IT/2225, 14 March 2017, para. 3 (“The issue of Climate Change does not fall within the ambit of the Treaty and thus does not fall within the scope of Permanent Indus Commission”); see also **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 7.

<sup>198</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, pp. 117–118.

<sup>199</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, pp. 102, 120.

<sup>200</sup> **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, p. 120.

<sup>201</sup> **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013, para. 13.

<sup>202</sup> **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013, para. 13; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, p. 100.

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## VI. THE COURT'S ANALYSIS

### A. INTRODUCTION

140. The Court's Award on Issues of General Interpretation determined that the calculation of maximum Pondage in Annexure D, Paragraph 8(c) requires, *inter alia*, consideration of the proposed HEP's installed capacity and anticipated load.<sup>203</sup> At the same time, the Court stated that, "as Pakistan has maintained that the proposed HEP's installed capacity and anticipated load is not relevant to the determination of 'maximum Pondage', the Court does not address in detail in this Award whether and how the Treaty regulates the basis upon which India may determine such installed capacity and anticipated load".<sup>204</sup> At Pakistan's request, the Court is now called upon to address the basis upon which India must determine, for the purposes of calculating maximum Pondage, the installed capacity and anticipated load of a proposed Annexure D, Part 3 HEP, and, once determined, how these elements are to be taken into account for purposes of the calculation of maximum Pondage.<sup>205</sup>
141. As a matter of terminology, the Court recalls that these two elements—installed capacity and anticipated load—are relevant to the calculation of "Pondage required for Firm Power",<sup>206</sup> which in turn is central for calculating "maximum Pondage" since the latter "shall not exceed *twice the Pondage required for Firm Power*".<sup>207</sup> Therefore, when the Court in this Award discusses the relevance of installed capacity and anticipated load to the calculation of "maximum Pondage", it does so by virtue of their relevance to the calculation of "Pondage required for Firm Power".
142. The Court further recalls that these two elements are being addressed in the context of Treaty provisions that already impose separate—and hard—limits on the amount of maximum Pondage that India may claim. As Pakistan has acknowledged, "the need to calculate Pondage on the basis of an assumed constant inflow at the MMD, and the constraints of Paragraph 15 ... provide *hard*

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<sup>203</sup> See Pt. IV.D.4, *supra*.

<sup>204</sup> Award on Issues of General Interpretation, para. 743.

<sup>205</sup> The Court notes that any design that is in the nature of a Storage Work would have to be assessed according to the criteria set forth in Annexure E of the Treaty. See **PLA-0001**, Treaty, Annexure D, para. 1.

<sup>206</sup> Award on Issues of General Interpretation, para. 811(O)(2)(ii).

<sup>207</sup> **PLA-0001**, Treaty, Annexure D, para. 8(c) (emphasis added); Award on Issues of General Interpretation, para. 811(O)(3).

*limits* on the maximum Pondage”.<sup>208</sup> Pakistan further has confirmed that “MMD inflow and Paragraph 15 are the primary constraints on Pondage within the interpretation of Paragraph 8(c) furnished by the Court in the [Award on Issues of General Interpretation]”.<sup>209</sup> This is because “[b]oth constraints materially limit the possibilities available to India—the first by reference to HEP site hydrology, and the latter by reference to a daily and weekly time period”.<sup>210</sup> Of the remaining material factors of installed capacity and anticipated load, Pakistan considers “anticipated load [to be] undoubtedly the most significant”.<sup>211</sup> Indeed, leaving aside any constraint relating to anticipated load, Pakistan has identified an approach to the calculation of a “theoretical maximum” Pondage of an Annexure D, Part 3 HEP based purely on a plant’s installed capacity and the MMD at the site of a plant.<sup>212</sup>

143. Pakistan has also requested that the Court address the potential requirement of a minimum flow to prevent environmental harm as an element in the calculation of maximum Pondage. Thus, the discussion below—which is supplemental to that provided in the Award on Issues of General Interpretation<sup>213</sup> and the Decision on the Request for Clarification<sup>214</sup> on the general interpretation of Annexure D, Paragraph 8(c) on maximum Pondage—proceeds by addressing, in turn, the HEP’s installed capacity, the HEP’s anticipated load, and minimum flow, all as elements when calculating maximum Pondage. Before doing so, however, the Court addresses two preliminary issues: what is meant by the expression “realistic, well-founded, and defensible”, as used by the Court in its Award on Issues of General Interpretation and as relevant for this Award; and the information and analysis presented by Pakistan regarding the utilization of Pondage at the Baglihar HEP and KHEP.

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<sup>208</sup> Pakistan’s Second Phase Memorial, para. 4.5 (emphasis added). Pakistan has explained that “[t]he first does so by limiting (for the purposes of the Paragraph 8(c) exercise) the maximum inflow into the HEP’s reservoir in the course of the hypothetical week within which Pondage is to be calculated under the methodology set out by the Court in paragraphs 745 to 748 of the General Issues Award. The second does so by restricting India’s ability to schedule that inflow within the week (i.e., the daily limit) and prohibiting storage between weeks (i.e., the weekly limit)”. See Pakistan’s Second Phase Memorial, para. 4.5.

<sup>209</sup> Pakistan’s Second Phase Memorial, para. 4.8.

<sup>210</sup> Pakistan’s Second Phase Memorial, para. 4.6.

<sup>211</sup> Pakistan’s Second Phase Memorial, para. 4.8.

<sup>212</sup> Pakistan’s Pondage Utilization Submission, paras. 1.15–1.30.

<sup>213</sup> See Award on Issues of General Interpretation, paras. 649–748, 811(O)–(P).

<sup>214</sup> See Decision on the Request for Clarification, paras. 39–47, 69–82, 88(F)–(H).

**B. MEANING OF “REALISTIC, WELL-FOUNDED, AND DEFENSIBLE”**

144. In its Award on Issues of General Interpretation, the Court finds that the calculation of “maximum Pondage” for an Annexure D, Part 3 HEP under Paragraph 8(c) of Annexure D shall be based on a “realistic, well-founded, and defensible” projection of the proposed HEP’s installed capacity and anticipated load.<sup>215</sup> While the Treaty does not expressly use the formula “realistic, well-founded, and defensible”, this standard follows from the text and context of Paragraph 8(c) of Annexure D to the Treaty, and the associated notification requirements in Paragraph 9, interpreted in good faith and in light of the object and purpose of the Treaty.
145. As recalled in Part IV, the Court identifies in its Award on Issues of General Interpretation the overall approach to be taken when interpreting the provisions of Annexure D, Part 3, in light of the object and purpose of the Treaty as it relates to the Western Rivers.<sup>216</sup>
146. In applying that approach to this issue, the starting point is the Treaty’s definition of “Pondage”. Paragraph 2(c) defines Pondage as “Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant”.<sup>217</sup> The text of Paragraph 2(c) is relevant in two respects. *First*, it ties Pondage directly to the anticipated load pattern of the plant. *Second*, the use of the phrase “only sufficient magnitude” precludes any Pondage that is excessive or otherwise exaggerated beyond the need “to meet fluctuations in turbine discharge arising from variations in the daily and weekly loads of the plant”. Taken together, these two aspects make clear that the calculation of the maximum Pondage for an Annexure D, Part 3 HEP at the design stage must strictly correspond to the *actual* operational requirements anticipated for the plant; it must not be premised on an artificial or exaggerated basis that simply serves to maximize Pondage. Indeed, any contrary approach would invert the logic of the Treaty by positing fluctuations in turbine discharge so as to justify a desired volume of Pondage, as opposed to limiting Pondage to a magnitude sufficient to accommodate genuine fluctuations in discharge. The former is not permitted by Paragraph 2(c) of Annexure D.
147. In its Award on Issues of General Interpretation, the Court does not regard the concepts of installed capacity and anticipated load as external to the Treaty’s definition of Pondage, but rather as integral elements to its determination. The “fluctuations in the discharge of the turbines” to which

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<sup>215</sup> Award on Issues of General Interpretation, paras. 745–748, 810(O); see also Decision on the Request for Clarification, para. 88(H).

<sup>216</sup> See Pt. IV.D.2, *infra*; see also Award on Issues of General Interpretation, Pt. VIII.

<sup>217</sup> **PLA-0001**, Treaty, Annexure D, para. 2(c).

Paragraph 2(c) refers cannot be identified in the abstract.<sup>218</sup> Those fluctuations depend, *first*, on the generating capability of the plant, as reflected in its installed capacity, and, *second*, on the pattern of demand that the plant is expected to meet, as reflected in its anticipated daily and weekly loads. In other words, *installed capacity* defines the operational envelope within which the plant may generate power, and the *anticipated load* determines the temporal pattern in which that capability is expected to be used. It follows that the Pondage required for an Annexure D, Part 3 HEP must be determined by reference to a realistic, well-founded, and defensible projection of those two elements, reflecting how the plant will actually operate, and not by reference to assumptions adopted merely to enlarge the permissible volume of Pondage.<sup>219</sup>

148. This conclusion similarly follows from the method provided by the Treaty for calculating “maximum Pondage”. Paragraph 8(c) provides that “maximum Pondage in the Operating Pool shall not exceed twice the Pondage required for Firm Power”.<sup>220</sup> Paragraph 2(i) then defines Firm Power as “the hydro-electric power corresponding to the minimum mean discharge at the site of a plant”.<sup>221</sup> Read together, those provisions anchor the calculation in the hydrology of the site—specifically, in the MMD at the site of the plant—and in the actual operation of the plant at that hydrological benchmark. Therefore, the installed capacity and anticipated load cannot be determined in the abstract, but must be compatible with what the river can actually support at the MMD at the site of the plant.
149. Paragraph 9 of Annexure D—requiring India to communicate to Pakistan, in writing, the information specified in Appendix II to Annexure D—confirms and adds context to this conclusion. At least six months in advance of the beginning of construction, India must provide Pakistan with the information specified in Appendix II to Annexure D, including hydrologic data, hydraulic data, particulars of design, and other “[g]eneral” information.<sup>222</sup> This information includes, *inter alia*, river discharge data (necessary to calculate the MMD),<sup>223</sup> the calculations for the Operating Pool,<sup>224</sup> the “[d]ischarge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and the weekly load

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<sup>218</sup> PLA-0001, Treaty, Annexure D, para. 2(c).

<sup>219</sup> See, e.g., Award on Issues of General Interpretation, para. 743.

<sup>220</sup> PLA-0001, Treaty, Annexure D, para. 8(c).

<sup>221</sup> PLA-0001, Treaty, Annexure D, para. 2(i).

<sup>222</sup> PLA-0001, Treaty, Annexure D, Appendix II.

<sup>223</sup> PLA-0001, Treaty, Annexure D, Appendix II, para. 2(b).

<sup>224</sup> PLA-0001, Treaty, Annexure D, Appendix II, para. 3(b).

fluctuations” (that is, the anticipated load of the HEP),<sup>225</sup> and the “[m]aximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power” (that is, the installed capacity of the HEP).<sup>226</sup>

150. As to the notification requirements relevant to anticipated load, Appendix II provides that India must provide the “[d]ischarge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and the weekly load fluctuations”.<sup>227</sup> This wording is important in three respects. *First*, the Treaty focuses on the discharge to be passed through the plant, thus confirming that the relevant inquiry concerns anticipated operational requirements, and not abstract or theoretical generating possibilities. *Second*, the phrase “initially and ultimately” indicates that the Treaty addresses the operation of the plant over time, including the form in which it is expected to operate once construction has finished and the HEP is in operation. *Third*, the phrase “expected variations” in discharge due to daily and weekly load fluctuations indicates that the Treaty is forward-looking but calls for a genuine projection; the load must be anticipated and not merely theoretical in nature. The use of the plural “variations” further confirms that India is not merely to provide a single span of possible variation, but rather the expected variations in discharge over the relevant period.
151. As to the notification requirements relevant to installed capacity, the same conclusion applies by indirect but necessary implication. Appendix II requires notification both of discharge under Paragraph 4(h) and of the “[m]aximum aggregate capacity of power units ... for Firm Power and Secondary Power” under Paragraph 4(i).<sup>228</sup> This requirement must be read together with the information India is required to provide of the anticipated load pursuant to Paragraph 4(h) of Appendix II. Specifically, given the relevance of installed capacity to the calculation of maximum Pondage under Paragraph 8(c), it cannot be chosen in isolation from the discharge the plant is proposed to pass, initially and ultimately. In other words, India’s notification of installed capacity must be the capacity that is intended to fit the actual operation of the HEP, as reflected in the discharge data the Treaty specifically requires.
152. It is for these reasons that the Court determined that the “Pondage required for Firm Power shall be calculated based on a realistic, well-founded, and defensible projection of the proposed

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<sup>225</sup> PLA-0001, Treaty, Annexure D, Appendix II, para. 4(h).

<sup>226</sup> PLA-0001, Treaty, Annexure D, Appendix II, para. 4(i).

<sup>227</sup> PLA-0001, Treaty, Annexure D, Appendix II, para. 4(h).

<sup>228</sup> PLA-0001, Treaty, Annexure D, Appendix II, para. 4(i).

Annexure D, Part 3 HEP's installed capacity and anticipated load, reflecting the fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant, as set forth in Paragraph 2(c) of Annexure D".<sup>229</sup>

**C. INDIA'S UTILIZATION OF PONDAGE AT THE BAGLIHAR HEP AND THE KHEP**

153. Pakistan has introduced into these proceedings records relating to India's actual utilization of pondage at the Baglihar HEP and at the KHEP (that is, the Pondage Logbooks).<sup>230</sup> Further, Pakistan later submitted to the Court an analysis of these records in which Pakistan maintains that India's calculation of the Pondage required for Firm Power at both HEPs far exceeds the pondage actually utilized at those HEPs. From this, Pakistan says that India's methodology for such calculation is not realistic, well-founded, and defensible. Ultimately, Pakistan says this reinforces what Pakistan has requested from the Court in its submissions for this phase of the proceedings.
154. After receiving Pakistan's analysis, the Court requested further details as to the calculations underpinning that analysis, which Pakistan provided.<sup>231</sup> The Court has carefully reviewed Pakistan's submissions and notes that there are certain inherent limitations in determining India's actual utilization of pondage from the data available, which arise in particular from the absence of actual inflow data to the reservoirs at both HEPs during the relevant time period and from the limited granularity of the available bathymetric data.<sup>232</sup> Separately, the Court observes that Pakistan's method for calculating actual utilization of pondage does not appear to be consistent across the analysis.<sup>233</sup>
155. Beyond these issues, the Court notes that there are different approaches that might be taken when seeking to analyze India's utilization of pondage. For example, while the difference between

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<sup>229</sup> Award on Issues of General Interpretation, paras. 747(b), 810(O)(2)(ii); see Decision on the Request for Clarification, para. 88(H); see also Award on Issues of General Interpretation, paras. 745–748.

<sup>230</sup> **P-0738**, Neutral Expert (Indus Waters), Appendix D ("Bathymetric Survey Data of Baglihar Reservoir (2015)") to the DHI Expert Report to India's Memorial dated 31 August 2023; **P-0739** Neutral Expert (Indus Waters), Item 7 R BHEP data (logbook of BHEP) submitted by India under cover of a letter to the Neutral Expert dated 21 January 2025; **P-0740**, Neutral Expert (Indus Waters), Item 7 (logbook of KHEP) submitted by India under cover of a letter to the Neutral Expert dated 31 July 2024.

<sup>231</sup> Pakistan's Letter to the Court dated 20 April 2026.

<sup>232</sup> The Court further notes that pre-impoundment data has been used across the analysis for consistency, notwithstanding that available post-impoundment data, which *inter alia* would take account of sediment accumulation, may more closely reflect actual operating conditions.

<sup>233</sup> In some instances, pondage actually utilized is assessed as the difference from the starting volume and minimum volume for a weekly time period, and in others, it is assessed as the difference from the maximum volume and the minimum volume over that period.

weekly starting volumes (that is, any net drawdown or accumulation over the weekly period) could be subtracted from the pondage actually utilized (as Pakistan has done), it is alternatively possible to subtract these differences only where they exceed the permissible tolerance set out in Paragraph 17(a) of Annexure D (and then only by the amount necessary to fall within that tolerance). Further, while an approach for determining the overall percentage of time that a certain amount of pondage is used might record the pondage utilized in high flow periods as zero (as Pakistan has done), it is alternatively possible to exclude such periods from the duration analysis entirely. These alternative approaches result in calculations for pondage actually utilized at higher levels than that indicated by Pakistan.

156. While the Court has considered carefully Pakistan’s submissions, the Court ultimately does not find it necessary to reach any specific conclusions as to the magnitude of India’s utilization of pondage at the Baglihar HEP and the KHEP for this phase of the proceedings. The Court recognizes that the data and analysis provided by Pakistan raises considerable questions and concerns as to whether the pondage utilized by India at the Baglihar HEP and the KHEP warrants the size of Pondage for which India has designed those HEPs. However, the determinations reached by the Court in this Award interpret Paragraph 8(c) of Annexure D of the Treaty generally, as it relates to particular elements (installed capacity, anticipated load, and minimum flow), but do not adjudicate India’s calculation of maximum Pondage at any particular HEP, where India’s prior practice in utilizing pondage might feature when considering India’s calculation of maximum Pondage for that HEP. Not reaching any conclusions on the magnitude of India’s utilization of pondage at this phase of the proceedings, however, does not preclude the Court from doing so in future phases of these proceedings, nor does it preclude such utilization from being considered by the Neutral Expert or by other dispute settlement bodies convened under the Treaty. Likewise, it does not preclude the Court or another body from considering such data as it may be relevant to understanding the *patterns* of actual utilization of pondage by India at its existing Annexure D, Part 3 HEPs.

**D. INSTALLED CAPACITY AS AN ELEMENT IN CALCULATING MAXIMUM PONDAGE**

157. Before addressing the calculation of maximum Pondage by reference to installed capacity, it is appropriate to explain in greater depth what is meant by the term “installed capacity” and the potential consequences that the installed capacity may have on the calculation of maximum Pondage.

## 1. Installed Capacity as an Aspect of the Treaty

158. In the Award on Issues of General Interpretation and in this Award, the Court uses “installed capacity” as a shorthand for the Treaty phrase “maximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power” at the HEP, a usage that is consistent with the definition of “installed capacity” appearing in widely-used publications on hydro-electric power.<sup>234</sup>
159. While the term “installed capacity” itself does not appear in Annexure D, Paragraph 8(c) (nor in the Treaty as a whole), Paragraph 8(c) expressly refers to “Pondage”, which in turn is defined in Paragraph 2(c) in part by reference to the “fluctuations in the discharge of the turbines”.<sup>235</sup> Thus, Pondage in Paragraph 8(c) is defined in part by reference to the component of the HEP that generates power. Further, Paragraphs 3 and 4 of Annexure D refer to “capacity” and “designed capacity” of the HEP when identifying HEPs in operation or under construction as of the effective date of the Treaty.<sup>236</sup> Finally, when describing the information India must provide to Pakistan on those HEPs in Appendix I of Annexure D, the Treaty refers to the “[m]aximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power”.<sup>237</sup> With respect to new Run-of-River HEPs, which are central to the present Award, Appendix II of Annexure D likewise employs the phrase “[m]aximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power” when describing the information that India must provide to Pakistan in the course of designing an Annexure D, Part 3 HEP.<sup>238</sup> The same phrase is used for those new HEPs that are classified as “Small Plants”.<sup>239</sup> Similarly, when designing an Annexure E Storage Work that incorporates a HEP, India must provide to Pakistan information on the “[m]aximum aggregate capacity of power units (exclusive of standby units) for firm power and secondary power”.<sup>240</sup>

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<sup>234</sup> See, e.g., **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, Appendix S-2, p. 292 (“Installed Capacity. The sum of the capacities in a powerplant or power system, as shown by the nameplate ratings of similar kinds of apparatus, such as generating units, turbines, or other equipment”).

<sup>235</sup> **PLA-0001**, Treaty, Annexure D, paras. 2(c), 8(c).

<sup>236</sup> **PLA-0001**, Treaty, Annexure D, paras. 3–4.

<sup>237</sup> **PLA-0001**, Treaty, Annexure D, Appendix I, para. 3(d).

<sup>238</sup> **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(i).

<sup>239</sup> **PLA-0001**, Treaty, Annexure D, Appendix III, para. 4(g).

<sup>240</sup> **PLA-0001**, Treaty, Annexure E, Appendix, para. 4(g)(v).

160. In these formulations, the ordinary meaning of “power unit” refers to a generating unit, as it appears in widely-used publications on hydro-electric power, for example, a “single power-producing unit, comprised of a turbine, generator, and related equipment”.<sup>241</sup> “Firm power”, though the subject of a particular definition for Annexure D, Part 3, HEPs,<sup>242</sup> is more broadly understood as referring to the “[p]ower intended to have assured availability to the customer” (or power system) “to meet all or any agreed upon portion of the [load] requirements”.<sup>243</sup> “Secondary power” is defined for Annexure D, Part 3, HEPs as “power, other than Firm Power, available only during certain periods of the year”,<sup>244</sup> a meaning that is consistent with that term’s usage in the literature.<sup>245</sup>
161. In such overall context, the ordinary meaning of “[m]aximum aggregate capacity of power units” refers to the installed capacity of the HEP to generate power, which is understood in the literature on HEPs as “[t]he sum of the capacities in a powerplant or power system, as shown by the nameplate ratings of similar kinds of apparatus, such as generating units, turbines, or other equipment”.<sup>246</sup> Here, it is the capacity of the plant that is relevant, not that of the power system. In their practice, the Parties have used a variety of formulations when referring to the total capacity of the generating units of an Annexure D, Part 3 HEP. India at times has referred to “installed capacity”<sup>247</sup> or to the “maximum aggregate capacity of power units”.<sup>248</sup> In these proceedings, Pakistan has referred to “installed capacity” and indicated that it means “the total capacity of the generating units housed in the Plant”.<sup>249</sup> The *travaux préparatoires* reveal that the Parties at one time envisaged using the phrase “[p]roposed maximum *installed* capacity of power

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<sup>241</sup> See, e.g., **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, Appendix S-7, p. 297.

<sup>242</sup> **PLA-0001**, Treaty, Annexure D, para. 2(i).

<sup>243</sup> See, e.g., **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, Appendix S-12, p. 302. On what is meant by “load” in this context, see para. 202, *infra*.

<sup>244</sup> **PLA-0001**, Treaty, Annexure D, para. 2(j).

<sup>245</sup> See, e.g., **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, Appendix S-13, p. 303.

<sup>246</sup> See, e.g., **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, Appendix S-2, p. 292.

<sup>247</sup> See, e.g., **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22-25 September 2013, 14 July 2014, p. 16.

<sup>248</sup> See, e.g., Figure 4: Calculation for the Operating Pool of the Kiru HEP, *infra*; **P-0546**, Annexure VII (India’s operating pool calculations for the Kiru HEP).

<sup>249</sup> Pakistan’s Second Phase Memorial, paras. 2.37, 3.16; see also Pakistan’s Second Phase Memorial, para. 3.32(a).

plant”<sup>250</sup> or “of plant”<sup>251</sup> before settling on “[m]aximum *aggregate* capacity of power units” in the Treaty.<sup>252</sup> Although Paragraphs 3 and 4 of Annexure D refer to the HEP’s capacity in kilowatts, the practice of the Parties has been to refer to aggregate or installed capacity in megawatts (MW).

## 2. Maximum Aggregate Capacity and the Relevance of Firm and Secondary Power

162. The Parties disagree as to one aspect relating to the maximum aggregate capacity of power units, which concerns what is meant in Appendix II to Annexure D by notification of that capacity “(exclusive of standby units) for Firm Power and Secondary Power”.<sup>253</sup> Pakistan contends that this notification requirement requires India to provide in its notification a breakdown in capacity between Firm and Secondary Power for the relevant HEP.<sup>254</sup> This, Pakistan submits, is necessary to enable it to discern whether India’s calculations of maximum Pondage under Paragraph 8(c) are for “Pondage required for Firm Power”, and not the aggregate of Firm and Secondary Power.<sup>255</sup> For its part, India contends that the requirement is only to notify Pakistan of the aggregate installed capacity for the generation of both Firm Power and Secondary Power, rather than separate figures for Firm Power and for Secondary Power.<sup>256</sup>
163. For the reasons that follow, and in accordance with the interpretative approach reflected in Articles 31 and 32 of the VCLT, the Court concludes that “[m]aximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power” refers to a single combined aggregate capacity of an Annexure D, Part 3 HEP’s non-standby power units; that is, the aggregate installed capacity by which the plant produces Firm Power and, when available, Secondary Power.
164. *First*, the text of the provision as it appears in Appendix II to Annexure D refers to the “[m]aximum aggregate capacity” in the singular.<sup>257</sup> It does not refer to “maximum aggregate

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<sup>250</sup> See **P-0136**, Heads of Agreement 1959, p. 23 (emphasis added).

<sup>251</sup> See **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960, p. 8 (emphasis added).

<sup>252</sup> See, e.g., **PLA-0001**, Treaty, Annexure D, Appendix I, para. 3(d) (emphasis added).

<sup>253</sup> **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(i).

<sup>254</sup> Tr., Day 1, 2 February 2026, pp. 60:11–18, 64:5–9, 66:11–68:16; Tr., Day 2, 3 February 2026, p. 117:9–25.

<sup>255</sup> See Tr., Day 2, 3 February 2026, p. 117:9–25; Pakistan’s Second Phase Memorial, para. 2.20, *referring to P-0649.0787*, Letter No. WT(125)/(5350-A)/PCIW from the PCIW to the ICIW dated 24 May 1993, p. 5.

<sup>256</sup> **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.8, *referring to PLA-0001*, Treaty, Annexure D, Appendix II, para. 4(g).

<sup>257</sup> **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(i).

capacities” in the plural, or otherwise refer to the “respective” capacities for Firm Power and Secondary Power. Rather, it refers to a single “capacity”. This singularity is reinforced by the use of the phrase “maximum aggregate” with regard to the “capacity of power units”, which ordinarily denotes a single total installed capacity of the relevant units taken together. Indeed, the same is true as the phrase is used throughout the appendices to Annexure D, and in the appendix to Annexure E as well, all of which refer to the “[m]aximum aggregate capacity” in the singular.<sup>258</sup>

165. *Second*, where the Treaty refers to a single aggregate capacity by reference to separate category-specific quantities, it expressly distinguishes them. In Paragraph 7 of Annexure E, the Treaty provides that the “aggregate storage capacity” shall not exceed “for *each* of the categories shown in Columns (3), (4) and (5), the quantities specified therein”.<sup>259</sup> It then sets out distinct figures for General Storage Capacity, Power Storage Capacity, and Flood Storage Capacity. The absence of such language in the appendices to Annexure D (when distinguishing Firm Power from Secondary Power with respect to “maximum aggregate capacities”) suggests that the installed capacity is a single composite figure for Firm Power and Secondary Power. Indeed, the use of defined terms for General Storage Capacity, Power Storage Capacity, and Flood Storage Capacity in the appendix to Annexure E indicates contextually that, when the Treaty intends to allocate parts within a larger whole, it does so by express definitions and separate figures.
166. *Third*, in Part 2 of Annexure D, the Treaty refers to the “[c]apacity (exclusive of standby units)” as a single figure. Specifically, Paragraph 3 of Annexure D lists plants in operation as on the Effective Date with a single figure for “Capacity (exclusive of standby units) (kilowatts)” for each plant.<sup>260</sup> The same can be seen in Paragraph 4 for plants under construction, which refers to the “Designed capacity (exclusive of standby units) (kilowatts)” for each HEP.<sup>261</sup> Although distinct from the phrase “[m]aximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power”, this formulation indicates contextually that the Treaty uses the term “capacity” in conjunction with “exclusive of standby units” as a single plant-level figure.
167. *Fourth*, contrary to Pakistan’s position that the phrase “Firm Power and Secondary Power” is fundamentally concerned with the calculation of maximum Pondage for Annexure D, Part 3 HEPs, the same phrase appears in the information India is required to provide to Pakistan under

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<sup>258</sup> **PLA-0001**, Treaty, Annexure D, Appendix I, para. 3(d), Appendix III, para. 4(g); **PLA-0001**, Treaty, Annexure E, Appendix, para. 4(g)(v).

<sup>259</sup> **PLA-0001**, Treaty, Annexure E, para. 7.

<sup>260</sup> **PLA-0001**, Treaty, Annexure D, para. 3.

<sup>261</sup> **PLA-0001**, Treaty, Annexure D, para. 4.

Appendix I, Appendix II, and Appendix III to Annexure D.<sup>262</sup> This usage through the appendices is particularly relevant, given that the formula for calculating maximum Pondage is *only* relevant for Annexure D, Part 3 HEPs (to which only Appendix II relates). One explanation for this consistent reference to capacity for “Firm and Secondary Power” is that the drafters of the Treaty sought to reinforce across all the appendices the exclusion of “standby units” from being factored into the “[m]aximum aggregate capacity of power units”.

168. *Finally*, this conclusion generally accords with how the installed capacity of a HEP is determined in common engineering practice. Specifically, in the ordinary design of a run-of-river HEP, installed capacity is typically selected by reference to the flow-duration characteristics of the site of the plant, and is often economically optimized to capture power available during periods of high flow, principally in the wet season.<sup>263</sup> Yet, the same “installed capacity”<sup>264</sup> serves to generate both firm power and secondary power, which are power output categories drawn from the same plant, not separate categories of installed capacity. The design of installed capacity, therefore, is not determined by reference solely to firm power, but to both firm power and secondary power.
169. To summarize this conclusion, the Court finds that “[m]aximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power” refers to a single combined aggregate capacity of an Annexure D, Part 3 HEP’s non-standby power units; that is, the aggregate installed capacity by which the plant produces Firm Power and, when available, Secondary Power.

### **3. Designing the Installed Capacity of a HEP and Potential Consequences on Pondage**

170. In general, the design of installed capacity influences pondage because it determines the rate at which inflow to the turbines can be converted into power and in turn, the potential for short-term storage of water for later power generation. However, as explained below, the *effect* of installed capacity on the calculation of maximum Pondage in the context of the Treaty ends up being materially limited due to other Treaty constraints imposed on that calculation, specifically the MMD and the daily and weekly release requirements set out in Paragraph 15 of Annexure D. In this regard, when projecting the installed capacity for an Annexure D, Part 3 HEP for the purposes of calculating the Pondage required for Firm Power, four considerations should be borne in mind.

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<sup>262</sup> **PLA-0001**, Treaty, Annexure D, Appendix I, para. 3(d), Appendix II, para. 4(i), Appendix III, para. 4(g), Annexure E, Appendix, para. 4(g)(v).

<sup>263</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, p. 5-47.

<sup>264</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower*, dated 31 December 1985, p. 6-2, Appendix S-2, p. 292.

171. *First*, in the ordinary design of a run-of-river HEP, installed capacity—that is, the maximum aggregate capacity of the generating units—is typically selected by reference to the flow-duration characteristics and the hydraulics of the site of the plant. In particular, the installed capacity is economically optimized to capture power available during periods of *high* flow, principally in the wet season. The design of installed capacity is, therefore, normally not driven by dry-season conditions, during which available flows are relatively limited and pondage becomes operationally relevant, but rather by the flows that the project is designed to exploit during periods of higher availability. As a result, a HEP usually will not operate at full installed capacity throughout the entire year. In this regard, it is “common to base the initial plant size on either the average annual flow or a point between 15 and 30 percent exceedance on the flow-duration curve”.<sup>265</sup> A plant designed to meet peak or intermediate loads may typically be able to operate at its maximum installed capacity for only certain periods of the year, while a plant intended to meet a combination of base load and peaking/intermediate loads may operate for longer periods of the year.<sup>266</sup>
172. *Second*, when designing any run-of-river HEP, hydro-power engineers are expected to determine the installed capacity based on factors reflecting the power needs of the locality or grid that will be served and the economics of building an efficient plant. A run-of-river HEP may have little value as a peaking plant if its output is limited during high demand periods, even though the capacity is dependable throughout the remainder of the year.<sup>267</sup> Conversely, significantly increasing the installed capacity even when the hydrology of the site cannot support power generation at that capacity would be a poor design, as it entails much greater cost in construction, for no gain in energy production. At the same time, where a HEP is intended to displace high-cost energy (such as from existing thermal generation), the project may remain economically viable even with utilization only at or near full installed capacity for a limited portion of the year, with output reduced or intermittent for the remainder.<sup>268</sup>
173. *Third*, as noted above, the size of the installed capacity can have consequences for the storage of water as Pondage at a Run-of-River HEP. The installed capacity—the maximum power the plant

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<sup>265</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, p. 5-47.

<sup>266</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, p. 6-18.

<sup>267</sup> See **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, p. 6-11.

<sup>268</sup> See **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, pp. 6-16, 9-4.

can produce—turns on certain factors: the vertical distance the water falls from the intake to the turbine (the effective “head”); the efficiency of the turbines and generator; and the turbine discharge rate. For present purposes, the most relevant factor when seeking to increase installed capacity is the turbine discharge rate. In essence, the larger the turbine discharge rate, the more quickly the stored water can be released, allowing more time to store water in the Operating Pool before releasing it, thereby increasing the potential size of the pondage.

174. Further, the configuration of the HEP’s generating units may be operationally relevant to the need for pondage. Installed capacity is typically divided among multiple turbine-generator units, each with its own minimum and maximum operating discharge.<sup>269</sup> Where capacity is concentrated in a small number of large units, each unit requires a relatively high flow to operate efficiently, thereby increasing the effective minimum generation threshold of the plant.<sup>270</sup> In such circumstances, water must often be accumulated before a unit can be brought online, increasing reliance on pondage to enable discrete periods of generation. By contrast, a larger number of smaller units permits finer control over discharge, allowing the plant to operate efficiently across a broader range of inflows and reducing the necessity to store water prior to generation.<sup>271</sup> The choice of unit configuration, therefore, has a direct bearing on the degree to which pondage is required to support the operation of the plant. This difference is illustrated by the following flow-duration curves, which show streamflow usable for generation for two equal installed capacities of different configurations, with a higher minimum turbine discharge for a single unit depicted on the left and a lower minimum turbine discharge for two units depicted on the right:<sup>272</sup>

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<sup>269</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, pp. 5-17, 5-32.

<sup>270</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, pp. 5-17, 5-32.

<sup>271</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, pp. 6-33–6-34.

<sup>272</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, p. 6-22, Figures 6-6, 6-7.

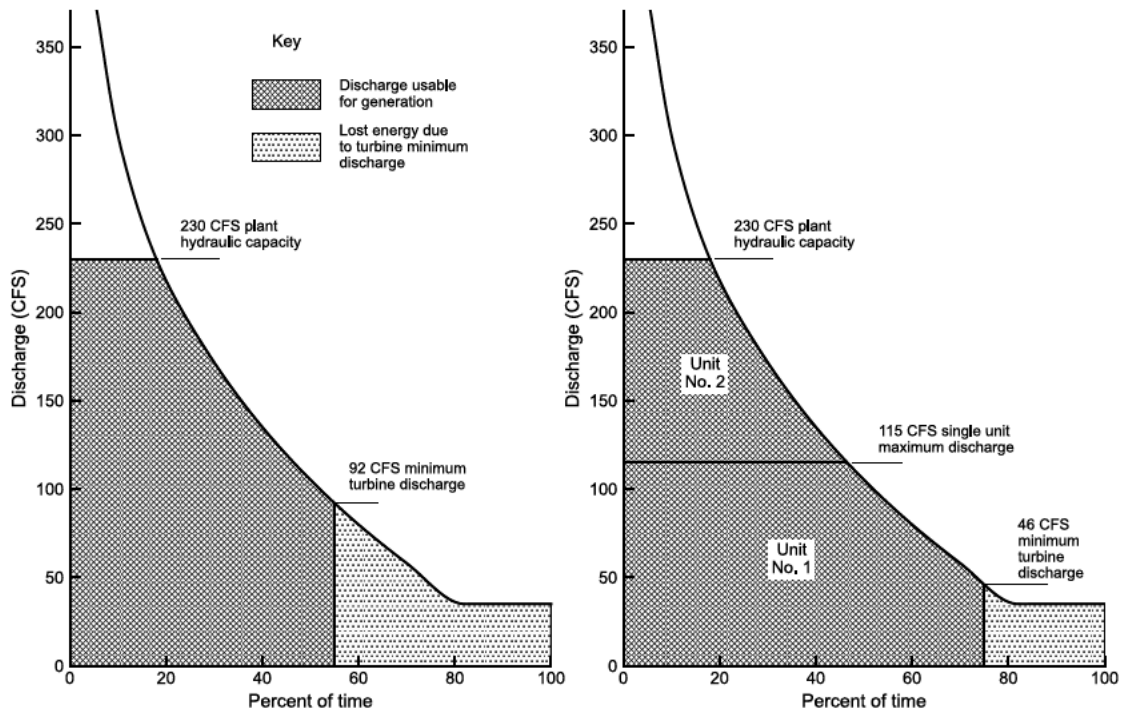


Figure 2: Flow-duration curve showing streamflow usable for generation

175. *Fourth*, while an increase in the installed capacity can have *some* effect on the size of the pondage, the effect is quite limited, at least in the context of Annexure D, Part 3 HEPs. The Pondage of such a HEP is already bounded by significant constraints, most notably by being calculated based on a very low-flow rate of the river (the MMD) and with regard as well to the mandatory operational constraints of Annexure D, Paragraph 15. Designing a HEP with a very high installed capacity would mean that the HEP during the dry season (and in particular, when flow rates are close to the MMD) could be operated only for very short periods of time, only hours or even minutes per week at that full installed capacity. Further, even at that higher capacity, the amount of usable Pondage remains similar to that associated with lower capacity HEPs because the MMD inflow limitation and the Paragraph 15 release requirements cap the amount of water that can be accumulated as Pondage over a daily or weekly period, as applicable.
176. This can be illustrated by reference to the following graph, which depicts the greatest potential amount of Pondage required for Firm Power against an increasing amount of installed capacity (as reflected in the maximum turbine discharge rate), in circumstances where those elements must function within the limits of the constraints of the MMD and Paragraph 15. Where the installed capacity is very low (that is, the maximum turbine discharge rate is lower than the very low-flow rate of the river (MMD)), no Pondage can realistically be used at all, given that the HEP will need to operate continuously at maximum capacity to pass that flow (and may also need to pass flow through outlets or spillways). Once the maximum rate of turbine discharge exceeds the MMD, increasing that rate (by increasing the installed capacity of the HEP) initially results in an increase

in the potential Pondage required for Firm Power. But, eventually, the constraints of operating at a very low-flow rate (MMD) and the need to meet the daily and/or weekly release requirements of Paragraph 15 mean that greater Pondage cannot possibly be accumulated, no matter how much the installed capacity is increased.

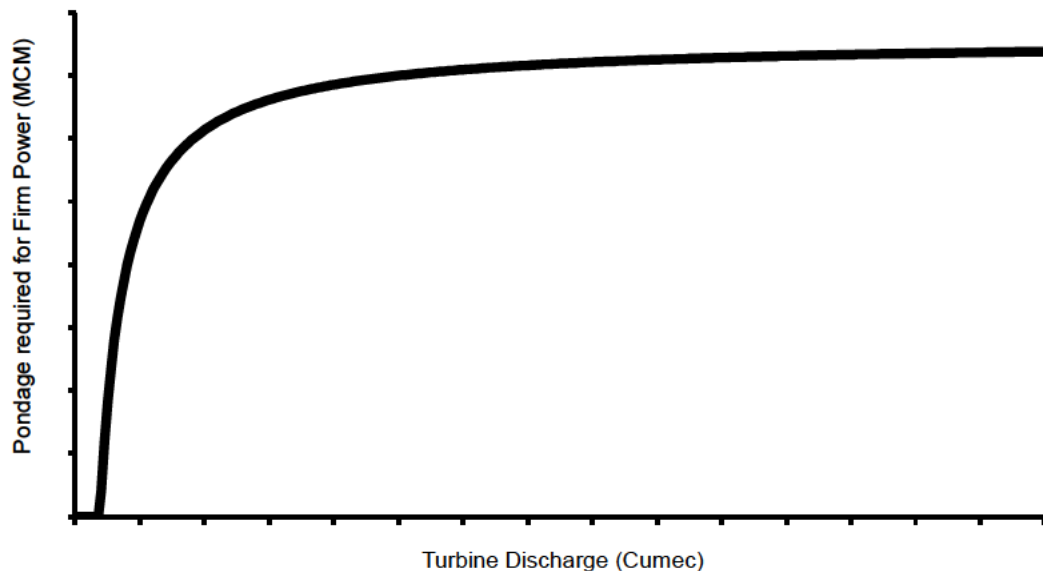


Figure 3: Pondage required for Firm Power as a function of turbine discharge

177. Thus, while the selection of a higher or lower installed capacity within those constraints can have some effect on the size of the Pondage, the effect is relatively small; simply put, there is a relatively discrete band of possible Pondage that bounds any possible advantage from increasing the installed capacity for this purpose.
178. While the potential consequences for Pondage of increasing the installed capacity may be limited, nevertheless the issue that remains for decision is how the installed capacity of a proposed Annexure D, Part 3 HEP is to be taken into account for purposes of the calculation of maximum Pondage.

#### **4. Calculation of Maximum Pondage by Reference to Installed Capacity**

179. The Court now proceeds to consider how maximum Pondage is to be calculated under the Treaty with reference to the installed capacity of an Annexure D, Part 3 HEP.
180. The installed capacity (i.e., the maximum aggregate capacity of power units) of any hydro-electric plant is central to its operation. Indeed, the turbines and associated equipment are at the heart of the HEP's operation: they receive water from the river above; they convert the flow of that water into energy for the power system that the HEP serves; and thereafter, the water is returned to the

river. While the installed capacity of a HEP is important even if the HEP is not designed to have any pondage (a pure run-of-river HEP), where the HEP is intended to have pondage, as previously noted, the installed capacity is relevant to the size of that pondage. It is because of this relationship between installed capacity and pondage that the installed capacity requires consideration when designing a HEP; the issue for determination is how that consideration is regulated under the Treaty for the purposes of calculating maximum pondage. The Court recalls that the discussion below is in the context of the calculation of maximum Pondage being constrained already by other Treaty requirements, including those concerning the use of the MMD and the operational release requirements of Paragraph 15 of Annexure D to the Treaty.

**(a) *Good faith interpretation of the text and context of Annexure D, Paragraph 8(c)***

181. Paragraph 8(c) of Annexure D to the Treaty contains no express language specifying exactly how India is to design the installed capacity of a Run-of-River HEP, nor do the definitions of the terms found therein (“Pondage”; “Operating Pool”; “Firm Power”). The relationship of Pondage to installed capacity, however, is reflected in the definition of “Pondage”, which provides that “‘Pondage’ means Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines”.<sup>273</sup> Thus, under the Treaty, the size of the Pondage required for Firm Power is determined, in part, based on the capacity of the turbines to make use of that Pondage to generate power.
182. The context of Paragraph 8(c), including the references to “capacity” and “design capacity” in Annexure D, Part 2, does not specify how exactly the installed capacity is to be determined. As noted above,<sup>274</sup> the Treaty does require India to inform Pakistan as to the “[m]aximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power” of an Annexure D, Part 3 HEP (a formulation also used for Small Plants and Annexure E Storage Works), but it does not expressly indicate how that capacity is to be calculated.
183. Even so, this context establishes that, when drafting the Treaty, the Parties viewed the maximum aggregate capacity of the power units of an Annexure D, Part 3 HEP, along with a wide variety of other aspects of the design of the HEP, as important. The Treaty requires that India provide Pakistan with information on the “particulars of design” for the HEP, including its installed capacity, at least six months in advance of commencing construction of the HEP.<sup>275</sup> After having

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<sup>273</sup> **PLA-0001**, Treaty, Annexure D, para. 2(c).

<sup>274</sup> See para. 158, *supra*.

<sup>275</sup> **PLA-0001**, Treaty, Annexure D, para. 9; **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(i).

reviewed such information, Pakistan is then entitled to communicate “any objection” that it may have with regard to the proposed design, including a lack of conformity with the requirements of Paragraph 8(c).<sup>276</sup> While the Treaty does not specify exactly how India is to design the installed capacity, for the Treaty’s notification and objection process to be effective, the basis for India’s initial design and for any Pakistani objection to the calculation of maximum Pondage must turn on objective criteria.

184. Those objective criteria are found in a good faith interpretation of the Treaty, including Paragraph 8(c) and its associated provisions, which establish a “maximum Pondage” for Annexure D, Part 3 HEPs. The installed capacity of the HEP is one component for understanding what magnitude of Live Storage is sufficient “to meet fluctuations in the discharge of the turbines”, a component of the definition of “Pondage”. Further, the text and context of Paragraph 8(c) indicate that India’s obligation to inform Pakistan of the installed capacity serves two purposes: to convey to Pakistan why the hydrology and hydraulics at the HEP site warrant having an installed capacity of the size designed by India and to convey to Pakistan what installed capacity it considers necessary to meet the needs of the power system that the HEP is intended to serve (which relates as well to the anticipated load, as discussed below). All told, with respect to installed capacity, a good faith interpretation of Paragraph 8(c) and its associated provisions leads to three conclusions.
185. *First*, India is not to identify, for the purposes of calculating maximum Pondage, the installed capacity for a Run-of-River HEP in a hypothetical way, including based on mere conjecture that, at some point in the future, there might be a need for an increased capacity at the plant. Indeed, the Court has previously found that the installed capacity “must correspond to how the plant will actually be operated; it cannot be hypothesized in a manner that serves to inflate the amount of maximum Pondage”.<sup>277</sup> As explained above, this is a central aspect of what the Treaty requires for there to be a realistic, well-founded, and defensible projection of the installed capacity.<sup>278</sup>
186. *Second*, and relatedly, the projection of the installed capacity of an Annexure D, Part 3 HEP should be consistent with the existing hydrologic and hydraulic data for that specific HEP. The correspondence of the installed capacity with how the plant will be operated, consistent with the existing hydrologic and hydraulic data for the site, serves as the objective basis for assessing

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<sup>276</sup> **PLA-0001**, Treaty, Annexure D, para. 10.

<sup>277</sup> See Award on Issues of General Interpretation, para. 743.

<sup>278</sup> See para. 146, *supra*.

whether India's calculations for maximum Pondage, based on a particular projection of installed capacity, comply with the Treaty.

187. *Third*, the Court recalls that any design for a component of an Annexure D, Part 3, HEP, including the HEP's installed capacity, must conform with all of the requirements of the Treaty, not just Paragraph 8(c).

**(b) Overall approach when interpreting Article III and Annexure D, Part 3**

188. The three conclusions reached above are consistent with the overall approach to be taken when interpreting the provisions of Annexure D, Part 3, in light of the object and purpose of the Treaty as it relates to the Western Rivers.<sup>279</sup> The Treaty establishes a general rule that India shall "let flow" the waters of the Western Rivers for Pakistan's unrestricted use, subject to certain specified exceptions to the general rule, one of which allows India to use the Western Rivers to generate hydro-electric power, but that exception is to be strictly construed.

189. Thus, the three conclusions must be understood in the broader scheme of balancing competing rights and obligations. On the one hand, the Treaty does not identify or expressly constrain the installed capacity to be used for each Annexure D, Part 3 HEP. Rather, the Treaty accords to India a right to the generation of hydro-electric power through Annexure D, Part 3 HEPs. On the other hand, when designing such a HEP, India is obligated to comply with the constraints imposed by the Treaty with respect to maximum Pondage which, in context, limit the installed capacity of the HEP.

190. In sum, Paragraph 8(c) constrains India's determination of maximum Pondage in important ways, including with respect to taking advantage of an unrealistic, oversized installed capacity in order to inflate the Pondage, though any such advantage is inherently limited.<sup>280</sup> Paragraph 8(c) and its associated provisions cannot be construed to deny India the ability to generate electricity from HEPs on the Western Rivers provided they are built in conformity with the Treaty, but they do require India to calculate maximum Pondage on the basis of an installed capacity that corresponds to how the plant will actually be operated, that is based on the hydrology and hydraulics at the HEP site, and that otherwise conforms with all of the requirements of the Treaty.

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<sup>279</sup> See Award on Issues of General Interpretation, Pt. VIII.

<sup>280</sup> See paras. 175–176, *supra*.

(c) *Subsequent practice of the Parties*

191. The Parties' subsequent practice under the Treaty is also consistent with the three conclusions reached above. With the exception of certain smaller HEPs notified by India early in the life of the Treaty,<sup>281</sup> India has regularly provided to Pakistan information on the proposed installed capacity for its new Run-of-River HEPs as a figure expressed in MW; further, India has provided a breakdown of the individual generating capacity for each turbine of the HEP.<sup>282</sup> From the correspondence within the Commission, it is clear that Pakistan has assessed such information and on occasion reacted to it. Importantly, India's practice indicates acceptance that the projection of the installed capacity cannot be hypothesized or otherwise divorced from the realistic and well-founded particulars of the HEP at issue. For example, in 2013, India's Commissioner stated that the "installed capacity of these projects is finalized after carrying out incremental benefit analysis and optimization studies. Various other factors like exploitation of overall potential available at the site are also considered for finalization of installed capacity".<sup>283</sup>
192. At the same time, this practice suggests that the Parties have accorded relatively limited significance to the issue of installed capacity when discussing the proper calculation of Pondage, and in this regard three points may be made. *First*, India consistently notified Pakistan of installed capacity whether or not the HEP was designed to have Pondage; thus, the issue of installed capacity was not seen as exclusively relevant to Pondage. *Second*, when notifying the installed capacity, India initially distinguished between Firm and Secondary Power but, starting with the Sumbal HEP, in all but one case it made no such distinction.<sup>284</sup> While Pakistan at times objected to India's failure to do so, leading in some instances to India providing such a breakdown, in recent years Pakistan has not so objected.<sup>285</sup> *Third*, when Pakistan has objected to India's calculations for Pondage, it has not done so based on India's projection of the installed capacity; instead, Pakistan has raised other factors as the basis for its objections, principally relating to the

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<sup>281</sup> Pakistan's Second Phase Memorial, Appendix A, rows 1–6, 26.

<sup>282</sup> Pakistan's Second Phase Memorial, Appendix A, rows 7–25, 27–86. It is noted that India's method of calculating maximum Pondage requires converting the installed capacity into a turbine discharge rate, expressed in cubic meters per second (cumecs). For example, at the Kiru HEP—an Annexure D, Part 3 HEP discussed in the Award on Issues of General Interpretation for illustrative purposes—India selected a design of four turbines with a combined power capacity of 624 MW and a discharge rate of 586 cumecs. India applied that discharge rate, along with other factors (including the anticipated load), to determine the maximum Pondage for the Kiru HEP.

<sup>283</sup> **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22–25 September 2013, 14 July 2014, p. 16.

<sup>284</sup> Pakistan's Second Phase Memorial, paras. 2.40–2.41.

<sup>285</sup> Pakistan's Second Phase Memorial, paras. 2.19–2.20.

determination of the MMD and whether the anticipated load was hypothetical in nature.<sup>286</sup> Indeed, Pakistan has confirmed that the “basis upon which India determines the installed capacity of a given proposed HEP has not been the subject of significant disagreement between the Parties” up to and including the Baglihar HEP.<sup>287</sup>

193. Nevertheless, there is some practice of the Parties concerning installed capacity that is linked to objections that Pakistan has made with respect to the anticipated load of Run-of-River HEPs. In essence, Pakistan has maintained with respect to certain HEPs, such as the Baglihar HEP, that India was basing its design on a hypothetical load curve that entails not operating the turbines at all for a certain period of time, and then operating them for very short periods in a manner that warrants a very large installed capacity. In Pakistan’s view, the formulation of such a load curve, which then justifies a very large installed capacity, is “not understandable” and is “drawn only to achieve maximum pondage”.<sup>288</sup>
194. In these circumstances, it is also important to note that there is no evidence on the record before the Court that India has proposed a Run-of-River HEP under Annexure D to the Treaty with an excessively large installed capacity for the purpose of inflating Pondage. Pakistan has not alleged that any of the Annexure D, Part 3 HEPs notified by India were designed with an “installed capacity [that] is too large and not justified by the hydrology”.<sup>289</sup> In this regard, the Court observes that there is considerable variation among the Annexure D, Part 3 HEPs notified by India to date with respect to installed capacity. For example, while the Dul Hasti HEP (780 MW) has an Operating Pool of 8 MCM, the Baglihar HEP (450 MW for stage I, 900 MW total) has a 37.5 MCM Operating Pool, the RHEP (850 MW) has a 23.86 MCM Operating Pool, the Kiru HEP (624 MW) has a 10.5 MCM Operating Pool, and the Kwar HEP (540 MW) has a 9.16 MCM Operating Pool. There are also several exceptional HEPs, such as the Nimo Bazgo HEP, which has an installed capacity of 45 MW, but an Operating Pool of 9.72 MCM comparable with the Kwar HEP. This diversity illustrates that the installed capacity of a plant does not proportionately scale with the size of the Operating Pool, and further indicates that the installed capacity proposed by India is strongly influenced by other design assumptions, not just maximization of the Operating Pool at the relevant plant. Indeed, as Pakistan itself acknowledges, “installed capacity

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<sup>286</sup> Pakistan’s Second Phase Memorial, paras. 2.30–2.32.

<sup>287</sup> Pakistan’s Second Phase Memorial, para. 2.38.

<sup>288</sup> See, e.g., **P-0649.0822**, Letter No. WT(127)/(5452-A)/PCIW from the PCIW to the ICIW dated 13 October 1994 (Baglihar HEP).

<sup>289</sup> Tr., Day 1, 2 February 2026, p. 165:15–21.

is likely to have a much more limited impact on “maximum Pondage” when compared with “the primary constraints on Pondage within the interpretation of Paragraph 8(c)”, namely, the MMD and daily and weekly release requirements set out in Paragraph 15 of Annexure D.<sup>290</sup> As previously noted, the effect is marginal because the calculation of maximum Pondage is limited by the fixed volume of water available over a day or a week, and once the turbines are large enough to discharge the usable inflow of MMD in a very short period, there is no more daily water volume left to retain as additional Pondage.

**(d) *Travaux préparatoires***

195. Limited as they may be, the *travaux préparatoires* are also consistent with the three conclusions reached above. It is recalled that by early August 1959, India had proposed that it be allowed certain non-consumptive uses of the Western Rivers, to include the generation of hydro-electric power.<sup>291</sup> Pakistan resisted that effort, but ultimately engaged in discussions on what would become Annexure D. The term “capacity” was advanced in the negotiations in the context of a provision that would ultimately become Paragraph 4(i) of Appendix II to Annexure D, indicating information that India would be required to provide to Pakistan in advance of commencing construction of an Annexure D, Part 3 HEP. In the Heads of Agreement that emerged in September 1959, the reference was to “installed capacity”, with the text reading: “Proposed maximum installed capacity of power plant (exclusive of standby units) both firm and secondary”.<sup>292</sup>
196. Thus, while the text was later adjusted, the initial concept of this provision was to address what hydro-engineers typically refer to as the HEP’s installed capacity. In the April 1960 draft of the Treaty, the word “plant” was dropped,<sup>293</sup> while in the June 1960 draft of the Treaty, the word “aggregate” replaced “installed” and the words “power units” were added, so as to read: “Maximum aggregate capacity of power units (exclusive of standby units) both firm and secondary”.<sup>294</sup> Pertinent to the Court’s interpretation above,<sup>295</sup> such adjustments are consistent

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<sup>290</sup> Pakistan’s Second Phase Memorial, para. 4.8.

<sup>291</sup> See Award on Issues of General Interpretation, para. 132.

<sup>292</sup> **P-0136**, Indus Waters, Heads of Agreement, 15 September 1959, Annex B, Appendix I, para. 4(i).

<sup>293</sup> **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft dated 23 April 1960, p. 8 (Appendix II).

<sup>294</sup> **P-0478**, Indus Waters Treaty 1960, Annexure D: Generation of Hydro-Electric Power by India on the Western Rivers (Article III(2)(d)), draft dated 6 June 1960, p. 11.

<sup>295</sup> See Pt. VI.D.2, *supra*.

with an interpretation that it is the *total* capacity of the power units that must be notified, rather than separate amounts for firm power and secondary power. Thereafter, the only change in the text was to use the defined terms of “Firm Power” and “Secondary Power”.

**(e) *Methodology for calculating maximum Pondage in respect of installed capacity***

197. In sum, as found in the Award on Issues of General Interpretation, and clarified in the Decision on the Request for Clarification, the Treaty requires that India’s calculation of maximum Pondage in accordance with Paragraph 8(c) be based on a projection for the proposed HEP’s installed capacity that is realistic, well-founded, and defensible. The Treaty does not prescribe a specific installed capacity, leaving that determination to considerations of hydrology, hydraulics, and other design factors.<sup>296</sup>
198. Even so, a good faith interpretation of the text and context of the Treaty, considered in light of the Treaty’s object and purpose, the Parties’ subsequent practice, and the *travaux préparatoires*, supports three conclusions as to whether the installed capacity is realistic, well-founded, and defensible for the purpose of calculating maximum Pondage. For the projection of the proposed HEP’s installed capacity to be realistic, well-founded, and defensible when calculating maximum Pondage consistent with Annexure D, Paragraph 8(c), it shall:
- (1) correspond to how the plant will actually be operated and not be hypothesized in a manner that serves to inflate the amount of Pondage required for Firm Power;
  - (2) be consistent with the existing hydrologic and hydraulic data for that specific HEP at the time it is being designed; and
  - (3) not result in a design that is inconsistent with any other provision of the Treaty.

**E. ANTICIPATED LOAD AS AN ELEMENT IN CALCULATING MAXIMUM PONDAGE**

199. In its Award on Issues of General Interpretation, the Court also found that the calculation of “Pondage required for Firm Power”, which is necessary for calculating maximum Pondage under Paragraph 8(c) of Annexure D, must be based on a realistic, well-founded, and defensible projection of the proposed HEP’s anticipated load.<sup>297</sup> Before addressing the calculation of maximum Pondage by reference to the anticipated load, it is appropriate to explain in greater

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<sup>296</sup> See Award on Issues of General Interpretation, para. 705.

<sup>297</sup> Award on Issues of General Interpretation, paras. 745–748, 810(O); Decision on the Request for Clarification, para. 88(H).

depth what is meant by “anticipated load” and the potential impact on Pondage of how load is distributed over the course of a critical time period, being a day or a week.

### 1. Anticipated Load as an Aspect of the Treaty

200. In the Award on Issues of General Interpretation and in this Award, the Court uses “anticipated load” to refer to the load that the power system is expected to place on the HEP over daily and weekly time periods, which corresponds to the phrase “daily and weekly loads of the plant”.<sup>298</sup>
201. While the term “anticipated load” does not appear in Paragraph 8(c) of Annexure D (nor in the Treaty as a whole), Paragraph 8(c) expressly refers to “Pondage”, which in turn is defined in Paragraph 2(c) as “Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly *loads* of the plant”.<sup>299</sup> Further, Appendix II to Annexure D provides that the particulars of design to be communicated by India to Pakistan include the “[d]ischarge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and the weekly *load* fluctuations”.<sup>300</sup> The Appendix to Annexure E on Storage Works contains this same provision.<sup>301</sup>
202. In this context, the ordinary meaning of the “loads” of the plant or “load” fluctuations refers to the power demand for which the plant is designed. Indeed, such usage is readily apparent in widely-used publications on hydro-electric power engineering.<sup>302</sup> Thus, when addressing the expected power demand at the design stage, one may succinctly refer to the HEP’s “anticipated load”. Pakistan has stated in these proceedings that “anticipated load” means “the amount of load that can be expected to be placed on a given HEP by the power system over daily and weekly time periods”.<sup>303</sup>

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<sup>298</sup> PLA-0001, Treaty, Annexure D, para. 2(c).

<sup>299</sup> PLA-0001, Treaty, Annexure D, para. 2(c) (emphasis added). The same usage may be found in the Annexure D definition of “Regulating Basin”. See PLA-0001, Treaty, Annexure D, Para. 2(h).

<sup>300</sup> PLA-0001, Treaty, Annexure D, Appendix II, para. 4(h) (emphasis added).

<sup>301</sup> PLA-0001, Treaty, Annexure E, Appendix, para. 4(g)(iv). By contrast, Appendix III to Annexure D on information to be provided regarding Small Plants contains no such provision.

<sup>302</sup> See, e.g., P-0302, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, Appendix S-8, p. 298 (referring to the “load” as the “amount of electric power delivered at a given point” by the plant within the power system it serves).

<sup>303</sup> Pakistan’s Second Phase Memorial, para. 2.48; see also Pakistan’s Second Phase Memorial, paras. 3.17, 3.32(a).

203. India's practice during the early life of the Treaty was to build HEPs with either no storage or only relatively small, daily storage. In more recent years, India has constructed larger HEPs, at times with the anticipated load based on a weekly period.<sup>304</sup>
204. While anticipated load refers to the power demand to be served by the HEP, India has historically represented the load, for notification purposes, by converting the required power output into the corresponding variations in turbine discharge, expressed in cumecs, in accordance with Paragraph 4(h) of Appendix II to Annexure D.<sup>305</sup> The anticipated load of a HEP (whether represented in terms of variations in required power output or turbine discharge) may be expressed graphically, through a load curve showing the variations over a specified time period, such as a day or week.<sup>306</sup> Where an Annexure D, Part 3, HEP is designed to have an Operating Pool, and especially for larger HEPs, the load variations are often indicated in India's calculations for the maximum Pondage by way of a load curve represented in table form. The table generally lists the hours that the HEP's turbines are either operating or idle, and shows inflows into, accumulated storage in, and releases from the Operating Pool, over either a daily or weekly period. The table is typically provided by India to Pakistan as an annex to its notification of a proposed new Run-of-River HEP.<sup>307</sup>
205. For example, India presented variations in power output/turbine discharge in tabular form when calculating maximum Pondage for the Kiru HEP.<sup>308</sup> While that HEP is not at issue in these proceedings, India's table has proved useful for explaining its approach to maximum Pondage in the Award on Issues of General Interpretation. In the Operating Pool calculations table shown below at page 79, India elected to design the Kiru HEP to follow a particular load curve—that is, a particular distribution over the week of the flow of the water through the turbines so as to generate electrical power. As can be seen, while the amount of MMD inflow from the river is

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<sup>304</sup> In this respect, it is noted that India draws a distinction between its Run-of-River HEPs located above and below Ramban on the Chenab Main. India maintains that, for HEPs located below Ramban, the required volume of water for Firm Power would be the volume of water contained in the "MMD over the day", whereas for Run-of-River HEPs located above Ramban, the required volume of water for Firm Power would be the volume of water contained in the MMD over a period of seven days. See **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.4.

<sup>305</sup> See **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(h); Award on Issues of General Interpretation, paras. 640–647.

<sup>306</sup> See para. 173, *supra*.

<sup>307</sup> Such information is reflected in Pakistan's Second Phase Memorial, Appendix A; see also Pakistan's Second Phase Memorial, paras. 2.11–2.15.

<sup>308</sup> See Figure 4: Calculation for the Operating Pool of the Kiru HEP, *infra*; **P-0546**, Annexure VII (India's operating pool calculations for the Kiru HEP).

constant (at 1560 cumec-hours per day), the releases are variable, resulting in greater accumulation of pondage from Saturday to Monday and greater generation of power from Tuesday through Friday. Based on this load curve, India identified a maximum Pondage of 20.22 million cubic meters (MCM).<sup>309</sup>

## 2. Designing for the Anticipated Load of a HEP and Potential Consequences on Pondage

206. When designing any run-of-river HEP, hydro-power engineers are expected to size the plant to meet the expected power demand upon the plant—in other words, the anticipated load—which may vary considerably on a daily, weekly, or seasonal basis.<sup>310</sup> Those variations in power demand typically will follow the ordinary course of human activities, increasing during the working hours of weekdays and diminishing during late evening and early morning hours, as well as on weekends. If a plant is connected to a power grid, in which various other plants also supply electricity, the demands on the plant may be affected by the contributions those plants can make in meeting electricity demand.<sup>311</sup>
207. Further, for a run-of-river HEP in the Indus Basin, the pondage required to meet the anticipated load is typically determined by reference to power demand during the dry season (from October to March), when water flows are low. During the wet season, when the flow of the river typically equals or exceeds installed capacity, a run-of-river HEP generally does not require pondage and can be expected to supply base load power, rather than daily peaking power. By contrast, during the dry season, a run-of-river HEP with pondage typically utilizes that pondage to contribute a larger amount of power to the system over just certain hours each day. During that season, the anticipated load is determined with an eye to the power the HEP can produce in a low-flow period through the use of pondage.<sup>312</sup>

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<sup>309</sup> See Award on Issues of General Interpretation, paras. 640–647.

<sup>310</sup> See Award on Issues of General Interpretation, paras. 464–466.

<sup>311</sup> See para. 204, *supra*.

<sup>312</sup> This is consistent with the Treaty’s use of the MMD (which entails very low-flow conditions) as a constraint in the calculation of the Pondage required for Firm Power.

<b>KIRU H. E. PROJECT</b>								
<b>Calculation for Operating Pool (as per IWT 1960)</b>								
Minimum Mean Discharge (MMD)	=	65.00	cumec					
Turbine (all 4 units) discharge	=	586	cumec					
Min env flow	=	16.33	cumec					
Daily inflow = 24 hr X MMD	=	1560.00	cumec-hr					
Minimum outflow to be released in a day=50% daily inflow	=	780.00	cumec-hr					
Maximum outflow to be released in a day=130% daily inflow	=	2028.00	cumec-hr					
Maximum pondage shall not exceed twice the pondage req. for firm power as per IWT								
Day	Time	Inflow	*Peaking & Releases	Storage	Cumulative Storage	Power Generation Time	Power	
	Period	No. of hrs.	(cumec-hr)	(cumec-hr)	(cumec-hr)	No. of hrs.	MW	
<i>Opening balance =</i>					596			
Sat-Sun	0800-1700	9.00	585.00	146.97	438	1034	0.00	624
	1700-1800	1.00	65.00	574.89	-510	524	<b>0.95</b>	624
	1800-2400	6.00	390.00	97.98	292	816	0.00	624
	2400-0530	5.50	357.50	89.82	268	1084	0.00	624
	0530-0800	2.50	162.50	40.83	122	1206	0.00	624
Sun-Mon	0800-1700	9.00	585.00	146.97	438	1644	0.00	624
	1700-1800	1.00	65.00	602.33	-537	1106	<b>1.00</b>	624
	1800-2400	6.00	390.00	97.98	292	1398	0.00	624
	2400-0530	5.50	357.50	89.82	268	1666	0.00	624
	0530-0800	2.50	162.50	40.83	122	1788	0.00	624
Mon-Tue	0800-1700	9.00	585.00	146.97	438	2226	0.00	624
	1700-1800	1.00	65.00	602.33	-537	1688	<b>1.00</b>	624
	1800-2400	6.00	390.00	97.98	292	1980	0.00	624
	2400-0530	5.50	357.50	89.82	268	2248	0.00	624
	0530-0800	2.50	162.50	40.83	122	2370	0.00	624
Tue-Wed	0800-1700	9.00	585.00	146.97	438	2808	0.00	624
	1700-1945	2.75	178.75	1656.41	-1478	1330	<b>2.75</b>	624
	1945-2400	4.25	276.25	69.40	207	1537	0.00	624
	2400-0530	5.50	357.50	89.82	268	1805	0.00	624
	0530-0800	2.50	162.50	40.83	122	1926	0.00	624
Wed-Thu	0800-1700	9.00	585.00	146.97	438	2364	0.00	624
	1700-1945	2.75	178.75	1656.41	-1478	887	<b>2.75</b>	624
	1945-2400	4.25	276.25	69.40	207	1093	0.00	624
	2400-0530	5.50	357.50	89.82	268	1361	0.00	624
	0530-0800	2.50	162.50	40.83	122	1483	0.00	624
Thu-Fri	0800-1700	9.00	585.00	146.97	438	1921	0.00	624
	1700-1945	2.75	178.75	1656.41	-1478	443	<b>2.75</b>	624
	1945-2400	4.25	276.25	69.40	207	650	0.00	624
	2400-0530	5.50	357.50	89.82	268	918	0.00	624
	0530-0800	2.50	162.50	40.83	122	1039	0.00	624
Fri-Sat	0800-1700	9.00	585.00	146.97	438	1477	0.00	624
	1700-1945	2.75	178.75	1656.41	-1478	0	<b>2.75</b>	624
	1945-2400	4.25	276.25	69.40	207	207	0.00	624
	2400-0530	5.50	357.50	89.82	268	474	0.00	624
	0530-0800	2.50	162.50	40.83	122	596	0.00	624
<b>Total =</b>		10920.00	10920.00				<b>13.953</b>	
<b>Pondage required =</b>					<b>2808</b>	<b>cumec-hr</b>		
<b>or</b>					<b>10.11</b>	<b>Mcum</b>		
<b>Pondage allowed as per Indus Water Treaty = 2 x Req'd. Pondage =</b>					<b>20.22</b>	<b>Mcum</b>		
* Includes Discharge for environmental flow.								

Figure 4: Calculation for the Operating Pool of the Kiru HEP

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208. Under the Treaty, for an Annexure D, Part 3 HEP that is proposed to have Pondage, India’s projection of the anticipated load has consequences for the size of Pondage needed during the dry season. As previously noted, a HEP creates Pondage by periodically reducing or stopping the flow of water through the turbines and storing the diminished dry-season flows during periods of low power demand, effectively storing the turbines’ “fuel”, so that the water can be released periodically to drive the turbines when power demand is higher.<sup>313</sup> The longer the periods of reduced or stopped flows during which dry season flows can be stored, the greater the amount of pondage that can be accumulated. Conversely, shorter periods of reduced or stopped flows limit the ability to store dry-season flows, resulting in less Pondage.

209. The relationship of anticipated load to Pondage can be illustrated graphically in the following way. If it is projected that the HEP will provide the exact same power each day, at the same time, over the course of a week, then the anticipated load would call for an accumulation and release of water over the week that would be uniform, with little to no accumulation of Pondage from day to day. This projection would require a certain amount of Pondage for Firm Power, as follows:

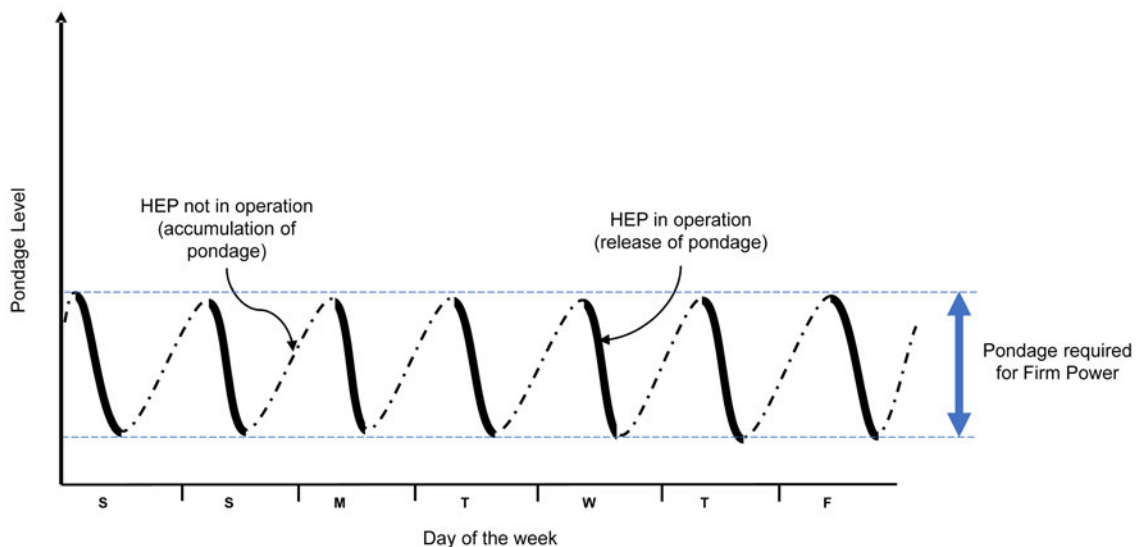


Figure 5: Pondage required for Firm Power with uniform daily peaking

210. By contrast, if it is projected that a smaller amount of power is provided on certain days of the week,<sup>314</sup> then a larger amount of water is accumulated on those days. Doing so would allow for a

<sup>313</sup> See para. 173, *supra*; see also Award on Issues of General Interpretation, paras. 465–470.

<sup>314</sup> In Figure 6, a smaller amount of power is provided on Sunday (Day 2), Tuesday (Day 4), and Friday (Day 7).

correspondingly greater amount of power to be provided on other days,<sup>315</sup> but this projection results in a need for a larger amount of Pondage for Firm Power, as follows:

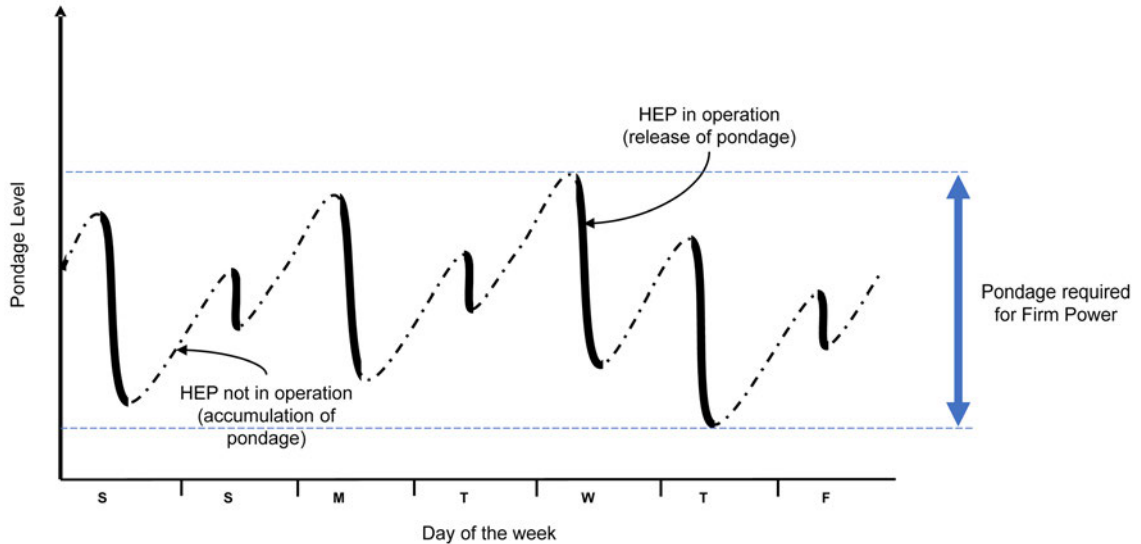


Figure 6: Pondage required for Firm Power—extended peaking on only certain days

211. Further, the sequencing of days in the projection also has an effect on the amount of Pondage required for Firm Power. For example, if the days in which a smaller amount of power is provided are sequenced together (and, in turn, the days in which a greater amount of power is provided are sequenced together), the amount of Pondage required for Firm Power is maximized, as follows:

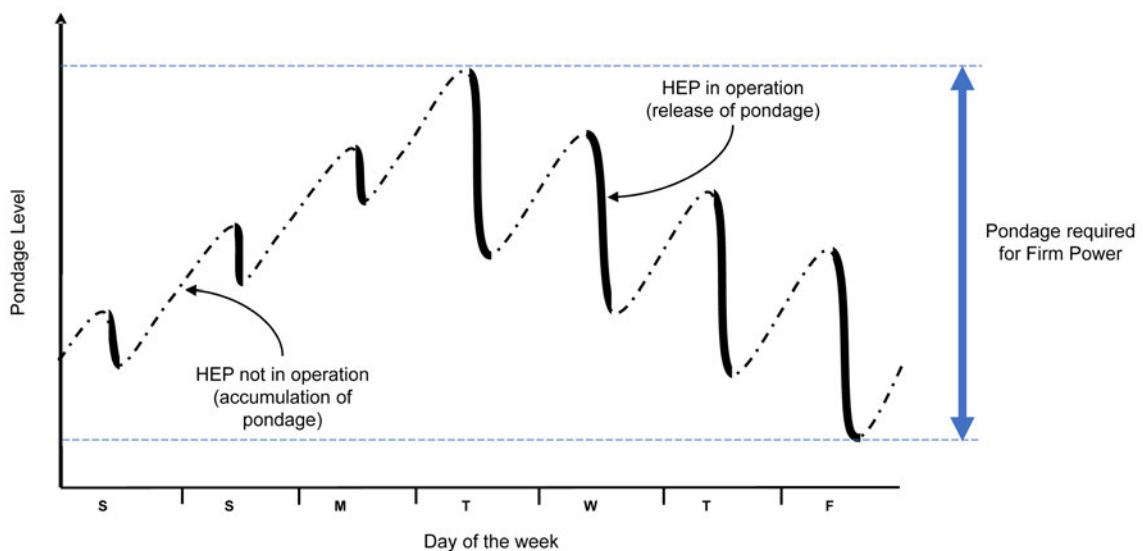


Figure 7: Pondage required for Firm Power—extended peaking on only certain days and sequenced together

<sup>315</sup> In Figure 6, a larger amount of power is provided on Saturday (Day 1), Monday (Day 3), Wednesday (Day 5), and Thursday (Day 6).

212. In sum, India’s projection of the anticipated load of the Annexure D, Part 3 HEP can have a significant impact on the calculation of maximum Pondage, even with the limitation imposed by use of the MMD, and even when respecting the daily and weekly release requirements set out in Paragraph 15 of Annexure D.

### **3. Calculation of Maximum Pondage by Reference to Anticipated Load**

213. The Court now proceeds to consider how maximum Pondage is to be calculated under the Treaty with reference to the anticipated load of an Annexure D, Part 3 HEP.

214. The anticipated load of any HEP (i.e., the power demand to be placed on the HEP) is central to its design. The purpose of a HEP is to generate power and to do so in a manner that meets a particular demand for power at particular points in time. As explained in the prior section, where the HEP is intended to have pondage to meet the demand for power in the dry season, the anticipated load has a material effect on the size of that pondage. This relationship between anticipated load and pondage requires consideration of both elements together when designing the HEP; the issue for determination is how that consideration is regulated under the Treaty for the purpose of calculating maximum Pondage. The Court recalls that the discussion below is in the context of the calculation of maximum Pondage being constrained already by other Treaty requirements, including those concerning the use of the MMD and the operational release requirements of Paragraph 15 of Annexure D to the Treaty.

#### **(a) *Good faith interpretation of the text and context of Annexure D, Paragraph 8(c)***

215. Paragraph 8(c) of Annexure D to the Treaty contains no express language specifying exactly how India is to determine the anticipated load of a particular Run-of-River HEP, nor do the definitions of the terms found therein (“Pondage”; “Operating Pool”; “Firm Power”). However, the definition of “Pondage” establishes a relationship between Pondage and anticipated load, and it confirms that anticipated load reflects variations in the demands of the power system on the plant over the course of a day or week. That definition provides that “‘Pondage’ means Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant”.<sup>316</sup> Thus, under the Treaty, the size of the Pondage is determined, in part, based on what amount of water is needed in the Live Storage (and more specifically in the Operating Pool) to generate power sufficient to meet the HEP’s power demand,

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<sup>316</sup> PLA-0001, Treaty, Annexure D, para. 2(c).

recognizing variations that occur over the course of a day or week (during which Pondage can be stored or released).

216. The context of Paragraph 8(c), including the reference in Paragraph 4(h) of Appendix II to Annexure D to the “[d]ischarge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and the weekly load fluctuations”,<sup>317</sup> does not specify exactly how the anticipated load is to be determined but, again, it confirms that such load reflects variations in the demands on the plant from the power system over the course of a day or a week. Moreover, for the reasons stated above,<sup>318</sup> this requirement that India notify proposed initial and ultimate discharges, and their expected daily and weekly variations, further confirms that the relevant inquiry concerns anticipated operational requirements of the Plant over time—including the form in which the HEP is expected to operate once construction has finished and the HEP is in operation—in a manner that is genuine.
217. This context establishes that, when drafting the Treaty, the Parties viewed the anticipated load of an Annexure D, Part 3 HEP, along with a wide variety of other aspects of the design of the HEP, as important. India’s calculation of the Pondage required for Firm Power is regulated by the Treaty. Further, the Treaty requires that India provide Pakistan with information on the “particulars of design” for the HEP, including information on the daily and weekly loads of the plant at least six months in advance of commencing construction.<sup>319</sup> After having reviewed that information, Pakistan is entitled to communicate “any objection” that it may have with regard to the proposed design, including a lack of conformity with the requirements of Paragraph 8(c).<sup>320</sup> While the Treaty does not specify exactly how India is to determine the anticipated load, for the Treaty’s procedures for notification and objection to be effective, the basis for India’s initial design and for any Pakistani objection to the calculation of maximum Pondage, as it relates to the projection of a proposed HEP’s anticipated load, must turn on objective criteria.
218. Those objective criteria are found in a good faith interpretation of the Treaty, including the express and implied meaning of Paragraph 8(c) and its associated provisions. Those provisions are concerned with the planned operation of the HEP during the dry season, when it is expected to provide firm power by utilizing Pondage. Taken in conjunction with the other types of information that India is obligated to convey pursuant to Paragraph 9 of Annexure D, including the

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<sup>317</sup> **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(h); see also **PLA-0001**, Treaty, Annexure E, Appendix, para. 4(g)(iv).

<sup>318</sup> See para. 55, *supra*.

<sup>319</sup> **PLA-0001**, Treaty, Annexure D, para. 9.

<sup>320</sup> **PLA-0001**, Treaty, Annexure D, para. 10.

“Hydrologic Data” and the “Hydraulic Data”, the anticipated load of the HEP is central for understanding, during the dry season, exactly what magnitude of Live Storage is sufficient “to meet fluctuations in the discharge of the turbines *arising from variations in the daily and the weekly loads of the plant*”, a component of the definition of “Pondage”.<sup>321</sup>

219. All told, a good faith interpretation of Paragraph 8(c) and its associated provisions leads to six conclusions as to what the Treaty requires with respect to the calculation of maximum Pondage in relation to the anticipated load.
220. *First*, as the Court has previously found, the anticipated load “must correspond to how the plant will actually be operated; it cannot be hypothesized in a manner that serves to inflate the amount of maximum Pondage”.<sup>322</sup> In other words, the projection of anticipated load used in the calculation of the Pondage required for Firm Power (and in turn, maximum Pondage) must strictly correspond to the *actual* operational requirements of the plant; the projection of the anticipated load must not be premised on an artificial or exaggerated basis that simply serves to maximize Pondage. As previously explained, this is a central aspect of what the Treaty requires for there to be a realistic, well-founded, and defensible projection of the anticipated load.<sup>323</sup>
221. *Second*, and relatedly, to correspond to the actual operational requirements of the plant, the anticipated load must be consistent with the projected needs of the power system that the HEP is intended to serve. To take an extreme example, a projection of anticipated load that envisages power demand only for very short periods, at hours that do not correspond to any normal peak in power demand, could be a basis for viewing that projection as not realistic, well-founded, or defensible, and to conclude instead that it is merely a means to inflate Pondage. Power demand fluctuates according to certain predictable patterns of human activity; it is required throughout the week and rarely requires peaking for just a few hours on a single day of the week.
222. *Third*, a projection of anticipated load would be presumptively realistic, well-founded, and defensible if, in the projection, the HEP supplies power to the system that the HEP is intended to serve on a daily and weekly basis at times of peak demand and allocates its power distribution across days of the week (including as between weekends and weekdays) in a manner that corresponds to the actual demand on the power system. In the early decades of the Treaty, India’s power system was of a relatively local nature, with local sources of energy serving local needs. In some instances, it is possible that a particular Run-of-River HEP might still fulfill such a

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<sup>321</sup> PLA-0001, Treaty, Annexure D, para. 2(c).

<sup>322</sup> See Award on Issues of General Interpretation, para. 743.

<sup>323</sup> See para. 146, *supra*.

function. However, at present, India's Run-of-River HEPs appear to be integrated into India's NRG, which covers eight states administered by India and which, as of 2025, had a total installed capacity of approximately 137,000 MW.<sup>324</sup> The NRG is one of India's five major power grids. Since 2013, those five regional grids have been inter-connected to form a nationwide power grid, such that electricity generated in one part of India, in principle, may be used to satisfy demand elsewhere in India, subject to issues such as interconnectivity or voltage stability over long distances.<sup>325</sup> Power demand in India is recorded through the Grid Controller of India Limited, which is an enterprise wholly-owned by India's Ministry of Power.<sup>326</sup>

223. While India's power system is fed by a range of power supplies (including hydro, coal, oil and gas, wind and solar), India's regional grids and national grid as a whole can be expected to meet the broad demand for power across the system, which will fluctuate on a daily and weekly basis. As such, a proposed Indian Run-of-River HEP most naturally might be designed to serve these broad demands of the power system. Thus, an objective baseline for considering whether the anticipated load of a particular Run-of-River HEP is realistic, well-founded, and defensible is whether that HEP supplies power to the system that the HEP is intended to serve on a daily and weekly basis at times of peak demand and allocates its power distribution across days of the week (including as between weekends and weekdays) in a manner that corresponds to the actual demand on the power system.
224. For the purpose of these proceedings, Pakistan provided data from the Grid Controller of India Limited on the NRG for the period from 1 January 2024 to 30 June 2025,<sup>327</sup> to establish the pattern of NRG loads throughout the dry and wet seasons. Further, through analysis of the data, Pakistan drew certain conclusions, including that: the NRG power demand varies seasonally;<sup>328</sup> in the dry season, when Pondage would be used, weekend power demand was not consistently lower than

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<sup>324</sup> See **P-0714**, National Power Portal (India), "Location wise Northern Region state-wise installed capacity as on 30/11/2025", at <<https://npp.gov.in/public-reports/cea/monthly/installcap/2025/NOV/capacity2-Northern-2025-11.pdf>>.

<sup>325</sup> See Government of India, Ministry of Power, Creation of National Grid (updated 18 March 2024), at <<https://powermin.gov.in/en/content/creation-national-grid>> (a "nationwide synchronous power grid, interconnecting all the five regional grids, has been established with the commissioning of 765kV S/c Raichur – Sholapur line on December 31, 2013", which connected the Southern Grid to the rest of India).

<sup>326</sup> See **P-0715**, India Ministry of Power Press Information Bureau, "Power System Operation Corporation Limited is now Grid Controller of India Limited", 14 November 2022, at <<https://www.pib.gov.in/PressReleaseframePage.aspx?PRID=1875864>>.

<sup>327</sup> See **P-0717**, Hourly demand data for Northern Region of India from 1 January 2024 to 30 June 2025, at <<https://iced.niti.gov.in/energy/electricity/distribution/national-level-consumption/load-curve>>.

<sup>328</sup> See Pakistan's Second Phase Memorial, Appendix D, para. 11.

weekday power demand;<sup>329</sup> and the existing load curves “will be representative of the load curves that can be expected in the future, i.e., the system does not show dramatic changes in the distribution of the load”.<sup>330</sup> For present purposes, the Court does not address whether the conclusions reached by Pakistan’s assessment of the NRG data are correct. Rather, it suffices to note that such data provide a basis for determining whether a proposed HEP supplies power to the system that the HEP is intended to serve on a daily and weekly basis at times of peak demand and allocates its power distribution across days of the week (including as between weekends and weekdays) in a manner that corresponds to the actual demand on the power system.

225. *Fourth*, any *other* projection of anticipated load must be based on specific information and underlying data produced by India that justify such a load. For example, India might demonstrate that the HEP is intended to address a particular *need* of the grid that differs from the overall *demand* of the grid, and which therefore warrants a particular projection of anticipated load. In that regard, a proposed HEP could be intended to help maintain voltage stability by supplying energy to the grid when intermittent sources of energy, such as wind or solar, are unable to do so. If so, the HEP may need to operate on a particular peaking schedule that differs from the overall pattern of demand of the relevant grid. Alternatively, India might demonstrate that the HEP is not intended to serve the NRG but, rather, is being constructed to serve a uniquely local purpose, such as a particular industrial complex or a remote residential community. In either case, while the projected anticipated load may deviate from the generalized average demand of a regional or national grid, it is incumbent upon India—in furtherance of the information-sharing and cooperation that serves as a hallmark of the Treaty—to substantiate such a deviation through specific information and data that demonstrate the purpose of the HEP and how that purpose is served through its projection of the anticipated load.<sup>331</sup>

226. *Fifth*, it is noted that Paragraph 8(c) establishes *design* criteria that are mandatory in nature and are to be applied at the outset of designing the HEP; such criteria are distinct from post-commissioning operational constraints, such as those set forth in Paragraph 15 of Annexure D.<sup>332</sup> The Court, *inter alia*, has noted that “the existence or acknowledgement of an operational constraint is not a basis for satisfying or accommodating a design constraint established by Annexure D, Paragraphs ... 8(c) ..., nor is a commitment by a Party to operating the proposed

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<sup>329</sup> See Pakistan’s Second Phase Memorial, Appendix D, paras. 22–25.

<sup>330</sup> See Pakistan’s Second Phase Memorial, Appendix D, paras. 28–29.

<sup>331</sup> See paras. 243–250, *infra*.

<sup>332</sup> See Award on Issues of General Interpretation, paras. 680, 745–748, 811(O), (P); Decision on the Request for Clarification, paras. 39–47, 88(F).

HEP only in a certain way. Such factors are not part of the criteria found in Paragraphs ... 8(c) ... and thus cannot be employed to circumvent the design constraints that those sub-paragraphs establish”.<sup>333</sup> Accordingly, the design of the HEP must satisfy the requirements of Paragraph 8(c), including that there be a realistic, well-founded, and defensible projection of the anticipated load, before then considering whether the design will cohere with any operational constraints.

227. *Sixth*, while post-commissioning operational constraints are not design criteria, given that the anticipated load must correspond to how the plant will actually be operated, the projection of anticipated load must nevertheless take account of such constraints, which in turn may limit the Pondage required for Firm Power. As the Court stated in the Award on Issues of General Interpretation with respect to Paragraph 8(c) and Paragraph 15, “both design and operational provisions serve to constrain the volume of maximum Pondage at the HEP”.<sup>334</sup> In this regard, any engineering work is designed with reference to the manner in which it may be, and is intended to be, operated; hence, design and operation cannot be so strictly separated.<sup>335</sup> As the *Kishenganga* Court rightly noted in its Partial Award, a “review of the context of Paragraph 15 makes clear that the provision is placed within a continuum of design, construction and operation that cannot properly be separated into watertight compartments”.<sup>336</sup> The *Kishenganga* Court thus concluded that the provisions contained in Part 3 of Annexure D “must be interpreted in a mutually reinforcing manner to avoid forbidding with one provision what is permitted by others”.<sup>337</sup> In the Decision on the Request for Clarification, the Court observed that, “for some components of a proposed HEP, the design of the component has a connection to the later ‘operation’ of the HEP”, but that “even then, the constraint remains one relating to how the component is to be *designed* so as to cohere with the suitable and workable operation of the Annexure D, Part 3 HEP”.<sup>338</sup>
228. In sum, a good faith interpretation of Paragraph 8(c) and its associated provisions leads to six conclusions as to what the Treaty requires with respect the calculation of maximum Pondage as it relates to anticipated load. The anticipated load must correspond to how the plant will actually be operated, and cannot be hypothesized in a manner that serves to inflate the amount of maximum Pondage. The anticipated load must be consistent with the projected demand for the power system that the HEP is intended to serve. An anticipated load can be presumed realistic, well-founded

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<sup>333</sup> See Decision on the Request for Clarification, para. 46.

<sup>334</sup> Award on Issues of General Interpretation, para. 680.

<sup>335</sup> Award on Issues of General Interpretation, para. 680.

<sup>336</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 407.

<sup>337</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 409.

<sup>338</sup> Decision on the Request for Clarification, para. 45, fn. 62, *citing* Award on Issues of General Interpretation, paras. 579, 590–591, 602–603.

and defensible if, in the projection, the HEP supplies power to the system that the HEP is intended to serve on a daily and weekly basis at times of peak demand and allocates its power distribution across days of the week (including as between weekends and weekdays) in a manner that corresponds to the actual demand on the power system. Otherwise, the projection of an anticipated load is realistic, well-founded and defensible only if it is based on specific information and underlying data produced by India that justify such a load. The anticipated load shall not be determined solely on the basis of whether the anticipated load allows for releases of water consistent with the operational constraints of the Treaty, including those found in Annexure D, Paragraph 15. At the same time, given that the anticipated load must correspond to how the plant will actually be operated, the anticipated load must take account of such constraints, which in turn may limit the Pondage required for Firm Power.

**(b) Overall approach when interpreting Article III and Annexure D, Part 3**

229. The six conclusions above are consistent with the overall approach to be taken when interpreting the provisions of Annexure D, Part 3, in light of the object and purpose of the Treaty as it relates to the Western Rivers.<sup>339</sup> The Treaty establishes a general rule that India shall “let flow” the waters of the Western Rivers for Pakistan’s unrestricted use, subject to certain specified exceptions to the general rule, one of which allows India to use the Western Rivers to generate hydro-electric power, but that exception is to be strictly construed.
230. As with respect to its analysis of installed capacity, the six conclusions indicated above must be understood in the broader scheme of balancing competing rights and obligations. On the one hand, the Treaty does not identify or expressly constrain the projection of the anticipated load to be used for each Annexure D, Part 3 HEP. Rather, the Treaty accords to India a right to the generation of hydro-electric power through Annexure D, Part 3 HEPs. On the other hand, when designing such a HEP, India is obligated to comply with the constraints imposed by the Treaty with respect to maximum Pondage which, in context, limit the projection of the anticipated load of the HEP.
231. In sum, Paragraph 8(c) constrains India’s determination of maximum Pondage in important ways, including with respect to identifying the anticipated load of the HEP. Paragraph 8(c) and its associated provisions cannot be construed to deny to India the capacity to generate electricity from HEPs on the Western Rivers provided they are built in conformity with the Treaty, but they do require India to project an anticipated load that is realistic, well-founded, and defensible.

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<sup>339</sup> See Award on Issues of General Interpretation, Pt. VIII.

**(c) Subsequent practice of the Parties**

232. The Parties' subsequent practice under the Treaty is also largely consistent with the Court's six conclusions indicated above. With the exception of certain smaller HEPs notified by India,<sup>340</sup> India has regularly provided to Pakistan information on the anticipated load for its new Run-of-River HEPs expressed by table and in cumecs.<sup>341</sup> From the correspondence within the Commission, it is clear that Pakistan has assessed such information and on occasion reacted to it. When doing so, Pakistan has often stressed that the magnitude of the Pondage "has to be determined from the actual load curve worked out for the proposed Plant and not from any hypothetical load curve",<sup>342</sup> must be "realistic",<sup>343</sup> and must be based "on the actual operation of the Plant".<sup>344</sup> For example, Pakistan has questioned why the anticipated load did not envisage any peaking requirements during the weekends.<sup>345</sup>
233. Importantly, India has not responded to such objections by stating that the Treaty allows India the discretion to hypothesize its calculations. Rather, for many years under the Treaty, India responded that its calculations are not hypothetical and instead are based on the expected

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<sup>340</sup> Pakistan's Second Phase Memorial, Appendix A, rows 6, 7, 17, 26, 79.

<sup>341</sup> See Figure 4: Calculation for the Operating Pool of the Kiru HEP, *supra*; **P-0546**, Annexure VII (India's operating pool calculations for the Kiru HEP); see also Pakistan's Second Phase Memorial, Appendix A, rows 7–25, 27–86.

<sup>342</sup> **P-0649.0143**, Letter No. WT(16)/(2295-A)/PCIW from the PCIW to the ICIW dated 9 May 1969, Observations p. 3 (regarding the Sumbal HEP); see also **P-0649.0342**, Letter No. WT(85)/(3487-A)/PCIW from the PCIW to the ICIW dated 28 January 1976, pp. 5–6, para. 3(c)(iii) (Lower Jhelum); **P-0649.0425**, Letter No. WT(14)/(4023-A)/PCIW from the PCIW to the ICIW dated 4 August 1979, p. 1 (Chinani-I HEP); **P-0649.0493**, Letter No. WT(104)/(4565-A)/PCIW from the PCIW to the ICIW dated 11 February 1984, p. 4 (Dul Hasti HEP); **P-0649.0637**, Letter No. WT(15)/(5021-A)/PCIW from the PCIW to the ICIW dated 5 December 1988, p. 3 (Asthan Nallah HEP); **P-0649.0703**, Letter No. WT(16)(5138-A)/PCIW from the PCIW to the ICIW dated 14 April 1990, p. 10 (Parnai HEP); **P-0649.0722**, Letter No. WT(15)/(5183-A)/PCIW from the PCIW to the ICIW dated 29 October 1990, p. 5 (Rajouri HEP); **P-0649.0755**, Letter No. WT(15)/(5240-A)/PCIW from the PCIW to the ICIW dated 31 August 1991, p. 2 (Sumoor Nobra HEP); **P-0649.2047**, Letter No. WT(127)/(5293-A)/PCIW from the PCIW to the ICIW dated 12 August 1992, p. 2, para. 5 (Baglihar HEP); **P-0649.0822**, Letter No. WT(127)/(5452-A)/PCIW from the PCIW to the ICIW dated 13 October 1994 (Baglihar HEP); **P-0078**, Letter No. WT(150)/(7314-A)/PCIW from the PCIW to the ICIW dated 26 November 2012, p. 1 (Ratle HEP).

<sup>343</sup> See, e.g., **P-0649.0514**, Letter No. WT(104)/(4661-A)/PCIW from the PCIW to the ICIW dated 3 March 1985, p. 4 (Dul Hasti HEP); **P-0649.0773**, Letter No. WT(104)/(5304-A)/PCIW from the PCIW to the ICIW dated 14 September 1992, pp. 3, 7.

<sup>344</sup> See, e.g., **P-0649.0833**, Letter No. WT(104)/(5511-A)/PCIW from the PCIW to the ICIW dated 8 October 1995, p. 4 (Dul Hasti HEP).

<sup>345</sup> **P-0056**, Letter No. WT(132)/(6713-A)/PCIW from the PCIW to the ICIW dated 24 August 2006, p. 6 (Kishenganga HEP).

operating conditions at the HEP in question, at present or in the future.<sup>346</sup> For example, in 2007 India responded to the objection concerning weekends by stating that the lack of peaking was due to the “relatively lower demand on Saturday [and] Sunday”, thereby justifying weekend storage that could be carried forward to the work week.<sup>347</sup>

234. At times Pakistan challenged India’s projection of the anticipated load on the ground that the anticipated load was not “based on the actual operation of the Plant which would be grided nation wide”.<sup>348</sup> In other words, Pakistan took the position that the anticipated load needed to reflect the power demand of the broader power grid that the HEP was intended to supply. Importantly, India at times responded by accepting that the anticipated load of a proposed HEP was properly assessed in relation to the power “grid” it served, and not in isolation, albeit in the course of explaining why flexibility in the projection of load was appropriate.<sup>349</sup> For example, India indicated that the Baglihar HEP would operate in “a grid”<sup>350</sup> and that the Dul Hasti HEP “would be required to be operated in the grid”.<sup>351</sup> This practice of the Parties supports the proposition that India’s projection of the anticipated load could have reference to the demands of the power system that the HEP serves and in particular the relevant grid.
235. Thus, the practice of the Parties to a degree supports the proposition that India’s projection of the anticipated load may not be hypothesized in a manner that bears no relation to the specific HEP at issue and the power system that it is intended to serve. Certain recent practice of India, however, diverges from this interpretation. For example, in 2013, India asserted that the anticipated load for a plant was justified because it was consistent with the operational constraints found in Paragraph 15 of Annexure D. India stated that “the operation rules in Paragraph 15 allow India to

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<sup>346</sup> **P-0649.0513**, Letter No. 16(4)62-I.T/179 from the ICIW to the PCIW dated 26 December 1964, pp. 5–6 (Dul Hasti HEP); **P-0650.1**, Minutes of Secretary Level Meeting on Baglihar Hydroelectric Project held in New Delhi, 3–6 January 2005 dated 7 January 2005, p. 9 (“the load demand on the plant may have [a] pattern consistent with system needs” and the “power plant has been designed to cater to the peaking requirements of the power system”).

<sup>347</sup> **P-0057**, Letter No. 3/7/82-IT/1369 from the ICIW to the PCIW dated 25 May 2007, p. 6, para. 4(b) (*Kishenganga* HEP).

<sup>348</sup> **P-0649.0833**, Letter No. WT(104)/(5511-A)/PCIW from the PCIW to the ICIW dated 8 October 1995, p. 4 (Dul Hasti HEP).

<sup>349</sup> **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20–21 March 2017 dated 29 March 2018, p. 10, para. 33 (referring to “the consumption of energy by industrial or domestic consumers in an interconnected grid”).

<sup>350</sup> **P-0649.0814**, Letter No. 3(1)/84-I.T./690 from the ICIW to the PCIW dated 11 March 1994, p. 2 (noting that “[i]n a grid of hydro-thermal mix, the load demand curve may assume any pattern which cannot be predicted unlike in case of an isolated distribution system”) (Baglihar HEP).

<sup>351</sup> **P-0649.0513**, Letter No. 16(4)/62-I.T/179 from the ICIW to the PCIW dated 26 December 1984, pp. 5–6 (Dul Hasti HEP).

hold or release water [at the RHEP site] within a band of 50% to 130% within a period of seven days. Therefore, there can be no objection to the Plant generating power in any pattern, including peaking, so long as it releases water in accordance with Paragraph 15”.<sup>352</sup> Pakistan’s practice, however, demonstrated an opposing position, which is that Paragraph 15 was an operational criterion that should not be used to design a Run-of-River HEP.<sup>353</sup> These recent, divergent views provide no concordant subsequent practice of the Parties that serves to assist in the interpretation of the Treaty.

236. Comment is also warranted as to whether India has engaged in a practice of hypothesizing the anticipated load (and installed capacity) so as to achieve what it regards as the highest possible maximum Pondage; if that has been India’s practice, it may indicate that India interprets the Treaty to allow it to do so. On reviewing the record, and although Pakistan submits that India’s “default approach, as seen through its historic practice ... routinely hypothesises its projected installed capacity and anticipated load precisely to inflate the amount of pondage to which it says it is entitled”,<sup>354</sup> the Court finds that India’s practice is mixed in this regard. As stated in the Award on Issues of General Interpretation, beyond the pre-Treaty HEPs that were in operation or under construction as on the Effective Date of the Treaty, India has communicated to Pakistan information regarding the proposed construction of approximately 86 HEPs on the Western Rivers, consisting of 32 Annexure D, Part 3 HEPs, 53 Small Plants under Annexure D, and one Storage Work under Annexure E.<sup>355</sup> The majority of these notifications pertain to Small Plants, which are characterized, *inter alia*, by an aggregate designed maximum discharge through turbines not exceeding 300 cusecs, as well as a lack of storage except for the Pondage and the storage incidental to the diversion structure.<sup>356</sup> Regarding the Annexure D, Part 3 HEPs notified by India to date, 12 plants have zero or negligible Operating Pools, 13 HEPs have an Operating Pool of less than 1 MCM, and 7 HEPs have an Operating Pool of more than 1 MCM, ranging

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<sup>352</sup> **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) from the ICIW to the PCIW dated 11 September 2013, para. 9 (Ratle HEP); see also **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20–21 March 2017 dated 29 March 2018, p. 10, para. 34.

<sup>353</sup> See **P-0649.1072**, Letter No. WT(159)/(6767-A)/PCIW from the PCIW to the ICIW dated 30 March 2007 (Nimoo-Bazgo HEP); **P-0330**, Record of the 104th Meeting of the Permanent Indus Commission, 27–31 March 2010 dated 31 March 2010, p. 6 (Nimoo-Bazgo HEP); **P-0216**, Record of the 117th Meeting of the Permanent Indus Commission, 1–3 March 2022 dated 3 March 2022, p. 10 (Kiru HEP).

<sup>354</sup> Tr., Day 1, 2 February 2026, p. 37:9–14.

<sup>355</sup> Award on Issues of General Interpretation, para. 180.

<sup>356</sup> A “Small Plant” is defined as a new Run-of-River Plant “which is located on a Tributary and which conforms to the following criteria ...: (a) the aggregate designed maximum discharge through the turbines does not exceed 300 cusecs; (b) no storage is involved in connection with the Small Plant, except the Pondage and the storage incidental to the diversion structure; and (c) 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”: **PLA-0001**, Treaty, Annexure D, para. 18.

from 37.5 MCM (Baglihar HEP) to 7.55 MCM (KHEP). Accordingly, while the Court recognizes that there are plants with comparatively large Operating Pools, the majority of Run-of-River HEPs notified by India under Annexure D to the Treaty have no or limited Operating Pool storage.

237. Moreover, for the Annexure D, Part 3 HEPs notified by India, the proposed Operating Pools are consistently and materially lower than the maximum Pondage that India claims as its entitlement under Paragraph 8(c) of Annexure D.<sup>357</sup> Specifically, of the 20 Annexure D, Part 3 HEPs with Operating Pool storage, only four plants have ultimately been designed with an Operating Pool that is above 90% of what India calculates to be the permissible maximum Pondage, as illustrated in the table below at page 95.<sup>358</sup>
238. Pakistan maintains that the record shows “that when India is minded to build a HEP with pondage, particularly anything above about 300 MW, it is minded to maximise its claimed entitlement to pondage by reference to Paragraph 15”.<sup>359</sup> Yet, this claim is open to question in light of the historic practice on the record. While the Baglihar, Ratle, and Kishenganga HEPs have installed capacity of more than 300 MW, so too do the Kiru, Dul Hasti, Lower Jhelum, and Kwar HEPs. In each of the latter cases, India has claimed less than half of the maximum Pondage to which India says it is entitled. Thus, India does not appear to design for a significant portion of the Pondage to which it claims an entitlement. However, caution is warranted in simply accepting that India is correctly calculating the maximum Pondage to which it is entitled; India may be calculating maximum Pondage above a size that the Treaty permits.

**(d) *Travaux préparatoires***

239. Limited as they may be, the *travaux préparatoires* are also consistent with the six conclusions reached above. The first reference to the concept of “load” appears at a meeting of India’s

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<sup>357</sup> Tr., Day 2, 3 February 2026, pp. 141:11–142:25.

<sup>358</sup> **P-0649.1730**, Letter No. F.4(1)/66-IC dated 9 September 1968; **P-0649.1731**, Letter No. 4(13)/65-IC dated 11 September 1968; **P-0649.0268**, Letter No. F.4(1)/62-IC(IT) dated 21 November 1974; **P-0649.0408**, Letter No. F.16(4)/62-IT dated 3 July 1978; **P-0649.0500**, Letter No. F.11(2)/82-I.T./135 dated 18 May 1984; **P-0649.0534**, Letter No. F.3(5)/83-I.T./227 dated 30 January 1986; **P-0649.0695**, Letter No. 4(1)/86-I.T./485 dated 15 January 1990; **P-0585**, Letter No. 3/1/84-I.T./597 from PCIW to ICIW dated 20 May 1992; **P-0055**, Letter No. 3/7/82-IT/1228 dated 19 June 2006; **P-0649.1065**, Letter No. 3/1/2003-IT/1349 dated 27 December 2006; **P-0649.1236**, Letter No. 3/9/2006-IT/1793 dated 31 May 2010; **P-0649.1337**, Letter No. 3/2/2011-IT/1930 dated 27 April 2012; **P-0649.1340**, Letter No. 3/4/2009-IT/1939 dated 22 June 2012; **P-0077**, Letter No. 3/5/2007-IT/1947 dated 16 August 2012; **P-0649.1372**, Letter No. 3/1/1990-IT/1984 dated 26 February 2013; **P-0546**, Letter No. 3/6/2007-IT/2371 (with enclosure) dated 1 June 2021; **P-0649.1587**, Letter No. Y-19011/5/2019-IT/2374 dated 7 July 2021; **P-0649.1603**, Letter No. Y-19011/2/2018/2378 dated 10 August 2021; **P-0649.1634**, Letter No. Y-19011/10/2019-IT/2382 dated 9 October 2021; **P-0649.1718**, Letter No. 3/7/2007-IT/ dated 21 June 2023.

<sup>359</sup> Tr., Day 2, 3 February 2026, p. 99:19–23.

representatives with the World Bank on 13 August 1959, at which the negotiators discussed India's draft proposal allowing it to use the Western Rivers to generate hydro-electric power. At that meeting, reference was made to "the weekly load factor in relation to the peak".<sup>360</sup> The next day, 14 August 1959, Pakistani representatives meeting with the World Bank expressed concern regarding "the extent of the harm that India could do should she operate the structures malevolently".<sup>361</sup> Thus, in the wake of India's proposal to use the Western Rivers for hydro-electric power generation, with reference to the load of the HEPs, Pakistan expressed concern about the use of such facilities. This appears to have prompted Pakistan on 17 August 1959 to advance its own proposed text on "hydel uses", which in referring to "pondage" connected that term to the "load" of the plant as follows: "the intake to the power house shall be fixed at such a level that the pondage above that level is adequate only to cater for the weekly load factor of the power plant (daily load factor in the case of a power house involving the construction of a dam on the main stem of the Chenab river)".<sup>362</sup>

240. Thereafter, the term "load" appeared in the 1959 Heads of Agreement as a part of the definition of "run-of-river" plants, in a manner comparable to the ultimate Treaty definition of that term in Paragraph 2(g) of Annexure D.<sup>363</sup> The same term, with reference to "daily or weekly load fluctuations", existed in the design criterion that later appeared in the Treaty as Paragraphs 2(c) and 8(c) of Annexure D.<sup>364</sup> As noted above, its inclusion in the text apparently was based on a proposed amendment by Pakistan (which India accepted) to address Pakistan's concerns, though the minutes of the meeting where it was introduced do not explain the meaning of the terms used, including "load".<sup>365</sup> That Pakistan proposed inclusion of the reference to daily and weekly loads indicates, however, that its inclusion was to impose a limitation on India.

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<sup>360</sup> **P-0456**, World Bank, Minutes of Meeting (with Indian representatives), 13 August 1959, para. 1(b).

<sup>361</sup> **P-0457**, World Bank, Minutes of Meeting (with Pakistani representatives), 14 August 1959, para. 1.

<sup>362</sup> **P-0365**, Letter from Mr. Mueenuddin to Mr. W.A. Sheikh (with enclosures), 17 August 1959, Enclosure II—Draft given by Pakistan on Hydel formula on 15.8.59, para. 2(b).

<sup>363</sup> **P-0136**, Indus Waters, Heads of Agreement, 15 September 1959, Annex B, Appendix I, para. 2 ("A 'Run-of'-River plant is a hydro-electric plant at which power is developed without live storage as an integral part of the plant, except for the storage in the operating pool, that is to say, the pondage required to meet fluctuations in the discharge of the turbines arising from variations in the daily or weekly load of the power plant").

<sup>364</sup> **P-0136**, Indus Waters, Heads of Agreement, 15 September 1959, Annex B, para. 3(b). The same term was used with respect to design criteria for Small Plants. **P-0136**, Indus Waters, Heads of Agreement, 15 September 1959, Annex B, para. 14(b).

<sup>365</sup> **P-0474**, World Bank, Minutes of Meeting, 8 September 1959, para. B.1 (emphasis added).

Project	Western River (Main)	Installed Capacity (MW)	Date of Notification	India's Calculated Maximum Pondage (CM)	Operating Pool Storage (CM)	Percentage of maximum Pondage
Stakna	Indus	3.242	09/09/1968	183,296	135,806	74%
Sumbal	Jhelum	22	11/09/1968	372,512	200,046	54%
Lower Jhelum	Jhelum	105	21/11/1974	2,068,550	961,499	47%
Dul Hasti	Chenab	780	03/07/1978	16,967,974	8,000,000	47%
Upper Sind-II	Jhelum	105	18/05/1984	442,820	404,290	91%
Kargil	Indus	3.75	30/01/1986	234,362	Not provided	N/A
Parnai	Jhelum	37.5	15/01/1990	178,308	67,680	38%
Baglihar-I&II	Chenab	450 (Stage I)	20/05/1992	37,722,000	37,500,000	99%
Kishenganga	Jhelum	330	19/06/2006	8,870,000	7,550,000	85%
Nimo Bazgo	Indus	45	27/12/2006	16,440,000	9,720,000	59%
Ranja-Ala Dunadi	Chenab	15	31/05/2010	N/A	2,065	N/A
Miyar	Chenab	120	27/04/2012	1,986,000	900,000	45%
Lower Kalnai	Chenab	48	22/06/2012	2,760,000	760,000	28%
Ratle	Chenab	850	16/08/2012	24,100,000	23,860,000	99%
New Ganderbal	Jhelum	93	26/02/2013	3,580,000	100,000	3%
Kiru	Chenab	624	01/06/2021	20,220,000	10,500,000	52%
Kargil Hunderman	Indus	25	07/07/2021	N/A	40,689	N/A
Mandi	Jhelum	15	10/08/2021	N/A	2,202	N/A
Ans-II	Chenab	23	09/10/2021	N/A	22,600	N/A
Kwar	Chenab	540	20/06/2023	20,170,000	9,160,000	45%

Figure 8: Notified Run-of-River HEPs with Operating Pool Storage

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241. As for the notification requirements, Pakistan proposed adding at the end of what became Paragraph 4(h) of Appendix II to Annexure D a sentence reading: “Firm power, capacity and output, *whether the plant integrated with any grid system; if so, how proposed to be operated*”.<sup>366</sup> That latter proposal, however, was not included in what became Appendix II, with World Bank engineers disagreeing with this and other changes “for the reasons that they are not required under the provisions of para. 4 ..., or that they are adequately covered in other items in the list of information to be communicated to Pakistan by India”.<sup>367</sup>
242. Rather, the text that became Paragraph 4(h) of Appendix II to Annexure D appeared in the 1959 Heads of Agreement as: “Mean discharge proposed to be passed through the plant, initially and ultimately, and variations in the discharge on account of daily and weekly load fluctuations”.<sup>368</sup> Thereafter, the word “expected” was added before “variations” in the April 1960 draft of the Treaty,<sup>369</sup> lending some support to the interpretation that the anticipated load was to be grounded in the actual, planned operation of the HEP. Otherwise, the substance of the notification requirements in relation to the anticipated load remained relatively constant throughout the remainder of the negotiations.

**(e) *The Court’s consideration of certain Pakistani submissions***

243. Before turning to the methodology for calculating maximum Pondage in respect of anticipated load, the Court addresses certain aspects of Pakistan’s submissions that the Court does not regard as compelled by the Treaty.
244. *First*, Pakistan submits that, when accounting for installed capacity in the projection of anticipated load, and in turn, the calculation of maximum Pondage, the “installed capacity is ... subject to limitations based on a realistic and reasonable number of daily operating hours, plant maintenance

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<sup>366</sup> **P-0121**, World Bank Group Archives, Indus Basin Negotiations Inventory List, Folder 1787894: Indus Basin Dispute – Generation of Hydro-Electric Power Correspondence, Memorandum, 3 September 1959, para. 1 (emphasis added) (paragraph 1 of the memorandum records that India and Pakistan proposed several amendments to “Table to be inserted in Para. 4 of HE/1B, dated August 25th, 1959: Information to be communicated to Pakistan by India”).

<sup>367</sup> **P-0121**, World Bank Group Archives, Indus Basin Negotiations Inventory List, Folder 1787894: Indus Basin Dispute – Generation of Hydro-Electric Power Correspondence, Memorandum, 3 September 1959, para. 2 (India and Pakistan proposed amendments to “Table to be inserted in Para. 4 of HE/1B, dated August 25th, 1959: Information to be communicated to Pakistan by India”).

<sup>368</sup> **P-0136**, Indus Waters, Heads of Agreement, 15 September 1959, Annex B, para. 4(h).

<sup>369</sup> **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960, p. 8.

requirements, and operation at reasonable efficiency levels”.<sup>370</sup> The Court observes, however, that a projection of installed capacity and anticipated load corresponding to how the plant will *actually* be operated is not equivalent to determining how an Annexure D, Part 3 HEP would *ideally* be operated. In this regard, the Court considers that, while the projection cannot be hypothesized in a manner that serves to inflate the amount of maximum Pondage, neither must it be hypothesized in a manner that serves to deflate the amount of maximum Pondage under Paragraph 8(c) of Annexure D.

245. With respect to a realistic and reasonable number of daily operating hours, as the Court has determined above, a projection of anticipated load is presumed realistic, well-founded and defensible if, in the projection, the HEP supplies power to the system that the HEP is intended to serve on a daily and weekly basis at times of peak demand and allocates its power distribution across days of the week (including as between weekends and weekdays) in a manner that corresponds to the actual demand on the power system. Nevertheless, other patterns may be justified based on specific information and underlying data produced by India.<sup>371</sup>
246. With respect to plant maintenance requirements, the Court notes that while it may be “typical” for each turbine to require two to four weeks maintenance annually, and that this may commonly occur in the dry season “when capacity is not required for energy generation”,<sup>372</sup> there is no evidence of maintenance being either required or typically undertaken during the period of the lowest flow, for which the anticipated load is projected. Therefore, the contention that one unit is assumed to be offline for maintenance is possible, but does not necessarily correspond to how the plant will actually be operated. Further, the Court notes that Appendix II to Annexure D requires that India notify Pakistan as to the “Maximum aggregate capacity of power units (*exclusive of standby units*) for Firm Power and Secondary Power”.<sup>373</sup> Thus, the definition of installed capacity already excludes any reserve or standby units included in the design that are not part of the normal generating configuration.<sup>374</sup> Accordingly, the Court does not accept Pakistan’s submission that

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<sup>370</sup> Pakistan’s Second Phase Memorial, Appendix D, para. 97.

<sup>371</sup> See para. 225, *supra*.

<sup>372</sup> Pakistan’s Second Phase Memorial, Appendix D, para. 72.

<sup>373</sup> **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(i) (emphasis added).

<sup>374</sup> Tr., Day 2, 3 February 2026, p. 118:10–15 (“The ordinary meaning is: power units that act as backups for outages or maintenance. And because these units are excluded by paragraph 4(i), they do not count towards the maximum aggregate capacity for planning purposes. They are intended to preserve availability, but not to increase the overall output.”).

the “capacity available for peaking should also be adjusted to account for turbines being out of service for annual maintenance”.<sup>375</sup>

247. With respect to operation at reasonable efficiency levels, the Court similarly observes that while operation of a HEP’s turbines at reasonable efficiency levels may ensure the maximum total amount of power is produced, it does not necessarily correspond to how the plant will actually be operated. In that regard, Pakistan submits that, when block loading, it is unrealistic to assume that the plant is either zero-loaded or operating all turbines at a rate corresponding to their maximum installed capacity (the latter of which may be less efficient than at a slightly lower rate).<sup>376</sup> However, the Court observes that it is typical for a peaking plant to “operate at or near full output for part of the day and at zero or some minimum output during the remainder of the day”.<sup>377</sup> Further, there may be economic or practical reasons for operating at maximum capacity (even if it may be less efficient). Accordingly, when calculating the maximum Pondage, the Court does not necessarily consider a projection to be unrealistic if it includes certain periods in which the HEP is either zero-loaded or operating all turbines at maximum installed capacity.
248. *Second*, Pakistan submits that, in considering whether a proposed Annexure D, Part 3 HEP is “realistic, well-founded, and defensible”, the plant needs to “make a meaningful contribution to the power system on a daily and weekly basis at times of peak demand”, including that the daily dispatch schedule be realistic considering the operation of the HEP within the overall system.<sup>378</sup> In this respect, Pakistan relies on a load duration<sup>379</sup> analysis of the NRG, which it views as confirming that there is a relative lack of variability in the power system during the dry season, when hour-to-hour variability is at its peak.<sup>380</sup> The Court notes that Pakistan’s analysis relies on an average weekly load curve based on just 18 weeks of data from two recent dry-season windows.<sup>381</sup> On this analysis, Pakistan concludes that there is limited intra-week variation, with the average weekly load curve showing that weekend demand is approximately 99 percent of the

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<sup>375</sup> Pakistan’s Second Phase Memorial, Appendix D, para. 72.

<sup>376</sup> Pakistan’s Second Phase Memorial, para. 3.59; Tr., Day 1, 2 February 2026, pp. 259:10–260:10.

<sup>377</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, p. 4-10.

<sup>378</sup> Pakistan’s Second Phase Memorial, para. 3.64(e)(ii); Tr., Day 1, 2 February 2026, p. 146:6–23.

<sup>379</sup> See Pakistan’s Second Phase Memorial, Appendix D, para. 36.

<sup>380</sup> Pakistan’s Second Phase Memorial, para. 3.55(d).

<sup>381</sup> Pakistan’s Second Phase Memorial, Appendix D, para. 18.

weekly average, and weekday demand is approximately 101 percent of the weekly average, with individual weeks showing only small deviations from that pattern.<sup>382</sup>

249. The Court considers that generalizations based on average power demand analyses are insufficient in and of themselves to establish stable demand within the system, as such averages obscure fluctuations that may remain relevant to the operation of individual plants. For instance, as Pakistan acknowledges, its analysis indicates that weekend energy ranged from 93 percent to 103 percent of the weekly average, and in 5 of the 18 weeks weekend energy was actually higher than average weekday energy.<sup>383</sup> Accordingly, rather than indicating a reliably fixed operational pattern across each day of the week, Pakistan’s analysis indicates that there is no large *average* weekend drop across the relevant period of time. Thus, although Pakistan considers that “the power demand for the NRG does not show a significant differentiation from weekend to weekday”,<sup>384</sup> this consideration does not necessarily mean that the anticipated load of a particular plant within the power system must be the same across days of the week. In this regard, the Court notes that it has already determined that the proposed Annexure D, Part 3 HEP’s anticipated load must reflect “the fluctuations in the discharge of the turbines arising from variations in the *daily and weekly* loads of the plant, as set forth in Paragraph 2(c) of Annexure D”.<sup>385</sup> Accordingly, while at the grid level the average load pattern may be stable, the Court does not consider that the Treaty establishes a rule that the anticipated load of a HEP must correspond to such averages.<sup>386</sup>
250. *Third*, and relatedly, although Pakistan considers that it “would be of no utility at all to the system dispatcher at the [national or regional grid operator]” for a HEP to operate for only a single hour per day, the Court considers there is a broad range of ways in which the design and operation of a HEP can be “realistic, well-founded, and defensible”.<sup>387</sup> The relevant inquiry is concerned with how the HEP is expected to operate once construction has finished and the HEP is in operation. This does not warrant an approach that would seek to transform *typical* design choices for a HEP into *required* design constraints under the Treaty. Specifically, within an integrated system of thermal, renewable, storage and run-of-river power generation, hydro-electric power plants “make contributions to system operation that are difficult to quantify”, but necessarily include

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<sup>382</sup> Pakistan’s Second Phase Memorial, para. 3.55(c), fn. 208; para. 3.57; Appendix D, paras. 21–24; Tr., Day 1, 2 February 2026, pp. 197:6–17, 231:5–232:8.

<sup>383</sup> Pakistan’s Second Phase Memorial, Appendix D, para. 22.

<sup>384</sup> Pakistan’s Second Phase Memorial, Appendix D, para. 23.

<sup>385</sup> Award on Issues of General Interpretation, para. 747(b).

<sup>386</sup> See **PLA-0001**, Treaty, Annexure D, para. 15(i).

<sup>387</sup> Pakistan’s Second Phase Memorial, para. 3.58(c). See also Tr., Day 1, 2 February 2026, p. 130:14–17.

“fast-start capability, ability to respond quickly to changing loads, and ability to operate as a motor to improve the system power factor”.<sup>388</sup> Accordingly, the natural variability of the demand within the region may remain relevant to the determination of the anticipated load of a HEP intended to meet such fluctuations, but it cannot be something that must be averaged out in all cases. At the same time, as noted above, the projection of the anticipated load must be substantiated based on specific information and underlying data produced by India that justify such a load, and must otherwise comply with the constraints of the Treaty.<sup>389</sup>

**(f) *Methodology for calculating maximum Pondage in respect of anticipated load***

251. As found in the Award on Issues of General Interpretation and clarified in the Decision on the Request for Clarification, the Treaty requires that the projection for the proposed HEP’s anticipated load be realistic, well-founded, and defensible in order to fulfill the requirements of Paragraph 8(c). The Treaty does not prescribe a specific anticipated load, leaving such matters to be considered in context.<sup>390</sup>

252. Even so, a good faith interpretation of the text and context of the Treaty, considered in light of the Treaty’s object and purpose, the Parties’ subsequent practice, and the *travaux préparatoires*, support six conclusions as to whether the anticipated load is realistic, well-founded, and defensible. For the projection of the proposed HEP’s anticipated load to be realistic, well-founded, and defensible when calculating maximum Pondage consistent with Annexure D, Paragraph 8(c), it shall:

- (1) correspond to how the plant will actually be operated, and cannot be hypothesized in a manner that serves to inflate the amount of Pondage required for Firm Power;
- (2) be consistent with the projected needs of the power system that the HEP is intended to serve;
- (3) be presumed realistic, well-founded and defensible if, in the projection, the HEP supplies power to the system that the HEP is intended to serve on a daily and weekly basis at times of peak demand and allocates its power distribution across days of the week (including as

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<sup>388</sup> **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, *Hydropower* dated 31 December 1985, p. 6-36.

<sup>389</sup> See para. 225, *supra*.

<sup>390</sup> See Award on Issues of General Interpretation, para. 705.

between weekends and weekdays) in a manner that corresponds to the actual demand on the power system;

- (4) otherwise be realistic, well-founded and defensible only if the anticipated load is based on specific information and underlying data produced by India that justify such a load;
- (5) not be determined solely on the basis of whether the anticipated load allows for releases of water consistent with the operational constraints of the Treaty, including the daily and weekly release requirements set out in Paragraph 15 of Annexure D; and
- (6) nevertheless take account of the operational constraints of the Treaty.

#### **F. MINIMUM FLOW AS AN ELEMENT IN CALCULATING MAXIMUM PONDAGE**

253. As indicated in Parts III.D and V.A above, Pakistan has raised another issue in the course of this phase of the proceedings, which is to seek an acknowledgment by the Court that the calculation of maximum Pondage shall also be calculated in a manner that abides by “India’s obligation under customary international law to prevent significant harm to the environment through provision of an environmental flow specific to the site of a proposed Annexure D, Part 3 HEP”.<sup>391</sup>

254. The Court proceeds first by distinguishing the concepts of “minimum flow” and “environmental flow”, and then by considering the *Kishenganga* Court’s decision relating to minimum flow. The Court then considers when a minimum flow obligation may apply to an Annexure D, Part 3 HEP, and the potential consequences for the calculation of maximum Pondage of such a minimum flow obligation.

##### **1. Distinction between “Minimum Flow” and “Environmental Flow”**

255. At the outset, it is useful to distinguish between the terms “minimum flow” and “environmental flow”, as both have been used at times by the Parties (and sometimes combined as “minimum environmental flow”).

256. In its Final Award, the *Kishenganga* Court usefully provided the following explanation of these related yet distinct concepts:

In this Final Award, the Court refers at various points to a “minimum flow” and to an “environmental flow.” For the sake of clarity, the Court notes the differences between these terms: an environmental flow is not necessarily a fixed minimum, affecting only the dry season, but is rather the flow regime anticipated to maintain environmental change resulting

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<sup>391</sup> Pakistan’s Final Submissions, para. 7.

from infrastructure and development within the range considered acceptable under the circumstances of the river in question. Environmental flows may therefore be higher or lower, depending on those circumstances, and may include requirements affecting the high flow seasons of a river that cannot reasonably be described as a “minimum.” Indeed, Pakistan’s proposals of percentage or variable release flow regimes are examples of such environmental flows. It is only the particular characteristics of the Kishenganga/Neelum and the fact that low-season flows appear to be the principal drivers of ecological change that permit the Court to discuss environmental flows in terms of a fixed minimum. At the same time, because the Court’s ultimate flow determination is based not solely on the environment, but also on hydro-electric power generation as required under the Treaty, the Court’s decision fixes a “minimum flow.” Insofar as this minimum flow serves to mitigate significant environmental harm, it also serves as an environmental flow without being synonymous with that term.<sup>392</sup>

257. As discussed further below, the *Kishenganga* Court was addressing a particular Annexure D, Part 3 HEP that entailed application of Paragraph 15(iii) of Annexure D to the Treaty concerning “existing Agricultural Use or hydro-electric use by Pakistan” on a “Tributary of The Jhelum”, such that the Court considered both those uses and any potential transboundary environmental harm. The *Kishenganga* Court also emphasized that its determination was not intended to address all elements of an environmental flow regime, but only those necessary to prevent significant transboundary harm. In addressing those elements, the *Kishenganga* Court referred to a required “minimum flow” rather than a required “environmental flow”.<sup>393</sup>

258. The Court adopts this distinction between “minimum flow” and “environmental flow” for the purposes of this Award. The Court notes that Pakistan’s requested relief in its Final Submissions is limited to “India’s obligation under customary international law to prevent significant harm to the environment through provision of an environmental flow specific to the site of a proposed Annexure D, Part 3 HEP”.<sup>394</sup> However, so as to provide a complete picture of how the calculation of maximum Pondage might be affected in different contexts, and consistent with the issues faced by the *Kishenganga* Court, the Court’s analysis below addresses any requirement of a minimum flow, whether arising in the context of an inter-tributary diversion or to address environmental concerns.

## **2. The *Kishenganga* Court’s Decision Relating to Minimum Flow**

259. The issue of minimum flow arose before the *Kishenganga* Court in the specific context of the KHEP, which implicated both India’s obligation under the Treaty with respect to existing

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<sup>392</sup> PLA-0004, *Kishenganga* Final Award, fn. 151.

<sup>393</sup> PLA-0004, *Kishenganga* Final Award, fn. 151.

<sup>394</sup> Pakistan’s Final Submissions, para. 7. At the same time, Pakistan recognized at the hearing in this phase that the “environmental flow and minimum flow, whilst they might overlap, essentially address two different issues”: Tr., Day 1, 2 February 2026, p. 33:14–16.

downstream uses of the water flow by Pakistan and India's obligation under customary international law to prevent significant transboundary harm.

260. Specifically, the *Kishenganga* Court considered in its Partial Award that the design for the KHEP involved an inter-tributary diversion of water, noting in this regard that "India's right under the Indus Waters Treaty to divert water from the Kishenganga/Neelum River for the Kishenganga Hydro-Electric Project (KHEP) is subject to the constraints specified by the Treaty".<sup>395</sup> Those constraints include Paragraph 15(iii) of Annexure D to the Treaty as well as customary international law to be applied by the Court pursuant to Paragraph 29 of Annexure G when interpreting the Treaty.<sup>396</sup> To that end, the *Kishenganga* Court reached several specific conclusions.
261. *First*, while acknowledging India's right under the Treaty to divert the waters of the Kishenganga/Neelum River to operate the KHEP, the *Kishenganga* Court found that Pakistan nevertheless retained a right to receive a minimum flow of water from India in the Kishenganga/Neelum riverbed.<sup>397</sup> The *Kishenganga* Court stated that this obligation stems in part from the requirement that inter-tributary diversion projects be operated "in such a way as to avoid adversely affecting Pakistan's 'then existing' agricultural and hydro-electric uses" under Paragraph 15(iii).<sup>398</sup> In this respect, the *Kishenganga* Court confirmed the necessity of maintaining the equipoise between the rights assigned to the Parties under the Treaty:

Both Parties' entitlements under the Treaty must be made effective so far as possible: India's right to divert water for the operation of the KHEP is tempered by Pakistan's right to hydro-electric and agricultural uses of the waters of the Western Rivers, just as Pakistan's right to these uses is tempered by India's right to divert the waters for the KHEP's operation. Any interpretation that disregards either of these rights would read the principles of Paragraph 15(iii) out of the Treaty, to one or the other Party's injury.<sup>399</sup>

262. *Second*, the *Kishenganga* Court concluded that India's right to divert the waters of the Kishenganga/Neelum River to operate the KHEP had to be interpreted subject to "the relevant principles of customary international law to be applied by the Court pursuant to Paragraph 29 of

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<sup>395</sup> PLA-0003, *Kishenganga* Partial Award, para. 445.

<sup>396</sup> PLA-0003, *Kishenganga* Partial Award, para. 445.

<sup>397</sup> PLA-0003, *Kishenganga* Partial Award, para. 446.

<sup>398</sup> PLA-0003, *Kishenganga* Partial Award, para. 446.

<sup>399</sup> PLA-0003, *Kishenganga* Partial Award, para. 446.

Annexure G when interpreting the Treaty”.<sup>400</sup> Such principles, the *Kishenganga* Court stated, include those that post-dated the entry into force of the Treaty:

It is established that principles of international environmental law must be taken into account even when (unlike the present case) interpreting treaties concluded before the development of that body of law. The *Iron Rhine* Tribunal applied concepts of customary international environmental law to treaties dating back to the mid-nineteenth century, when principles of environmental protection were rarely if ever considered in international agreements and did not form any part of customary international law. Similarly, the International Court of Justice in *Gabčíkovo-Nagymaros* ruled that, whenever necessary for the application of a treaty, “new norms have to be taken into consideration, and ... new standards given proper weight.” It is therefore incumbent upon this Court to interpret and apply this 1960 Treaty in light of the customary international principles for the protection of the environment in force today.<sup>401</sup>

263. In considering these principles, the *Kishenganga* Court concluded that there “is no doubt that States are required under contemporary customary international law to take environmental protection into consideration when planning and developing projects that may cause injury to a bordering State”.<sup>402</sup> Applied to large-scale construction projects, the *Kishenganga* Court stated that this principle of sustainable development translates to “a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource”.<sup>403</sup>
264. The *Kishenganga* Court further noted the acknowledgements by both India and Pakistan “that hydro-electric projects (including Pakistan’s projects) must be planned, built and operated with environmental sustainability in mind”.<sup>404</sup> On this basis, and in accordance with the limitations

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<sup>400</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 445. The *Kishenganga* Court noted that such law also is applicable through application of the customary international law on treaty interpretation: **PLA-0003**, *Kishenganga* Partial Award, para. 447, fn. 654. Specifically, the *Kishenganga* Court said:

In addition to Paragraph 29 of Annexure G to the Treaty, customary rules on treaty interpretation (codified in the VCLT) require that the Court take account of relevant customary international law—including international environmental law—when interpreting the Treaty. See VCLT, Art. 31(3)(c) (“There shall be taken into account, together with the context: ... (c) any relevant rules of international law applicable in the relations between the parties”).

<sup>401</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 452.

<sup>402</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 449, citing *Case concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, 1997 ICJ Rep. 7, p. 78.

<sup>403</sup> **PLA-0003**, *Kishenganga* Partial Award, paras. 450–451, citing *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, 2010 ICJ Rep. 14, pp. 83–84; *Arbitration Regarding the Iron Rhine (“Ijzeren Rijn”) Railway between the Kingdom of Belgium and the Kingdom of the Netherlands*, Award, 24 May 2005, PCA Award Series (2007), para. 59.

<sup>404</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 454.

imposed by Paragraph 15 of Annexure D and customary international law, the *Kishenganga* Court determined as follows:

India is however under an obligation to construct and operate the Kishenganga Hydro-Electric Plant in such a way as to maintain a minimum flow of water in the Kishenganga/Neelum River, at a rate to be determined by the Court in a Final Award.<sup>405</sup>

265. *Third*, in order to provide an adequate basis to determine the quantity of water that would constitute an appropriate minimum flow downstream of the KHEP in response to considerations of environmental protection, the *Kishenganga* Court requested the Parties to submit further data with respect to the relationship between flows and (1) power generation, (2) agricultural uses, and (3) environmental factors downstream of the KHEP below the Line of Control.<sup>406</sup> After receiving that data, the *Kishenganga* Court concluded that “a minimum flow criterion of 9 cumecs is consistent with Pakistan’s analysis of environmental flows, given the need to balance power generation with environmental and other downstream uses, and, based on India’s data, would maintain the natural flow regime in the most severe winter conditions”.<sup>407</sup>
266. *Fourth*, the Court also acknowledged that it was “important not to permit the doctrine of *res judicata* to extend the life of this Award into circumstances in which its reasoning no longer accords with reality along the Kishenganga/Neelum”.<sup>408</sup> Accordingly, the *Kishenganga* Court made provision in its Final Award for a “review mechanism”, allowing either Party to seek reconsideration of the Court’s determination of minimum flow, at any time from seven years after the diversion of the Kishenganga/Neelum through the KHEP, through the “[PIC] and the mechanisms of the Treaty”.<sup>409</sup> To date, neither Party has sought reconsideration.
267. *Fifth*, while finding that “the requirement of an environmental flow (without prejudice to the level of such flow) is necessary in the application of the Treaty”,<sup>410</sup> the Court expressed caution with respect to the use of customary international law when interpreting the Treaty:

At the same time, the Court does not consider it appropriate, and certainly not “necessary,” for it to adopt a precautionary approach and assume the role of policymaker in determining the balance between acceptable environmental change and other priorities, or to permit environmental considerations to override the balance of other rights and obligations expressly identified in the Treaty—in particular the entitlement of India to divert the waters of a tributary of the Jhelum. The Court’s authority is more limited and extends only to mitigating

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<sup>405</sup> PLA-0003, *Kishenganga* Partial Award, para. A(3).

<sup>406</sup> PLA-0003, *Kishenganga* Partial Award, paras. 455, 458–462.

<sup>407</sup> PLA-0004, *Kishenganga* Final Award, para. 115.

<sup>408</sup> PLA-0004, *Kishenganga* Final Award, para. 118.

<sup>409</sup> PLA-0004, *Kishenganga* Final Award, paras. 116–119.

<sup>410</sup> PLA-0004, *Kishenganga* Final Award, para. 112.

significant harm. Beyond that point, prescription by the Court is not only unnecessary, it is prohibited by the Treaty. If customary international law were applied not to circumscribe, but to negate rights expressly granted in the Treaty, this would no longer be “*interpretation or application*” of the Treaty but the substitution of customary law *in place of* the Treaty. Echoing the Court’s caution in the Partial Award, the prioritization of the environment above all other considerations would effectively “read the principles of Paragraph 15(iii) [of Annexure D] out of the Treaty.” That Paragraph 29 does not permit.<sup>411</sup>

268. In light of the above conclusions, the *Kishenganga* Court unanimously decided in its Final Award as follows:

- A. In the operation of the KHEP:
  - (1) Subject to paragraph (2) below, India shall release a minimum flow of 9 cumecs into the Kishenganga/Neelum River below the KHEP at all times at which the daily average flow in the Kishenganga/Neelum River immediately upstream of the KHEP meets or exceeds 9 cumecs.
  - (2) At any time at which the daily average flow in the Kishenganga/Neelum River immediately upstream of the KHEP is less than 9 cumecs, India shall release 100 percent of the daily average flow immediately upstream of the KHEP into the Kishenganga/Neelum River below the KHEP.
- B. Beginning 7 years after the diversion of water from the Kishenganga/Neelum River for power generation by the KHEP, either Party may seek reconsideration of the minimum flow in paragraph (A) above through the Permanent Indus Commission and the mechanisms of the Treaty.
- C. This Final Award imposes no further restrictions on the operation of the KHEP, which remains subject to the provisions of the Treaty as interpreted in this Final Award and in the Court’s Partial Award.
- D. Each Party shall bear its own costs. The costs of the Court will be shared equally by the Parties.<sup>412</sup>

### 3. Methodology for Calculating Maximum Pondage in Respect of Any Minimum Flow Obligation

269. As indicated above, the *Kishenganga* Court determined that India is permitted under the Treaty to deliver the waters of the Kishenganga/Neelum River into another tributary in the course of its operation of the KHEP (an inter-tributary diversion).<sup>413</sup> At the same time, the *Kishenganga* Court concluded that India’s right to make the inter-tributary diversion was subject to two constraints:<sup>414</sup> (1) the constraints specified by Paragraph 15(iii) of Annexure D so as not to affect adversely certain existing uses by Pakistan of a Tributary of the Jhelum;<sup>415</sup> and (2) India’s duty to ensure

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<sup>411</sup> PLA-0004, *Kishenganga* Final Award, para. 112 (citations omitted; emphasis in original).

<sup>412</sup> PLA-0004, *Kishenganga* Final Award, Pt. V (Decision).

<sup>413</sup> PLA-0003, *Kishenganga* Partial Award, para. 367, Pt. V.A(1)–(2).

<sup>414</sup> PLA-0003, *Kishenganga* Partial Award, para. 445.

<sup>415</sup> PLA-0001, Treaty, Annexure D, para. 15(iii).

that a minimum flow reaches Pakistan for environmental purposes,<sup>416</sup> which “stems from the Treaty’s interpretation in light of customary international law”.<sup>417</sup> Those conclusions are *res judicata* with respect to the KHEP and are binding upon the Parties, this Court, the Neutral Expert, and future dispute settlement bodies under the Treaty.<sup>418</sup>

270. Before the Court at this time, however, is the broader question of whether a minimum flow obligation must be taken into account when calculating maximum Pondage under the Treaty with respect to all Annexure D, Part 3 HEPs, including those that do not involve an inter-tributary diversion.
271. At the outset, it is important to recognize that, since the *Kishenganga* Court’s Final Award, India has made allowance for a minimum downstream flow when calculating maximum Pondage under Paragraph 8(c) of Annexure D in relation to Annexure D, Part 3 HEPs. For example, India has included a “minimum environmental flow” in its calculations of maximum Pondage for the Kiru HEP, where it provided for an environmental flow of 16.33 cumecs.<sup>419</sup> It has similarly done so with respect to the Operating Pool calculations for the Kwar HEP and the RHEP, being the newest Plants in respect of which India has provided Operating Pool calculations pursuant to Paragraph 9 and Appendix II of Annexure D. On the information before the Court, and as Pakistan recognizes, India does not appear to dispute that, if a “minimum flow” is required under customary international law, it must be included in the calculation of maximum Pondage under Paragraph 8(c) of Annexure D to the Treaty. That said, India’s practice of including a “minimum environmental flow” in its calculations of maximum Pondage for its Annexure D, Part 3 HEPs may be driven by India’s own national laws and regulations with respect to environmental protection and not necessarily by a view that it is obliged to do so by the Treaty. To the extent such a flow is required by Indian law, it nevertheless must be reflected in calculations of maximum Pondage, given that such calculations must be based on how the plant will actually be operated.
272. In any event, the Treaty, read in light of customary international law, must be understood in the context of balancing competing rights and obligations. On the one hand, the Treaty and customary

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<sup>416</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 445. As stated in *Kishenganga* Partial Award, V.A(3):

India is however under an obligation to construct and operate the Kishenganga Hydro Electric Plant in such a way as to maintain a minimum flow of water in the Kishenganga/Neelum River, at a rate to be determined by the Court in a Final Award.

<sup>417</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 447.

<sup>418</sup> Award on Issues of General Interpretation, paras. 304–362, 811(A).

<sup>419</sup> Figure 4: Calculation for the Operating Pool of the Kiru HEP, *supra*; **P-0649.1718**, Letter No. 3/7/2007-IT/ dated 21 June 2023; **P-0077**, Letter No. 3/5/2007-IT/1947 (with enclosures) dated 16 August 2012.

international law do not identify a minimum flow to be used for each Annexure D, Part 3 HEP. Rather, the Treaty accords to India a right to generate hydro-electric power on the Western Rivers through, *inter alia*, Annexure D, Part 3 HEPs. On the other hand, when designing such a HEP, India is required to determine whether it is obligated, in that context, to provide for a minimum flow. It is noted that maintaining downstream ecology is a complex undertaking and may depend on many site-specific factors, including the specific characteristics of the HEP, the river and its surrounding features, and flora and fauna species potentially under threat. With this in mind, the Court reaches the following six conclusions.

273. *First*, where an Annexure D, Part 3 HEP involves an inter-tributary diversion “on a Tributary of The Jhelum on which Pakistan has any Agricultural use or hydro-electric use”, a minimum flow obligation may arise pursuant to Paragraph 15(iii) of Annexure D, which ensures that Pakistan’s “then existing Agricultural Use or hydro-electric uses” are not “adversely affected”. As noted above, the *Kishenganga* Court was confronted with an inter-tributary diversion by a HEP located close to Pakistan-administered territory that Pakistan maintained would affect an “existing Agricultural Use or hydro-electric use”.
274. *Second*, a minimum flow obligation may also be applicable to an Annexure D, Part 3 HEP in circumstances that do not involve an inter-tributary diversion on a Tributary of The Jhelum pursuant to Paragraph 15(iii). The minimum flow obligation arises as well in situations where the design and operation of an Annexure D, Part 3 HEP may cause significant environmental harm to Pakistan or Pakistan-administered territory. In that case, customary international law requires India to take all appropriate steps to prevent that harm. In this instance, India’s rights under the Treaty are circumscribed by customary international law, which is pertinent when interpreting the Treaty generally and not solely when interpreting Paragraph 15(iii) of Annexure D to the Treaty. While such rules of customary international law may not negate the rights granted by the Treaty, they are relevant when interpreting the Treaty.<sup>420</sup>
275. In this regard, customary international environmental law provides, as reflected in Principle 21 of the 1972 Stockholm Declaration, that States, when exploiting their natural resources, must “ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction”.<sup>421</sup> This proposition has found

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<sup>420</sup> See **PLA-0005**, VCLT, Art. 31(3)(c) (providing for interpretation of a treaty in light of “any relevant rules of international law applicable in the relations between the parties”); see also Pt. IV.B, *supra*.

<sup>421</sup> Stockholm Declaration of the United Nations Conference on the Human Environment, 16 June 1972, UN Doc. A/CONF. 48/14/Rev 1, 3.

repeated affirmation in the jurisprudence of international courts, including the International Court of Justice.<sup>422</sup> In essence, the environmental harm at issue must be *transboundary*,<sup>423</sup> the environmental harm must be *significant* in nature, and the State engaged in the activity must take *all appropriate measures to prevent* such harm. As indicated by the International Court of Justice in the *Pulp Mills* case, a “State is thus obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State”.<sup>424</sup> When assessing what is meant by significant harm, the International Law Commission has explained that a “significant” harm denotes a “real detrimental effect” that is “more than ‘detectable,’ but” not necessarily “serious” or “substantial” and that “[s]uch detrimental effects must be susceptible of being measured by factual and objective standards”.<sup>425</sup>

276. As to notification by India of potential environmental harm, the Court notes that Paragraph 5(a) of Appendix II requires India to specify the “[e]stimated effect of a proposed development on the flow pattern below the last plant downstream (with details of estimation)”.<sup>426</sup> Further, customary international law entails certain procedural requirements concerning notification and consultation regarding the possibility of significant harm from a planned measure on an international watercourse.<sup>427</sup>

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<sup>422</sup> See, e.g., *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua) and Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, Judgment, [2015] ICJ Rep 665, para. 104; *Obligations of States in Respect of Climate Change*, Advisory Opinion, 25 July 2025, ICJ, paras. 132–139.

<sup>423</sup> While referring to “transboundary” in this context, the Court emphasizes that its Award is without prejudice to the territorial claims of either Party. Indeed, the jurisprudence and literature with respect to the prevention of transborder harm habitually refers, with respect to either the State potentially causing harm or the State potentially affected by the harm, to both the State’s territory or an area under its control. See, e.g., International Law Commission, Draft Articles on Prevention of Transboundary Harm of Hazardous Activities, in Yearbook of the International Law Commission (2001), Vol. II, Part Two, U.N. Doc. A/CN.4/SER.A/2001/Add 1, p. 152, Art. 2(c) (referring to “harm caused in the territory of or in other places under the jurisdiction or control of a State other than the State of origin”).

<sup>424</sup> *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, [2010] ICJ Rep. 14, para. 101.

<sup>425</sup> International Law Commission, Draft Articles on Prevention of Transboundary Harm of Hazardous Activities, in Yearbook of the International Law Commission, 2001, vol. II, Part Two, UN Doc. A/CN.4/SER.A/2001/Add. 1, p. 152, para. 4.

<sup>426</sup> Tr., Day 2, 3 February 2026, pp. 103:22–104:6.

<sup>427</sup> See *Dispute over the Status and Use of the Waters of the Silala (Chile v. Bolivia)*, Judgment, [2022] ICJ Rep. 614, paras. 113–118 (discussing procedural obligations under customary international law incumbent on States as regards transboundary harm, including in the context of the management of shared resources); see also Convention on the Law of the Non-navigational Uses of International Watercourses, 21 May 1997, 2999 U.N.T.S. 77, arts. 11–19 (it is noted that, while the convention has entered into force with 42 parties, neither India nor Pakistan has ratified or acceded to the convention).

277. This conclusion is consistent with the *Kishenganga* Court’s application of customary international environmental law to the interpretation of the Treaty, which was not uniquely confined to Paragraph 15(iii) of Annexure D. Rather, the *Kishenganga* Court initiated its examination of customary international environmental law because, under Paragraph 29 of Annexure G, “the law to be applied by the Court” may include “[c]ustomary international law”.<sup>428</sup> Indeed, the *Kishenganga* Court invoked customary international environmental law because *the Treaty itself* required its application “whenever necessary for its interpretation or application”.<sup>429</sup> In both its Partial and Final Awards, the *Kishenganga* Court spoke in broad terms that extended beyond inter-tributary transfers, noting that “States have ‘a duty to prevent, or at least mitigate’ significant harm to the environment when pursuing large-scale construction activities”.<sup>430</sup> The *Kishenganga* Court’s citation of extensive international environmental law precedents and authorities, drawn from a broad spectrum of contexts unrelated to inter-tributary diversions (as discussed further below), supports the understanding that the Court’s invocation of customary international environmental law was not limited to the narrow context of the KHEP’s inter-tributary diversion under Paragraph 15(iii) of Annexure D to the Treaty. The Court affirmed that understanding in its Final Award, when it stated: “It is therefore incumbent upon this Court to interpret and apply *this 1960 Treaty* in light of the customary international principles for the protection of the environment in force today”.<sup>431</sup> Similarly, the Court stated in its Final Award that “the Court has no difficulty concluding that the requirement of an environmental flow (without prejudice to the level of such flow) is necessary in the application of *the Treaty*”.<sup>432</sup>
278. As a factual matter, the *Kishenganga* Court was concerned with the KHEP, which is located approximately twelve kilometers upstream of the Line of Control, such that the downstream flow from the HEP soon passes into territory administered by Pakistan. That proximity is reflected in the *Kishenganga* Court’s conclusions that India has a “duty to ensure that a minimum flow reaches Pakistan”<sup>433</sup> and, as previously noted, that States must take environmental protection into

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<sup>428</sup> PLA-0001, Treaty, Annexure G, para. 29(b).

<sup>429</sup> PLA-0001, Treaty, Annexure G, para. 29. Importantly, the Treaty makes clear that customary international law, including customary international environmental law, may be applied only when necessary for the Treaty’s interpretation or application, and “only to the extent necessary for that purpose”. See PLA-0001, Treaty, Annexure G, para. 29.

<sup>430</sup> PLA-0003, *Kishenganga* Partial Award, para. 451; PLA-0004, *Kishenganga* Final Award, para. 112.

<sup>431</sup> PLA-0003, *Kishenganga* Partial Award, para. 452 (emphasis added).

<sup>432</sup> PLA-0004, *Kishenganga* Final Award, para. 112 (emphasis added).

<sup>433</sup> PLA-0003, *Kishenganga* Partial Award, para. 447 (emphasis added).

consideration when their projects “may cause injury to a bordering State”.<sup>434</sup> Ultimately, the data requested by the *Kishenganga* Court from the Parties concerned “environmental factors downstream of the KHEP *below the Line of Control*”.<sup>435</sup> Further, all of the cases cited by the *Kishenganga* Court concerned transboundary harm,<sup>436</sup> such as transboundary air pollution,<sup>437</sup> transboundary water pollution or harm,<sup>438</sup> or environmental regulation of a reactivated rail line between two countries.<sup>439</sup> Thus, the *Kishenganga* Court was focused on *transboundary* environmental harm and specifically on harm to Pakistan. The *Kishenganga* Court also repeatedly referred to “*significant* adverse impact in a transboundary context”,<sup>440</sup> “*significant* harm”,<sup>441</sup> “*significant* environmental impacts”,<sup>442</sup> and “*significant* environmental harm”,<sup>443</sup> and cited sources that invoked such a standard.<sup>444</sup>

279. To summarize this conclusion, whether or not an Annexure D, Part 3 HEP involves an inter-tributary diversion, a minimum flow obligation may arise pursuant to customary international law where such minimum flow is necessary to prevent significant environmental harm to Pakistan or Pakistan-administered territory.

280. *Third*, given the above, the minimum flow requirement does not necessarily operate with respect to all Indian Annexure D, Part 3 HEPs; the issue can only be addressed in the context of a specific

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<sup>434</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 449 (emphasis added); see para. 263, *supra*.

<sup>435</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 455 (emphasis added); see also **PLA-0003**, *Kishenganga* Partial Award, para. 458 (“environmental concerns at and downstream of the Line of Control to Nauseri”).

<sup>436</sup> See, e.g., **PLA-0003**, *Kishenganga* Partial Award, paras. 448–452. The *Kishenganga* Court also cited to this rule as expressed in several treaties, some of which concern transboundary harm to the global commons. See, e.g., International Convention for the Regulation of Whaling, 2 December 1946, 161 U.N.T.S. 72; Convention on Fishing and Conservation of Living Resources of the High Seas, 29 April 1958, 559 U.N.T.S. 285; African Convention on the Conservation of Nature and Natural Resources, 15 September 1968, 1001 U.N.T.S. 0; United Nations Convention on the Law of the Sea, 10 December 1982, 1833 U.N.T.S. 397; ASEAN Agreement on the Conservation of Nature and Natural Resources (not in force), opened for signature 9 July 1985; the Treaty on European Union, 7 February 1992, 1757 U.N.T.S. 3.

<sup>437</sup> *Trail Smelter Arbitration*, 16 April 1938 and 11 March 1941, 13 R.I.A.A. 1905, p. 1965.

<sup>438</sup> *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, [2010] ICJ Rep. 14, p. 83; *Case concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, [1997] ICJ Rep. 7, p. 78.

<sup>439</sup> *Arbitration Regarding the Iron Rhine (“Ijzeren Rijn”) Railway between the Kingdom of Belgium and the Kingdom of the Netherlands*, Award, 24 May 2005, PCA Award Series (2007), para. 59.

<sup>440</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 450 (emphasis added).

<sup>441</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 451 (emphasis added).

<sup>442</sup> **PLA-0003**, *Kishenganga* Partial Award, para. 502 (emphasis added).

<sup>443</sup> **PLA-0004**, *Kishenganga* Final Award, para. 97, fn. 151 (emphasis added).

<sup>444</sup> See, e.g., **PLA-0003**, *Kishenganga* Partial Award, para. 448, fn. 655, *citing* *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, [1996] ICJ Rep. 226, p. 242.

proposed HEP. Thus, a threshold question is whether the design and operation of the specific Annexure D, Part 3 HEP: (1) entails an inter-tributary diversion of water on a Tributary of The Jhelum pursuant to Paragraph 15(iii) of Annexure D; or (2) may cause significant transboundary environmental harm to Pakistan or Pakistan-administered territory.

281. For example, a HEP may be situated at a considerable distance from the Line of Control, such that releases from the HEP, when combined with other waters from tributaries along the way to the Line of Control, have no transboundary effect. Similarly, the HEP might be located on a tributary that flows into a main stem, such that the releases from the HEP have no effect on the flow of the main stem as it crosses the Line of Control. Alternatively, the HEP may be required to include a Regulating Basin, “whose only purpose is to even out fluctuations in the discharge from the turbines arising from variations in the daily and the weekly loads of the plant”.<sup>445</sup> Indeed, the Treaty contains provisions requiring a Regulating Basin for any Run-of-River HEP “constructed on the Chenab Main at a site below Kotru”, close to the Line of Control.<sup>446</sup> If there is a transboundary effect on Pakistan’s environment, then a further question is whether that effect constitutes significant harm to Pakistan’s environment. Only then is India obligated to take all appropriate measures to prevent such harm, such that a minimum flow obligation arises.
282. *Fourth*, if a minimum flow obligation exists for a specific Annexure D, Part 3 HEP, then India might be able to satisfy that obligation in ways that are unrelated to the calculation of maximum Pondage. For example, India might construct a re-regulating facility downstream of the HEP that produces a minimum flow in fulfillment of India’s obligation.
283. *Fifth*, if a minimum flow obligation exists but is not fulfilled in another way, then India is required to fulfill that obligation through the establishment of a minimum flow at the relevant HEP. If so, India is required to determine the amount of flow necessary to satisfy the obligation and to factor that flow into its calculation of maximum Pondage, essentially by reducing the amount of that minimum flow from the MMD before proceeding with its calculations under Paragraph 8(c). The need for, and amount of, a minimum flow will vary depending on the design of the HEP and the site conditions, and any such flow must be determined on a case-by-case basis.<sup>447</sup> Therefore, it is incumbent upon India, when designing an Annexure D, Part 3 HEP, and calculating its Pondage, to take into account whether that specific HEP’s projected downstream releases satisfy not just

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<sup>445</sup> **PLA-0001**, Treaty, Annexure D, para. 2(h).

<sup>446</sup> **PLA-0001**, Treaty, Annexure D, para. 8(g); see also **PLA-0001**, Treaty, Annexure D, Appendix I, paras. 2(a), 3(e); Appendix II, paras. 3(a), 3(d), 4(a), 4(j), Annexure E, para. 24.

<sup>447</sup> Pakistan’s Second Phase Memorial, para. 3.78.

the obligations arising under the chapeau and sub-paragraphs (i) and (ii) of Paragraph 15 of Annexure D, but also any applicable obligation under Paragraph 15(iii) of Annexure D, or under customary international law to take all appropriate measures to prevent significant environmental harm to Pakistan or Pakistan-administered territory.

284. This constraint may substantially affect the overall Pondage analysis. The critical factor is the relationship between the MMD and the minimum flow: as the minimum flow increases relative to the MMD, the net volume of water available for discretionary regulation diminishes, which therefore reduces the Pondage that can be accumulated over a day or a week. India's operating pool calculations table for the Kiru HEP illustrates this point.<sup>448</sup> In the table, India identified the MMD as 65 cumecs and the minimum flow (labeled as "min env flow") as 16.33 cumecs. Over a 24-hour day, that continuous minimum flow release amounts to 391.92 cumec-hours, out of a total daily inflow of 1,560 cumec-hours. Consequently, only 1,168.08 cumec-hours remain potentially available for storage and subsequent regulation, which represents approximately 75 percent of the total daily inflow. Thus, although Paragraph 8(c) does not expressly refer to a minimum flow obligation, it can be a necessary element in the methodology for calculating "maximum Pondage".
285. *Sixth*, while the matter appears not to be in dispute as between the Parties, the daily and weekly release requirements set out in Paragraph 15 of Annexure D (found in the *chapeau* and in sub-paragraphs (i) and (ii)) are separate from any minimum flow obligation.<sup>449</sup>
286. In sum, with respect to the obligation for a minimum flow in relation to the calculation of maximum Pondage for an Annexure D, Part 3 HEP:
- (1) where an Annexure D, Part 3 HEP involves an inter-tributary diversion on the Jhelum, a minimum flow obligation may arise pursuant to Paragraph 15(iii) of Annexure D to protect Pakistan's existing Agricultural Use or hydro-electric uses;
  - (2) where a minimum flow is necessary to prevent significant environmental harm to Pakistan or Pakistan-administered territory, a minimum flow obligation arises pursuant to customary international law;

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<sup>448</sup> See Figure 4: Calculation for the Operating Pool of the Kiru HEP, *supra*; see also Award on Issues of General Interpretation, p. 263.

<sup>449</sup> Award on Issues of General Interpretation, para. 678, *citing* PLA-0001, Treaty, Annexure D, para. 15. As a general matter, Paragraph 15 requires that (a) the same volume of water received in the river upstream of the plant in a week must be released back into the river below the plant in the same week; and (b) the volume of water delivered into the river in any given day generally shall not be less than 30 per cent or more than 130 per cent of the volume received above the plant during the same 24-hour period.

- (3) the existence of a minimum flow obligation with respect to an Annexure D, Part 3 HEP shall be determined in the context of the design and operation of that particular HEP;
- (4) if a minimum flow obligation exists for an Annexure D, Part 3 HEP, then India may satisfy that obligation in ways that are unrelated to the calculation of Pondage required for Firm Power, such as through releases from a downstream re-regulating facility;
- (5) if a minimum flow obligation exists and is not otherwise satisfied, India shall, when designing an Annexure D, Part 3 HEP and calculating Pondage required for Firm Power, take into account the HEP's projected downstream releases that are necessary to satisfy the obligation for a minimum flow, essentially by reducing the amount of that minimum flow from the MMD before proceeding with its calculations; and
- (6) the daily and weekly downstream release requirements of Paragraph 15 of Annexure D do not automatically satisfy any applicable minimum flow obligation.

#### **G. COOPERATION AND INFORMATION SHARING**

287. As indicated in Part III above, Pakistan has not placed before the Court a “dispute” concerning the application of the Treaty provisions on information sharing or notification as such, and hence the Court has made no findings regarding compliance of either Party with those provisions. Even so, the Court emphasized in its Award on Issues of General Interpretation two important points with respect to cooperation and information sharing under the Treaty, which are pertinent as well to such cooperation and information sharing specific to the projection of the installed capacity and anticipated load of an Annexure D, Part 3 HEP.

288. *First*, the Court stated that “consistent with the notification requirements set forth in Appendix II of Annexure D, India is under an obligation *inter alia* to convey to Pakistan, at an early stage, the ‘[o]bserved or estimated daily river discharge data’, ‘the calculations for the Operating Pool’, and the ‘particulars of design’, including the dimensional plan, the ‘[d]ischarge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and weekly load fluctuations’, and the ‘[m]aximum aggregate capacity of power units ... for Firm Power and Secondary Power’”.<sup>450</sup> The Court reiterates in these proceedings that such information is crucial for any evaluation, by Pakistan or a third-party dispute resolution entity, of whether India is in compliance with the Treaty’s provisions governing “maximum Pondage”. With

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<sup>450</sup> Award on Issues of General Interpretation, para. 742.

respect to the installed capacity of a proposed Annexure D, Part 3 HEP, Appendix II to Annexure D requires that India notify Pakistan as to the “Maximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power”.<sup>451</sup> With respect to the anticipated load of a proposed Annexure D, Part 3 HEP, Appendix II to Annexure D requires that India notify Pakistan as to the “[d]ischarge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and weekly load fluctuations”.<sup>452</sup>

289. *Second*, the Court stated that:

Part XIII of this Award addresses the critical role that cooperation of the Parties plays for effective implementation of the Treaty. Here, it is stressed that the cooperation by the Parties with respect to India’s notification of information pertinent to the application of Paragraph 8(c), Pakistan’s response, and cooperation within the Commission on any questions that may arise, are critical for Paragraph 8(c) to operate as the Parties intended.<sup>453</sup>

290. The Court remains mindful that the Treaty demands that the Parties engage cooperatively to ensure that all aspects of India’s design of Annexure D, Part 3 HEPs, including determination of maximum Pondage, are Treaty compliant. To the extent that there is anything about the projection of the installed capacity or anticipated load that does not satisfy Pakistan as to whether it conforms to Paragraph 8(c), including the conditions indicated above,<sup>454</sup> it is appropriate for India to provide an explanation as to why Pakistan should be satisfied. Doing so would assist in allaying any concerns by Pakistan and would be in furtherance of the “cooperative spirit” envisaged in the Treaty’s Preamble for addressing any questions that may arise.

291. The projection of the anticipated load is an especially important element of the calculations for Pondage, as it presents a situation where Pakistan might be concerned that the projection is being manipulated to justify a higher level of Pondage than is required for the operation of the HEP. To avoid such concerns and to maintain the “cooperative spirit” envisaged for addressing any questions that may arise, it would be appropriate for India to explain, when providing its Appendix II notification to Pakistan, why the anticipated load conforms to Paragraph 8(c), including the conditions indicated above.<sup>455</sup> For example, while there is no express obligation in Appendix II for India to provide information on its grid system, if the HEP is intended to serve the power

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<sup>451</sup> **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(i).

<sup>452</sup> **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(h).

<sup>453</sup> Award on Issues of General Interpretation, para. 744.

<sup>454</sup> See para. 288, *supra*.

<sup>455</sup> See para. 288, *supra*.

demand of that system, India could provide such information. Specifically, India could explain how the HEP will supply power to the system that the HEP is intended to serve on a daily and weekly basis at times of peak demand, and further how it will allocate its power distribution across days of the week (including as between weekends and weekdays) in a manner that corresponds to the actual demand on the power system. Alternatively, when providing its Appendix II notification to Pakistan, India could provide specific information and underlying data that justify an alternative anticipated load.

292. In this regard, Pakistan called upon the Court at the Hearing to identify a “presumption” of Treaty non-compliance if India failed to provide (or provided materially insufficient) information of the type indicated above relating to installed capacity and anticipated load. It is noted that Pakistan did not raise this issue in its Memorial, including the submissions contained therein. Rather, it is at the Hearing and in its Final Submissions that Pakistan advanced such an argument.<sup>456</sup>
293. Specifically, in its Final Submissions, Pakistan sought confirmation that “India must communicate to Pakistan, as part of its Annexure D, Paragraph 9 notification of the design of a proposed Annexure D, Part 3 HEP, information and explanation relating to India’s calculation for maximum Pondage” and that, in the event India fails to do so, “or provides materially insufficient information, there will be a presumption that India’s projection of the proposed Annexure D, Part 3 HEP’s installed capacity and anticipated load is not realistic, well-founded, and defensible and does not accord with the anticipated actual operation of that HEP”.<sup>457</sup>
294. The Court recalls that India is obligated, in relation to the calculation of maximum Pondage, to provide Pakistan with information as to the installed capacity and anticipated load of a planned Annexure D, Part 3 HEP under Paragraph 9 and Appendix II of Annexure D. Indeed, the Court has stated that, “to fulfill its Treaty obligations, India must include information and an explanation relating to its calculation of maximum Pondage pursuant to Paragraph 8(c)”.<sup>458</sup> Pursuant to Paragraph 10 of Annexure D, Pakistan then bears the burden to “communicate to India, in writing, any objection that it may have with regard to the proposed design on the ground that it does not conform to the criteria mentioned in Paragraph 8”.<sup>459</sup> Thereafter, if a question arises as to whether

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<sup>456</sup> See Tr., Day 1, 2 February 2026, pp. 40:23–41:22; Tr., Day 2, 3 February 2026, p. 154:9–16.

<sup>457</sup> See para. 60, *supra*.

<sup>458</sup> Award on Issues of General Interpretation, para. 742.

<sup>459</sup> **PLA-0001**, Treaty, Annexure D, para. 10.

the HEP conforms to the Treaty, “then either Party may proceed to have the question resolved in accordance with the provisions of Article IX(1) and (2)”.<sup>460</sup>

295. If Pakistan objects to India’s failure to provide such information, then a question arises as to whether India has satisfied its Treaty obligations, and that question is to be examined by the Commission.<sup>461</sup> If no agreement is reached in the Commission, then a difference is deemed to have arisen that may be addressed through the Treaty’s dispute resolution procedures.<sup>462</sup> Further, as previously stated by the Court: “Ultimately, if a difference emerges in this regard between the Parties, it is for India, as the proponent of the design and construction of the HEP, to establish that the proposed maximum Pondage satisfies the requirements of Paragraph 8(c), bearing in mind any Pakistani position that a more Treaty-compliant alternative exists”.<sup>463</sup>
296. Thus, if India fails to provide such information—whether through the notification procedure established by the Treaty, whether in subsequent discussions within the Commission or bilaterally between the governments of the Parties, or whether in the course of any dispute resolution proceedings that Pakistan may initiate—then it has failed to carry its burden of establishing that the proposed maximum Pondage satisfies the requirements of Paragraph 8(c), and India’s projection of the proposed Annexure D, Part 3 HEP’s installed capacity and anticipated load is not realistic, well-founded, and defensible.

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<sup>460</sup> PLA-0001, Treaty, Annexure D, para. 11.

<sup>461</sup> PLA-0001, Treaty, Art. IX(1).

<sup>462</sup> PLA-0001, Treaty, Art. IX(2).

<sup>463</sup> Award on Issues of General Interpretation, para. 742; see also Award on Issues of General Interpretation, para. 811(P)(5) (determining, “with respect to compliance with Article VII(2), with Paragraph 8(c) of Annexure D to the Indus Waters Treaty 1960, and with Paragraph 9 of Annexure D to the Treaty, that India is obliged ... as the proponent of the design and construction of the HEP, to establish that the maximum Pondage satisfies the requirements of Paragraph 8(c).”).

## VII. DECISION

297. The Court of Arbitration reaffirms its prior findings in the Award of Competence of 6 July 2023 and the Supplemental Award on Competence of 27 June 2025 that the Court of Arbitration is competent to consider and determine the disputes set forth in Pakistan's Request for Arbitration.

298. The Court of Arbitration recalls the following findings reached in its Award on Issues of General Interpretation of 8 August 2025 at paragraph 811:

O. FINDS, by four votes to one, for the reasons set out in paragraphs 649 to 748, that when designing an Annexure D, Part 3 HEP, India is limited to a maximum Pondage pursuant to Paragraph 8(c) of Annexure D to the Indus Waters Treaty 1960 taking into account the following restrictions:

- (1) "Firm Power", shall be calculated as the hydro-electric power corresponding to the minimum mean discharge at the site of the Plant, calculated in accordance with Paragraph 2(i) of Annexure D;
- (2) "Pondage required for Firm Power" shall be calculated based on the water that can be accumulated and released at the site of India's proposed Annexure D, Part 3 HEP during the course of no more than a seven-day period, within the following constraints:
  - (i) Pondage required for Firm Power shall be calculated based on what can be accumulated during that period when the stream flow of the river is at the MMD, as set forth in Paragraph 2(i) of Annexure D;
  - (ii) "Pondage required for Firm Power" shall be calculated based on a realistic projection of the proposed HEP's installed capacity and anticipated load, reflecting the fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant, as set forth in Paragraph 2(c) of Annexure D; and
  - (iii) "Pondage required for Firm Power" shall be calculated in a manner that abides by the daily and weekly release requirements set out in Paragraph 15 of Annexure D; and
- (3) "maximum Pondage" shall be no more than twice the Pondage calculated in accordance with the above requirements.

P. FINDS, unanimously, with respect to compliance with Article VII(2), with Paragraph 8(c) of Annexure D to the Indus Waters Treaty 1960, and with Paragraph 9 of Annexure D to the Treaty, that India is obliged:

- (1) to convey, at an early stage, "hydrologic data", "hydraulic data", and the "particulars of design" to Pakistan, including the estimated river discharge rate, the dimensional plan, and the installed capacity and anticipated load of the plant, along with the calculations for the Operating Pool;
- (2) to include with its communication of the "Particulars of Design" for its HEP an explanation of why the proposed maximum Pondage meets the requirements set forth in Paragraph 8(c);
- (3) to give sufficient time for Pakistan to respond with its views as to whether the design is compliant with the Indus Waters Treaty 1960 and for India still to modify its design in the face of valid concerns;

- (4) to give careful consideration to timely objections, including any Pakistani position that a more Treaty-compliant alternative exists; and
- (5) as the proponent of the design and construction of the HEP, to establish that the maximum Pondage satisfies the requirements of Paragraph 8(c).

299. The Court of Arbitration recalls the following findings reached in its Decision on the Request for Clarification of 8 November 2025:

- F. FINDS, for the reasons set out in paragraphs 39 to 47, that the references in paragraphs 811(H) to (K) and (M) to (S) of the Award and the associated analysis to “designing an Annexure D, Part 3 HEP” or to the “design” of such a HEP are references to design criteria that:
  - (1) are mandatory in nature;
  - (2) are to be applied at the outset, meaning at the time that the proposed Annexure D, Part 3 HEP is being planned by India and prior to its construction;
  - (3) are distinct from post-commissioning operational constraints on an Annexure D, Part 3 HEP; and
  - (4) cannot be satisfied or accommodated simply by an acknowledgement of or commitment to operational restraint.
- G. FINDS, for the reasons set out in paragraphs 69 to 73, that the data and information referred to in paragraph 742 of the Award are not comprehensive, whether as to the information that India is required to convey to Pakistan in relation to the calculation of maximum Pondage, in relation to Annexure D more generally, or in relation to the Treaty as a whole.
- H. FINDS, for the reasons set out in paragraphs 74 to 82, that paragraph 811(O)(2)(ii) of the Award and the associated analysis decided that Pondage required for Firm Power shall be calculated based on a realistic, well-founded, and defensible projection of the proposed Annexure D, Part 3 HEP’s installed capacity and anticipated load, reflecting the fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant, as set forth in Paragraph 2(c) of Annexure D.

300. The Court of Arbitration reaffirms and notes the *res judicata* and otherwise binding effect of the findings set forth in the Award on Issues of General Interpretation of 8 August 2025, as clarified in the Decision on the Request for Clarification of 8 November 2025.

301. Supplemental to paragraphs 811(O) and 811(P) of the Award on Issues of General Interpretation and paragraphs 88(F), 88(G), and 88(H) of the Decision on the Request for Clarification, the Court of Arbitration:

- A. FINDS, for the reasons set out at paragraphs 162 to 169 of this Award, that “[m]aximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power” refers to a single combined aggregate capacity of an Annexure D, Part 3 HEP’s non-standby power units; that is, the aggregate installed capacity by which the plant produces Firm Power and, when available, Secondary Power.
- B. FINDS, for the reasons set out at paragraphs 144 to 152 and 179 to 198 of this Award, that “Pondage required for Firm Power” consistent with Paragraph 8(c) of Annexure D shall be

based upon a realistic, well-founded, and defensible projection of a proposed HEP's installed capacity, which is a projection that:

- (1) corresponds to how the plant will actually be operated and is not hypothesized in a manner that serves to inflate the amount of Pondage required for Firm Power;
- (2) is consistent with the existing hydrologic and hydraulic data for that specific HEP at the time it is being designed; and
- (3) does not result in a design that is inconsistent with any other provision of the Treaty.

C. FINDS, for the reasons set out at paragraphs 144 to 152 and 213 to 252 of this Award, that "Pondage required for Firm Power" consistent with Paragraph 8(c) of Annexure D shall be based upon a realistic, well-founded, and defensible projection of the proposed HEP's anticipated load, which is a projection that:

- (1) corresponds to how the plant will actually be operated and is not hypothesized in a manner that serves to inflate the amount of Pondage required for Firm Power;
- (2) is consistent with the projected needs of the power system that the HEP is intended to serve;
- (3) is presumed compliant if, in the projection, the HEP supplies power to the system that the HEP is intended to serve on a daily and weekly basis at times of peak demand and allocates its power distribution across days of the week (including as between weekends and weekdays) in a manner that corresponds to the actual demand on the power system;
- (4) is otherwise compliant if the projection of anticipated load is based on specific information and underlying data produced by India that justify such a load;
- (5) is not determined solely on the basis of whether the anticipated load allows for releases of water consistent with the operational constraints of the Treaty, including the daily and weekly release requirements set out in Paragraph 15 of Annexure D; and
- (6) does nevertheless take account of the operational constraints of the Treaty.

D. FINDS, for the reasons set out at paragraphs 269 to 286 of this Award, that "Pondage required for Firm Power" shall be calculated with regard to any applicable minimum flow requirement as follows:

- (1) where an Annexure D, Part 3 HEP involves an inter-tributary diversion on the Jhelum, a minimum flow obligation may arise pursuant to Paragraph 15(iii) of Annexure D to protect Pakistan's existing Agricultural Use or hydro-electric uses;
- (2) where a minimum flow is necessary to prevent significant environmental harm to Pakistan or Pakistan-administered territory, a minimum flow obligation arises pursuant to customary international law;
- (3) the existence of a minimum flow obligation with respect to an Annexure D, Part 3 HEP shall be determined in the context of the design and operation of that particular HEP;
- (4) if a minimum flow obligation exists for an Annexure D, Part 3 HEP, then India may satisfy that obligation in ways that are unrelated to the calculation of Pondage

required for Firm Power, such as through releases from a downstream re-regulating facility;

- (5) if a minimum flow obligation exists and is not otherwise satisfied, India shall, when designing an Annexure D, Part 3 HEP and calculating Pondage required for Firm Power, take into account the HEP's projected downstream releases that are necessary to satisfy the obligation for a minimum flow, essentially by reducing the amount of that minimum flow from the MMD before proceeding with its calculations; and
- (6) the daily and weekly downstream release requirements of Paragraph 15 of Annexure D do not automatically satisfy any applicable minimum flow obligation.

302. The Court of Arbitration:

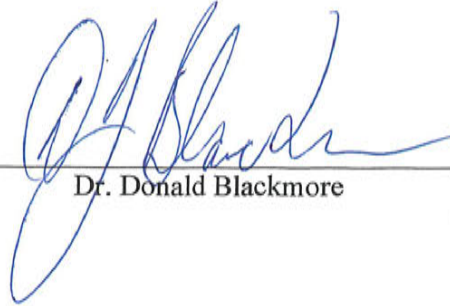
- A. RESERVES the costs of the proceedings to be awarded by the Court pursuant to Paragraph 26 of Annexure G to the Indus Waters Treaty 1960 for determination in the Court's Final Award.
- B. RESERVES for further consideration and directions all issues not decided in this Award.
- C. REMAINS seized of the disputes set forth in Pakistan's Request for Arbitration.

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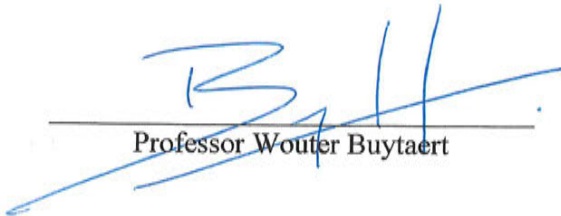
Done this 15<sup>th</sup> day of May 2026:



Judge Awn Shawkat Al-Khasawneh



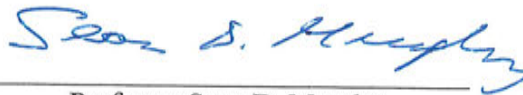
Dr. Donald Blackmore



Professor Wouter Buytaert



Professor Jeffrey P. Minear



Professor Sean D. Murphy  
Chairman



Mr. Garth Schofield  
Registrar