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Cour internationale de Justice

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International Court of Justice

THE HAGUE

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Audience publique

tenue le lundi 21 septembre 2009, à 10 heures, au Palais de la Paix,

sous la présidence de M. Tomka, vice-président,
faisant fonction de président

***en l'affaire relative à des* Usines de pâte à papier sur le fleuve Uruguay**
(Argentine c. Uruguay)

COMPTE RENDU

YEAR 2009

Public sitting

held on Monday 21 September 2009, at 10 a.m., at the Peace Palace,

Vice-President Tomka, Acting President, presiding,

***in the case concerning* Pulp Mills on the River Uruguay**
(Argentina *v.* Uruguay)

VERBATIM RECORD

Présents : M. Tomka, vice-président, faisant fonction de président en l'affaire
MM. Koroma
Al-Khasawneh
Buergenthal
Simma
Abraham
Keith
Sepúlveda-Amor
Bennouna
Skotnikov
Cançado Trindade
Yusuf
Greenwood, juges
MM. Torres Bernárdez
Vinuesa, juges *ad hoc*

Mme de Saint Phalle, greffier adjoint

Present:	Vice-President	Tomka, Acting President
	Judges	Koroma
		Al-Khasawneh
		Buergenthal
		Simma
		Abraham
		Keith
		Sepúlveda-Amor
		Bennouna
		Skotnikov
		Cançado Trindade
		Yusuf
		Greenwood
	Judges *ad hoc*	Torres Bernárdez
		Vinuesa
	Deputy-Registrar	de Saint Phalle

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S. Exc. M. Santos Goñi Marenco, ambassadeur de la République argentine auprès du Royaume des Pays-Bas,

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Mme Laurence Boisson de Chazournes, professeur de droit international à l'Université de Genève,

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M. Homero Bibiloni, secrétaire d'Etat à l'environnement et au développement durable,

comme autorité gouvernementale ;

M. Esteban Lyons, directeur national du contrôle environnemental du secrétariat à l'environnement et au développement durable,

M. Howard Wheater, docteur en hydrologie de l'Université de Bristol, professeur d'hydrologie à l'Imperial College, directeur de l'Imperial College Environment Forum,

M. Juan Carlos Colombo, docteur en océanographie de l'Université de Québec, professeur à la faculté des sciences et au musée de l'Université de La Plata, directeur du Laboratoire de chimie environnementale et de biogéochimie de l'Université de La Plata,

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Le VICE-PRESIDENT, faisant fonction de président : Veuillez vous asseoir. L'audience est ouverte. La Cour se réunit aujourd'hui pour entendre le premier tour de plaidoiries de la République orientale de l'Uruguay. Celle-ci achèvera son premier tour de plaidoiries à la séance qui se tiendra le jeudi 24 septembre entre 10 heures et 13 heures. I shall now give the floor to His Excellency Ambassador Carlos Gianelli, Agent of Uruguay to make his introductory statement. You have the floor, Sir.

Mr. GIANELLI:

I. INTRODUCTION

1. Mr. President and Members of the Court, it is an honour for me to appear before this distinguished tribunal, and a great privilege to act as the Agent of Uruguay in these proceedings.

2. I want to begin by expressing, on behalf of our delegation, the grief at the absence of our principal Agent, whose unexpected health problems forced him to remain in Montevideo. I also extend my appreciation to my counterpart, Ambassador Ruiz Cerutti, for her expression of concern for Ambassador Gros Espiell, and assure her that her best wishes have been conveyed to him.

3. Mr. President, this is a sad episode in the historically close relations between Argentina and Uruguay. We regret that our two friendly countries now confront each other in a way that neither Uruguayans nor Argentinians could have ever imagined. But today, the sadness I and all Uruguayans feel is compounded by the excessive language that Argentina used throughout last week's presentations, in which it portrayed Uruguay as nothing short of an international outlaw. Nevertheless, Uruguay is pleased to have this opportunity to respond fully and openly to Argentina's unsupported case against us. As the distinguished counsel and advocates who follow me to the podium will demonstrate, based on the evidence and the law as they truly are, Uruguay did not and has not violated the 1975 Statute on the River Uruguay in any respect.

II. INTERNATIONAL CO-OPERATION AND GOOD NEIGHBORLINESS

4. Mr. President, Members of the Court, Argentina has tried to portray our country as wholly indifferent to the 1975 Statute. It was said that Uruguay "behaves as if the 1975 Statute does not exist". In fact, Uruguay attaches tremendous importance to the Statute, not least because it is

instrumental in helping to protect us in our relationship with our much bigger and more economically developed neighbour.

5. Because of its much larger territory, population, agriculture and industry, it is Argentina — not Uruguay — that makes by far the greatest use of the Uruguay river with its related environmental consequences. The 1975 Statute is sacred to Uruguay because it guarantees our country its right to be protected from pollution and harmful environmental effects by Argentina, as well as its right to the equitable utilization of the river.

6. In reviewing the transcripts of last week's proceedings, I was struck by the gap between the facts and the way in which Argentina tried to portray them to the Court. After hearing so very many words from Argentina, I hope the Court will find it useful to examine the actual evidence.

7. In its presentations last Thursday (CR 2009/15), Argentina not so subtly suggested to the Court that unless it takes strong action against the Botnia plant, it will be responsible for setting the cause of international environmental law back decades. Argentina has offered the Court a false choice, Mr. President. I say that not just because Uruguay thinks it is right. I say that because the evidence tells us that. One of the remarkable features of this case is that, in the end, you do not need to choose between what Uruguay says and what Argentina says.

8. The present case differs from the great majority of cases before this Court, where the parties base their allegations on evidentiary materials that they have prepared especially for the case. In this one, you have before you multiple reports prepared by the independent environmental consultants engaged by the International Finance Corporation of the World Bank that clearly establish that the Botnia mill is operating to the highest international standards in all respects, and that it is not polluting the Uruguay river.

9. The reports to which I refer are also a complete answer to Argentina's heavy-handed attempts to suggest that the Botnia plant could not have been built in Europe, in North America, or in other developed countries. As those reports make clear, it could have been. The plant we are here talking about is as good as the best mills in Europe. No qualifications. If Argentina is wondering why the plant was built in Uruguay, perhaps it needs only recall that a eucalyptus tree grows at least three times faster in our region than it does in Europe.

10. Mr. President, Argentina's decision in early 2006 to suspend all monitoring of water quality contradicts the general principles of co-operation and good neighbourliness and the provisions of the 1975 Statute, as recognized by this Court in its July 2006 Order. Instead of going through CARU to monitor the river as the Statute provides, we learned for the first time on 30 June this year that Argentina spent two years secretly conducting its own unilateral study.

III. EVIDENCE PRESENTED BY ARGENTINA

11. Mr. President, last week you heard a lot about the phenomenon of reverse flow. You heard over and over again how much it happens, and more particularly that Uruguay supposedly never took account of it or consulted with Argentina about it. Mr. President, such allegations are totally unfounded. The fact is, and the evidence shows, that Uruguay did take into account the hydrodynamic characteristics of the river, including reverse flow episodes. It also incorporated that fact into its modelling of the dispersal of Botnia's effluents. And it shared that modelling with Argentina at the high level technical group (GTAN) consultations that took place in November 2005, four years ago, and was accepted. That is what the evidence in the record, some of it from Argentina no less, actually tells us. The truth is that Uruguay understood this issue perfectly, explained it fully to Argentina in 2005, and it got it right.

12. You heard much the same thing about wind. Counsel for Argentina told you that Uruguay again either misunderstood or failed to inform itself about the basic wind dynamics in the region, and failed to consult on the matter with Argentina. Here, too, Argentina's argument goes in the opposite direction from the evidence. In the days to come, Uruguay's counsel will show that not only did Uruguay consider the wind issue, it got it right and shared its views with Argentina long before the Botnia plant was ever built.

13. As much as you heard last week from Argentina's counsel, one thing you did not hear much about was the water quality standards adopted by both countries in CARU. These are the water quality standards Argentina and Uruguay have promised each other to meet. They are thus the law between the Parties on this issue. In a case on environmental pollution, one might reasonably expect to hear what the applicable standards have to say. You did not, and the reason is

simple: the Botnia plant has not caused any exceeding of the CARU water quality standards in the 22 months it has been operating.

14. Instead, Mr. President, we heard many times that there was an "unprecedented" algal bloom in February 2009 allegedly caused by the plant, that there were nonylphenols and lindane, and dioxins and furans among other substances. Once again, Argentina has its facts wrong, and demonstrably so. The algal bloom was not caused by the Botnia mill. In fact, algal blooms are common during the summer months, and this one appears to have started well upstream from the plant beyond what even Argentina claims is Botnia's reach, from where it was transported downstream and washed away into the ocean.

15. With respect to dioxins and furans, their levels are so low that they are beyond the ability of modern technology to detect. Although perhaps these substances were once an issue with pulp mills in eras past, it is not the case of this high technology mill. Argentina has not found any in the water of the river, only in sediments from Ñandubaysal Bay, which Argentina acknowledges is unaffected by effluents from Botnia.

16. The answer on nonylphenols and lindane is even simpler. Botnia does not use either in any part of its processes. Lindane has been banned in Uruguay for many years. However, in Argentina, both are still widely used in agriculture — in the case of lindane — and agriculture and industry — in the case of nonylphenols. So, Mr. President, therefore their source is Argentina, not Botnia.

17. The construction and operation of the Botnia pulp mill is fully consistent with all applicable environmental laws and regulations, as the results of a comprehensive monitoring plan will evidence to the Court this week. In addition, those results confirm the predictions made by the environmental impact assessment under DINAMA's direction, before even a preliminary environmental authorization was issued. It is for these reasons that the choice between the protection of the environment and the maintenance of the operations of the Botnia plant is a false one.

IV. PROCEDURAL COMPLIANCE

18. Mr. President, in addition to arguing that Uruguay had entirely disregarded its obligations to protect and preserve the environment, Argentina also spent a lot of time last week arguing that Uruguay breached its procedural obligations under the Statute. Mr. President, Uruguay did not.

19. I must say that I was greatly surprised by Argentina's assertion that Uruguay never shared information with or consulted with it. In fact, Uruguay provided a massive amount of information about the plants and the receptor environment to Argentina, not only before the Botnia plant started operating, but before serious construction activities even began. Mr. President, I cannot resist asking Argentina: if not consulting, what is it that its officials were doing for six months in 2005 and 2006 when they met 12 times with Uruguayan counterparts to exchange information and views under the auspices of GTAN?

V. EXTRAJUDICIAL COERCIVE MEASURES

20. As the Court is aware, a group of Argentine citizens has been blockading the main international transit route between Argentina and Uruguay, the General San Martin Bridge, since this case began more than three years ago. These blockades, which have been openly tolerated by the Government of Argentina and have caused hundreds of millions of dollars in economic harm to Uruguay, constitute an attempt to force Uruguay to stop activities at the Botnia plant. This was the subject of Uruguay's provisional measures request in December 2006. At that time, the award of an *ad hoc* Mercosur Arbitration Tribunal had already established that Argentina's tolerance for the blockades violated its duties under the Treaty of Asunción[1].

21. Nonetheless, the blockade continues to this day. Argentina, in open defiance of the Mercosur tribunal, in disregard of the principle of good neighbourliness, and in contravention of other principles of international law, continues to tolerate it. For example, recently, the Senate of

[1]Arbitral award of *ad hoc* tribunal of Mercosur, constituted to hear the dispute submitted by the Oriental Republic of Uruguay versus the Argentine Republic on "Omission of the Argentine State to adopt suitable measures to prevent and/or eliminate the impediments to free circulation stemming from the blocking of the access roads to international bridges Gral. San Martín and Gral. Artigas in Argentine territory, which connect the Argentine Republic with the Oriental Republic of Uruguay, 6 Sep. 2006, IV Decision, No. 2 in Annex 2 of provisional measures submitted by Uruguay, 30 Nov. 2006 and also available at http://www.mercosur.org.uy/innovaportal/innovaportal.GetHTTPFile/Laudo%20de%20Cortes%20de%20Ruta%20-%20ES.pdf?contentid=375&version=1&filename=Laudo%20de%20Cortes%20de%20Ruta%20-%20ES.pdf (last visited 1 Sep. 2009).

Entre Ríos unanimously currently passed a bill declaring them an "historical and cultural landmark".

22. Mr. President, most probably, the long and rich history of this Court does not record any case where a litigant country has allowed its provincial government, allied to a group of citizens, to exercise extrajudicial measures to attempt to coerce the other party regarding the issues being litigated before the Court. Uruguay will never allow itself to be coerced in this manner, or to abandon the defence of its right to sustainable development guaranteed by the 1975 Statute. Ultimately, these illegal measures, from the beginning of this proceeding, have served only to exacerbate the dispute between the two countries. Uruguay submits that Argentina's tolerance to this matter cannot be reconciled with the Court's Order of 13 July 2006, in which "the Court further encourages both Parties to refrain from any actions which might render more difficult the resolution of the present dispute" (*Pulp Mills on the River Uruguay (Argentina* v. *Uruguay), Provisional Measures, Order of 13 July 2006, I.C.J. Reports 2006*, p. 134, para. 82).

23. Mr. President, following me to the podium today will be Professor Alan Boyle who will show that the Botnia plant has not caused any harm to the Uruguay river or its aquatic life since it began operating in November 2007.

24. Mr. President, I now invite you to call Professor Boyle to the podium. Thank you very much.

The VICE-PRESIDENT, Acting President: Thank you, His Excellency Ambassador Gianelli, for your statement. I shall now give the floor to Professor Alan Boyle. You have the floor, Sir.

Mr. BOYLE:

I. THE PERFORMANCE OF THE PLANT

1. Mr. President, Members of the Court, it is an honour and a privilege to appear before you once more on behalf of the Oriental Republic of Uruguay. My task this morning is straightforward: to set out the evidence that sustains Uruguay's case on environmental protection and to show that the Botnia plant has lived up to the commitments which Uruguay made under the 1975 Statute and

under its own Constitution. Despite what you were told by Professor Sands last week — and I pay tribute to his powerful and determined advocacy — Argentina's case is just as weak today as it was in 2006.

2. The evidence you will hear this week shows that the Botnia pulp mill has exceeded the high expectations of Uruguay and of the International Finance Corporation. It has caused no harmful pollution of the river as defined by the Statute. It has not put at risk the ecology or ecosystem of the river. It meets European technology — BAT — standards for pulp mills. It meets the World Bank's environmental and social responsibility standards. It complies in every respect with the water quality and environmental protection standards agreed by both Parties and set out in the CARU Digest — and it is truly remarkable that nowhere in Argentina's presentation last week was there any reference to those regulations, no allegation that they have been broken. The Botnia plant has met these strict standards and it has done so because Uruguay has required it to do so. In sum, it is the right mill, in the right place, on a river that is more than capable of sustaining this type of economic development. Its exemplary performance is entirely consistent with the environmental requirements of the 1975 Statute of the River Uruguay, and with all other applicable international standards. Put simply, Argentina has no case.

3. The Court heard a great deal last week about pollutants, some of them irrelevant to this case. It heard almost nothing about water quality, or how good it remains, even after the mill has started to operate. Uruguay's evidence on this point will be explained in more detail this morning, but the key points are summarized at page ES (iii) of the Third EcoMetrix Report[2] and you will find this summary at tab 3 in your folder. EcoMetrix is a Canadian environmental engineering and consulting firm appointed by the International Finance Corporation to advise it on the Botnia project. All of its reports have been produced for and at the direction of the IFC to specifications the IFC laid down.

4. Their third report makes three findings that should lay to rest any doubts about the impact of the Botnia plant. First, EcoMetrix concluded that water quality remains good:

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[2]"Orion Pulp Mill, Uruguay: Independent Performance Monitoring as required by the International Finance Corporation: Phase 3: Environmental Performance Review 2008 Monitoring Year" — hereafter referred to as the third EcoMetrix Report; Uruguay's Submission of New Documents, 30 June 2009, Ann. S7.

> "The water quality of the Rio Uruguay is considered to be of high quality since the concentrations of indicator parameters are well below the most restrictive of the applicable Uruguayan and CARU standards."

Secondly, they found that water quality has not changed since the plant started operations:

> "A comparison [they say] of the monitoring data pre- and post-commissioning of the mill shows that water quality of the Rio Uruguay has not changed as a result of the mill."

And thirdly, they found no meaningful difference between water quality upstream and water quality downstream, thus confirming their previous conclusions:

> "The water quality between the mill and Fray Bentos is comparable to the water quality further upstream [they say] . . . , indicating that the mill has not affected water quality within the Rio Uruguay."

5. These are not Uruguay's findings. They are not Botnia's. They are the conclusions of IFC-appointed independent experts. They are entitled to great weight and their conclusions, Uruguay submits, are dispositive. The IFC's independent validation of the Botnia project is precisely the sort of evidence to which considerable weight should be given. As this Court has noted in the *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo* v. *Uganda)*, "evidence obtained" by independent persons "experienced in assessing large amounts of factual information, some of it of a technical nature, merits special attention" (*Judgment, I.C.J. Reports 2005,* p. 201, para. 61)[3].

II. USES OF THE RIVER AT FRAY BENTOS

6. The conclusions of the IFC's experts should come as no surprise to the Court: Uruguay has the strongest interest in ensuring that the Botnia plant does not pollute the river or generate harmful levels of air pollution — now or in the future. The Uruguay river has provided and will no doubt continue to provide drinking water and recreation for Fray Bentos and other communities along the river — that is a resource that Uruguay is hardly likely to put at risk. And contrary to what Argentina claimed last week, the drinking water inlet for Fray Bentos remains where it has always been — downstream from the Botnia plant. There is a reserve inlet pipe located upstream in case of shipping accidents but it has remained unused since it was installed. IFC monitoring reports on the quality of the water show that "*the quality of the raw water supply* [and they are

[3]The report under consideration was the report of the Porter Commission, which examined persons involved in the actions at issue in the case.

referring to Fray Bentos] *is unaffected by the discharge from the mill*"[4]. On the map you will see both the Botnia outlet pipe and the Fray Bentos drinking water inlet. And in the top left hand corner on the Argentine side you can see the Gualeyguaychú river flowing into Ñandubaysal Bay. [Fig. 1 — map.]

7. But the Uruguay river also serves as a vital driver of the region's economic development. The new pulp mill is far from being the only source of industrial effluent discharges. On the Argentine side, Gualeguaychú industrial park is home to some 25 factories engaged, among other things, in dyeing, battery manufacture, and food and beverage processing[5]. At Colon, further upstream, there is the Fana Quimica chemical plant, and there are many more Argentine industrial facilities adjacent to the river in other locations. They all discharge waste water into the river system[6].

8. Argentina's own scientific report shows that industries of this kind are a significant source of many of the substances detected in the river, including the nonylphenols its advocates referred to last week[7]. Far from showing that everything in the river originates in the Botnia plant, Argentina's evidence suggests that many of these substances are a ubiquitous consequence of the growing industrialization of the river[8].

9. Sewage from the 75,000 residents of Gualeguaychú is similarly discharged into the river near the Botnia plant and constitutes a major input of phosphorus. The drainage run-off from hundreds of thousands of hectares of agricultural land and cattle farms will discharge nitrogen and phosphorus to the river. The soya growers around Gualeyguaychú use nonylphenols in herbicides[9]. No doubt much of that, some of it anyway, ends up in the river.

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[4]Third EcoMetrix Report, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7, para. 4.6; emphasis added.

[5]CMU, Vol. X, Ann. 224, p. 40.

[6]CMU, para. 2.144.

[7]Argentina Scientific and Technical Report, Chap. 3.5, p. 39.

[8]Argentina Scientific and Technical Report, Chap. 3.6.1, p. 44.

[9]J.C.M.Papa, Argentine National Institute of Agricultural Technology (INTA), "Evaluation of the activating capacity on glyphosate of a coadjuvant with a nonylphenol base", 2002, available at http://www.inta.gov.ar/oliveros/info/documentos/malezas/artic1.htm (last visited on 20 Sept. 2009) and "Weeds that are tolerant of and resistant to herbicides", 2008, available at http://www.inta.gov.ar/rafaela/info/documentos/miscelaneas/112/misc112_143.pdf (last visited on 20 Sept. 2009). Translations included in tab 2 of the judges' folder.

10. The 1975 River Uruguay Statute envisages uses of this kind. Article 27 recognizes the right of each Party to exploit the waters of the river for domestic, sanitary, industrial and agricultural purposes, in accordance with the terms of the Statute and the regulations adopted thereunder by CARU. And lest any Member of the Court is in any doubt, the practice of both Parties shows that the use of the river for "sanitary" and "industrial" purposes is intended to allow sewage and industrial effluent disposal. The importance of this point will be very clear when we consider the definition of "pollution" later in the week.

11. Both Parties also accept that, in accordance with general international law, they each have what the Court has referred to as a "basic right to an equitable and reasonable sharing of the resources of an international watercourse" (*Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment, I.C.J. Reports 1997*, p. 54, para. 78). That equitable right must necessarily include effluent and sewage disposal. The argument that *any* discharge of effluent is pollution prohibited by the Statute is plainly untenable when tested against Article 27 and the equitable rights of both Parties.

III. THE ALLEGED SENSITIVITY OF THE RIVER AT FRAY BENTOS

12. Now let me move to the alleged sensitivity of the river at Fray Bentos. Fray Bentos is the right place for a mill of this type and size. Argentina presents a very misleading picture of the flow of the river and its capacity to dilute effluent discharged at Fray Bentos. The River Uruguay really is a very large river — it is one of the 25 biggest in the world. Averaging over 6,230 m^3/s at Fray Bentos[10], it is very considerably larger than any river in Europe, except the Danube and the Volga[11]. Even the mighty Rhine at its largest point only manages 40 per cent of the Uruguay river's flow at Fray Bentos[12]. The average flow of the Vistula is 1000 m^3/s, of the Elbe 877 m^3/s, and of the Seine only 410 m^3/s. All of these rivers host pulp mills[13]. Even if we accept

[10]See Exponent, Response to the Government of Argentina's Reply, pp. 5-9 (hereafter "Exponent Report"). RU, Vol. IV, Ann. R83.

[11]S.A.Schumm and B.R.Winkley (eds.), *The Variability of Large Alluvial Rivers*, ASCE, 1994.

[12]Technische Universitat Dresden, http://intranet.floodmaster.de/wiki/rhine_river.

[13]See Exponent Report, pp. 5-9. RU, Vol. IV, Ann. R83. The figure given there for the Elbe should read 877 m^3/s United Nations Environment Program 2008, http://www.grid.unep.ch/product/publication/freshwater_europe/elbe.php.

Argentina's figure of 440 m^3/s for the most extreme low flow conditions, the River Uruguay would still be a large river, more than large enough for a pulp mill.

13. My colleague Mr. McCubbin will explain to the Court in greater depth why the river's substantial flow can indeed handle the volume of effluents discharged by the mill, even at low flows[14]. But Professor Sands referred last week to what he called "huge quantities" of pollutants. In fact the quantity of effluent is small compared to the volume of the river itself, and compared to the amount of nutrients coming in to the river from other sources. The total volume of effluents is meaningful only in context. The important point when comparing capacity to handle effluents is that a bigger river can handle a bigger plant.

14. Argentina's arguments on reverse flow at Fray Bentos are simply wrong. Contrary to Argentina's assertions, Uruguay modelled reverse flow and low flow comprehensively, before it approved the siting of the plant[15]. Its assumptions on reverse flow were if anything even more conservative that Argentina's. Uruguay did not get this wrong. The river's flow characteristics, and its ability to flow in both directions, were well known and taken fully into account in the permitting process. No significant harm was predicted even at low flow. Uruguay's evidence shows no such harm, nor does Argentina's. Argentina's main arguments on the siting of the plant is thus as erroneous as their data is misleading. But Mr. Reichler will deal with all of these points in more detail later this morning.

15. Nor is the river too sensitive at Fray Bentos to deal with the volume of phosphorus and other effluents discharged at this point. The evidence shows that Uruguay quite reasonably concluded after extensive environmental assessments that this type of plant located at Fray Bentos would not harm the river or existing uses of the river on both sides. This was also the conclusion of the International Finance Corporation — indeed, based on expert reports, they found that the site was suitable for *two* pulp mills[16]. Professor Kohen's argument that the choice of site is neither optimal nor reasonable necessarily assumes significant harm. As the remainder of my speech and

[14]Final CIS, pp. 4.48, 4.49 & 4.54-4.57. CMU, Vol. VIII, Ann. 173.

[15]CR 2009/16 (Reichler).

[16]Final CIS, CMU, Vol. VIII, Anns. 173-178.

most of Mr. Reichler's will show, the evidence points overwhelmingly to the conclusion that Professor Kohen is wrong. The plant has caused no such harm and is most unlikely to do so.

16. It is also quite wrong to suggest, as counsel did last week, that the river has reached a "tipping point", or that Uruguay has displayed "gross environmental recklessness". The evidence shows quite the opposite — that Uruguay has behaved prudently, diligently, and successfully in assessing the risk and preventing pollution from the Botnia plant. Let me then summarize for the Court the essential points of Uruguay's environmental case, before I review the evidence Uruguay has put before you.

17. Put simply — but the detail will certainly follow — the case you will hear today is that there has been no failure by Uruguay to comply with CARU water quality and environmental protection standards, or with any other applicable instruments. On Wednesday I will argue that if there is no breach of these standards, there is no harmful pollution as defined by the Statute. If there is no harmful pollution, the plant cannot have caused significant harm to the river's ecology or to Argentina, and it will pose no risk of significant harm. If there is no significant harm and no significant risk, there can be no breach of the environmental articles of the 1975 Statute. And if there is no breach of the Statute, however broadly construed, Argentina has no case on environmental harm, or on the siting of the plant.

IV. URUGUAY'S EVIDENCE

18. So let me then turn to Uruguay's evidence. Mr. President, Members of the Court, there has been extensive monitoring of the river, and of the plant, before operations began, and subsequently. In addition to the Environmental Impact Assessment carried out during DINAMA's evaluation of the Botnia permit application, the Court will no doubt recall the two further assessments — the so-called Cumulative Impact Study, or CIS, and the Final Cumulative Impact Study — that were prepared at the direction of the International Finance Corporation before the plant was authorized to operate. The Final CIS is a much revised and expanded study undertaken by EcoMetrix, which was brought in in order to revise the original study following criticism of the earlier report by the IFC ombudswoman. It was completed a full year before DINAMA authorized the plant to commence operations and it fully supported that decision.

19. In November 2007, just before the plant started up, two more reports were prepared for the IFC by what were termed "independent external consultants"[17] — EcoMetrix again, and AMEC, an international engineering firm with extensive experience of pulp mills and pollution control. These are the only independent experts who looked at the Botnia plant in detail. EcoMetrix found that the monitoring programme is "extremely comprehensive and exceeds the commitments identified in the CIS"[18]. The AMEC report found that: "Modern process technologies are used that promise to perform with low emission and world-leading environmental performance."[19] Mr. McCubbin will say more about the technology tomorrow.

20. But on the basis of these expert reports the IFC, quite reasonably and properly, concluded that "Botnia's Orion pulp mill in Uruguay is ready to operate in accordance with IFC's environmental and social requirements and BAT standards"[20]. Both of these exacting sets of requirements were described in detail in Uruguay's written pleadings, and I will not repeat them here[21]. But based on these independent reports, the IFC also satisfied itself that "the mill will comply with IFC and MIGA's environmental and social policies while" they said "generating significant economic benefits for the Uruguayan economy"[22]: that was their judgment.

21. So there was no lack of independent scrutiny before the plant came into operation. All the necessary studies had been undertaken and considered by the relevant institutions in Uruguay and by the IFC before the plant was authorized to operate.

22. And, of course, the assessment and evaluation did not stop there. In July 2008, EcoMetrix issued a second report for the IFC. This report evaluated the plant's first six months of operation[23]. According to it there had been "comprehensive monitoring of air and water emissions" that "provide a detailed characterization of the quantity and quality of the air and water emissions, and" they said "a direct measure of operational efficiency and performance of the mill".

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[17]RU, para. 4.14. *Orion Pulp Mill, Uruguay, Independent Performancing Monitoring as Required by the International Finance Corporation, Phase 1: Pre-Commissioning Review.*

[18]*Ibid*., para. 4.43.

[19]*Ibid*., para. 4.22.

[20]*Ibid*., para. 4.15.

[21]CMU, Chap. 5.

[22]RU, para. 4.15.

[23]*Uruguay Independent Performance Monitoring as required by the International Finance Corporation, Phase 2, 6-Month Environmental Performance Review*.

They also found that the information gathered during the operational monitoring was sufficient, as they said "to verify that the mill is operating according to authorization limits specified in the environmental authorization"[24]. And they concluded: "After six months of operation, all indications are that the mill is performing to the high environmental standards predicted in the EIA and the CIS, and in accordance with Uruguayan and IFC standards."[25]

23. This intensive monitoring continues today. EcoMetrix produced a third report for the IFC, which reviews the mill's environmental performance during the first year of operation, ending in November 2008. Uruguay's environment agency, DINAMA, has also reported on the plant's performance up to May 2009[26]: and in what follows I will rely heavily on these two reports, since they give the most up-to-date picture of the reality. You will find the third EcoMetrix Report in Uruguay's Supplementary Documents at Annex S7, but there is a summary in your folder at tab 3. The DINAMA report has also been deposited with the Court in the interests of transparency and there is, again, a summary in your folder at tab 3.

24. Last week Argentina made various unfounded criticisms of the Botnia monitoring régime. Yet the PROCEL scheme for joint monitoring agreed with Argentina in 2004 was not nearly as demanding[27]. That scheme was designed specifically for the Botnia and ENCE plants. Since Argentina withdrew from PROCEL, Uruguay has had to make its own arrangements. Botnia's emissions, water quality, effects on aquatic biota and sediments are currently monitored more frequently, and more comprehensively, than was envisaged under PROCEL. More substances are surveyed now than was previously agreed[28]. It is true that certain chemicals are not surveyed because they are not used in or produced by Botnia, including nonylphenols and lindane: but the object of monitoring the plant is to monitor what the Botnia plant adds to the river, not what it takes *from* the river.

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[24]RU, para. 4.73.

[25]*Ibid*, para. 4.86.

[26]DINAMA, Follow-Up Plan Cellulose Plant at Fray Bentos Surface water and sediment quality data report (Semester January-June 2009); DINAMA July 2009 Water Quality Report, DINAMA Follow-Up Plan Cellulose Plant at Fray Bentos Air quality report Semester January-June 2009; Semester report of the BOTNIA Emission Control and Environmental Performance Plan November 11, 2008 - May 31, 2009; DINAMA Follow-Up Plan Cellulose Plant at Fray Bentos Surface water and sediment quality data report (Semester January-June 2009). All deposited with the Court.

[27]CMU, Vol. IV, Ann. 109; RU, Vol. IV, Ann. R89.

[28]*Ibid.*

25. Also, contrary to Argentina's assertions last week, collection of baseline data started in August 2006[29], a full 15 months before the plant started operations in November 2007[30]. Since then Botnia has monitored and reported on all of the substances on which it is required to report — and the evidence is in the reports, indeed it provided some of the data used by DINAMA and EcoMetrix. There is, quite simply, no basis for saying that Botnia's monitoring or the monitoring system as a whole are inadequate.

V. POST OPERATIONAL REPORTS

26. Let us then turn to those post-operational reports, in particular the Third EcoMetrix Report[31] and I would invite you to consider some of its findings in more detail. Based on extensive monitoring data, that report, fully and without qualification, concludes that the plant's environmental performance today is outstanding.

27. As the Court will see, the report provides very clear confirmation that the Botnia plant is not causing harmful pollution. This is exactly what was predicted by DINAMA and in the IFC's environmental impact assessment. The essential points are summarized on pages ES.i and ESii of the third EcoMetrix Report:

> "From this review and to this point in time, all indications are that the mill is performing to the high environmental standards predicted in the EIA and CIS, and in compliance with Uruguayan and IFC standards. These results are also consistent with the performance measures for other modern mills."

28. After reviewing the monitoring results for the six months to May 2009, DINAMA's most recent report comes to the same conclusion:

> "The environmental performance [they say] of the BOTNIA plant continued to comply with the environmental norms in force, the environmental authorizations, and the criteria established in the Best Available Techniques (BAT) reference documents."[32]

That was DINAMA's conclusion.

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[29]Uruguay's Submission of New Documents, 30 June 2009, Ann. S2.

[30]RU, Vol. II, Ann. R6.

[31]Third EcoMetrix Report, para. 4.6, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7.

[32]DINAMA, "Semester report of the BOTNIA Emission Control and Environmental Performance Plan", 11 November 2008-31 May 2009, p. 26.

29. Before turning to look briefly at the figures supporting these conclusions, let me explain as simply as possible what parameters are important in regulating and evaluating wastewater discharges from the mill. Argentina would have you believe that volume is what matters. If only it were so simple. I will leave the technicalities to others, but there are three ways in which we might understand and assess what comes out of the waste pipe.

30. First, water quality. Water quality standards provide a means of ensuring that the water in the river remains fit for intended purpose, including drinking, even after effluents are discharged. There will always be effluents from many sources in a river — the key question is at what concentrations they can be regarded as unacceptable pollution that might harm the river and violate the Statute. The more sensitive the river, the stricter the water quality standards. CARU has adopted agreed water quality standards for most of the important potential pollutants in the River Uruguay, although not for phosphorus or nitrogen. And I will return to that point.

31. The Botnia plant is required by its permits to operate so that it does not cause violations of the strictest applicable standards, whether CARU or Uruguayan. And these standards are indeed strict. The IFC's experts compare CARU standards favourably with those of the European Union, Australia, and the World Health Organization, amongst others[33]. Argentina has not argued otherwise. Compliance with applicable water quality standards is thus an important test of whether the mill's performance meets all the pollution prevention requirements of the 1975 Statute.

32. Second, we can also consider effluent discharge limits. If water quality is the objective, the result, then discharge limits are one of the means to secure that result. Expressed as milligrams per litre (mg/l) and tons per day (t/d), the first provides a measurement of the concentration of effluents in each litre of wastewater discharged from the plant and the second sets a limit on the absolute amount of effluents that can be discharged in a day. These are the principal tools by which national regulators achieve or preserve the desired water quality.

[33]International Finance Corporation, Cumulative Impact Study, Uruguay Pulp Mills, Ann. D (hereinafter "final CIS, Ann. D"), pp. D2.5, D2.9-D2.10, Sep. 2006. CMU, Vol. VIII, Ann. 176.

33. Under the 1975 Statute it is the parties, not CARU, which prescribe discharge limitations for any given source[34]. Uruguayan law and the permits issued to the plant set specific daily discharge limits for all the relevant substances. Compliance with these limits is thus the second test of the mill's performance. But it is essential for the Court to understand that what comes out of the effluent pipe includes what was in the water extracted by the plant. If, for example, the river water is full of phosphorus from elsewhere when extracted from the river by the mill, it will be full of the same phosphorus when it goes back into the river — even if the mill has added nothing. Such discharges will of course not change water quality.

34. Finally, I think the third way of looking at these issues is to consider environmental efficiency — how much effluent does the mill discharge for each ton of pulp produced? Mr. McCubbin will deal with this point tomorrow, so I will move quickly on and outline what EcoMetrix and DINAMA say about effluent discharge limits and water quality. Because the evaluation has been so thorough — one commentator described the Botnia mill as "the most monitored site in the world today"[35] — I can but scratch the surface of the information but I am sure the Court will be very grateful to me if I do refrain from going any further.

VI. DISCHARGES COMPLY WITH ALL THE PERMITS GRANTED BY URUGUAY

35. The first point to make is to draw your attention to the plant's compliance with its effluent discharge limits.

36. The third EcoMetrix Report shows that, as confirmed by DINAMA, effluent discharges from the plant comply with all the applicable Uruguayan regulations and permits and that the effluent is not toxic[36]. In some cases, including dioxins and furans, toxic substances to which Argentina has drawn attention are detectable in mill discharges, if at all, only at background levels equivalent to the river water.

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[34]The *Digest* does have discharge limitations for a limited number of substances, *Digest* of the Administrative Commission of the Uruguay River (CARU), Subject E3 (hereinafter "CARU *Digest* Subject E3"), Title 2, Chap. 5, Art. 7 (1984, as amended), CMU, Vol. IV, Ann. 60, but the discharges of the Botnia plant will not contain, and Argentina does not allege that they will contain, any of those substances.

[35]Clarin, 25 January 2009. Uruguay's Submission of New Documents, 30 June 2009, Ann. S17.

[36]Third EcoMetrix Report, p. 3.5, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7.

37. Let me start with *phosphorus*. As the Court no doubt recalls from Argentina's presentations last week, phosphorus, like nitrogen, affects the health of the river because it can, in some instances, contribute to algal blooms. Uruguay, of course, recognizes that there is a long-standing problem of algal blooms in the river, but it believes that Argentina has vastly overestimated the impact of phosphorous discharges from the Botnia plant.

38. For example, emissions of phosphorus during its first year of operations have remained well below the regulatory limits. Uruguayan Decree 253/79 and Botnia's permit establish a maximum discharge limit of 5 milligrams per litre[37]. The mill's average discharge of 0.59 mg/l. That is little more than one tenth of the permit limit[38], and it is 40 per cent lower than the standard of 1 mg/l that, in the written pleadings, Professor Wheater claimed should be applicable to the Botnia mill[39].

39. Moreover, as the EcoMetrix Report also confirms total phosphorus "reduced over the latter part of the 2008 monitoring year due to optimization of the mill process and effluent treatment"[40]. This improvement has continued since Ecometrix published its third report. DINAMA has established that between November 2008 and May 2009 the mill's average discharge of phosphorus fell further, by almost half, to 0.3 mg/l, or less than one seventeenth of the regulatory limit, and 70 per cent lower than Professor Wheater's 1 mg/l standard[41] — 70 per cent.

40. Let us look at *nitrogen*. The Botnia plant's performance with respect to nitrogen has been just as good. The EcoMetrix Report notes that "the concentration of total nitrogen is well within the permit limit"[42]. In its written pleadings, although not last week, Argentina asserted that a well-run pulp mill should have an effluent concentration of between 2 to 4 mg/l of nitrogen[43]. In fact the average concentration of nitrogen in Botnia's effluent for the first year of operations is

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[37]Decree No. 253/79, Art. 11(2), CMU, Vol. II, Ann. 6.

[38]Third EcoMetrix Report, p. 3.4. Uruguay's Submission of New Documents, 30 June 2009, Ann. S7.

[39]Second Wheater Report, p. 25. RA, Vol. III, Ann. 44; RA, para. 3.175.

[40]Third EcoMetrix Report, p. 3.4, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7.

[41]DINAMA, July 2009, Botnia Environmental Performance Report, p. 14.

[42]Third EcoMetrix Report, p. 3.4. Uruguay's Submission of New Documents, 30 June 2009, Ann. S7.

[43]RA, para. 3.111.

2.6 mg/l[44]. The maximum monthly load for 2008 has been just one third of the permit limit and even less than the final CIS estimate[45].

41. *Dioxins, furans, lindane*. The Court heard much last week about dioxins and furans, which Argentina insinuated had been deposited in the river by the Botnia plant. But what the Court did not hear from Argentina were the results of the monitoring of Botnia's effluent, no doubt because it provides conclusive evidence that dioxins and furans in the river could not have come from the plant. Even using sophisticated methodology capable of detecting the extraordinarily low concentration of less than one part per quadrillion of water — and, yes, I had to use Google to work out what a quadrillion was — dioxins in the plant's effluent were not found, except a single furan at a sample well below one fifth of one quadrillionth of a gram per litre — I think that is very, very, very, very small. It is certainly lower than the furan levels detected in the baseline sampling performed on the Uruguay river[46]. This tiny amount is more than 25 times below the discharge permit limits. As EcoMetrix concluded, it could not be attributable to the plant but, rather, could only have come from the water supply taken from the river.

42. The same can be said for lindane. Use of lindane has been illegal in Uruguay for over twenty years[47]. From its knowledge of Botnia's processes, DINAMA confirms that Botnia does not use lindane in the mill. Trace elements from other sources will of course continue to be detectable in the river for many years. Argentina assumes that all the "pollutants" — to use its term — all the pollutants it has identified come from the plant. But Uruguay's evidence shows very clearly that they do not. You would expect to find dioxins and lindane in the river, and in the sediments. They are, after all, persistent. They may be in the water the plant extracts from the river. They will still be in the water it puts back. If the levels are no higher than background levels, they cannot have been added by Botnia.

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[44]Third EcoMetrix Report, p. 3.4, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7; RU, Vol. IV, Ann. R98.

[45]Third EcoMetrix Report, p. 3.4, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7; Wastewater Treatment System Approval, *op. cit.*, table 1; CMU, Vol. X, Ann. 225.

[46]Third EcoMetrix Report, p. 3.5, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7; DINAMA, July 2009, Botnia Environmental Performance Report, p. 6, table 2.

[47]www.mgap.gub.uy/dgssaa/normativa.

43. No one should be surprised by the all but complete absence of dioxins and furans in the Botnia discharge. These persistent organic pollutants are regulated by Uruguay in accordance with the 2001 Convention on Persistent Organic Pollutants, otherwise known as "POPs", and they are by-products of combustion and various industrial processes, including the bleaching of wood pulp by chlorine. But Botnia's technology does not use chlorine bleaching and therefore does not produce or generate dioxins and furans in more than vanishingly small trace amounts, unlike the pulp mills operating in Argentina that still employ the decades-old chlorine process. It is noticeable, as I told the Court in 2006, that while Argentina emitted 2110 g of dioxin in 2001 according to its own National Inventory on the Discharge of Dioxins and Furans, in 2002 the whole of Uruguay for comparison emitted a total of 55 g, according to its national inventory[48]. And those are the most up-to-date figures available.

44. *Toxicity*. Let me also respond to Argentina's repeated and rather careless references to Botnia's effluent as toxic. The effluent is not toxic — and even Argentina's own scientific report nowhere concludes that it is. As required by its Wastewater Treatment System Approval, Botnia conducts monthly acute toxicity tests for the effluent[49]. This is done by measuring the survival of fish, invertebrates, and other river biota in pure effluent. Botnia's effluent has passed with flying colours: the tests have revealed no acute toxicity from mill effluent whatsoever[50]. The IFC's technical experts concluded that "[m]onthly testing has been completed following standard protocols using three separate test procedures". These results show that the effluent is not toxic and is in full compliance with Uruguayan regulations and permits[51]. No dead fish. No dead snails. Not in the laboratory. Not in the river.

45. I will address air pollution only briefly: Mr. McCubbin will say more about the technical aspects. In Uruguay's view air pollution falls strictly outside the Court's jurisdiction in the present dispute. The 1975 Statute is concerned with the optimum and rational utilization of the River Uruguay (Art. 1). It covers, among other things, navigation in the river, fishing, conservation of

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[48]POPS Convention website at www.pops.int/documents/guidance

[49]Environmental Performance Review, p. 3.6. RU, Vol. IV, Ann. R98.

[50]*Ibid.* See also Third EcoMetrix Report, p. 3.5, Uruguay's Submission of New Documents, 30 June 2009; DINAMA, July 2009, Botnia Environmental Performance Report, p. 6, table 2.

[51]Third EcoMetrix Report, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7, p. 3.5.

natural resources, and prevention of pollution of the "aquatic environment" (Arts. 35, 37-41). It does not create a general régime of environmental protection, nor does it seek to regulate effluents otherwise than through the medium of the river.

46. The Statute has no provisions specifically on air pollution. Article 36, on which Argentina relies, is concerned with the co-ordination of measures "through the Commission" — that is CARU — to avoid "any change to the ecological balance and to control pests and . . . harmful factors in the river and the areas affected by it". This article cannot reasonably be interpreted as covering transboundary air pollution allegedly affecting areas well beyond the river. If it did apply to air pollution CARU would have regulations on the subject. CARU has no regulations on air quality. It has confined itself solely to the regulation of water quality. Neither Argentina nor Uruguay has ever proposed that CARU should regulate transboundary air pollution. This is surely a decisive rejection of the claim that the Statute covers the topic.

47. Nor has Argentina offered the Court any evidence that airborne emissions from the plant cause significant harm to the aquatic environment or alter its ecological balance: but of course Uruguay's evidence that water quality has not changed applies equally to airborne deposition and to discharges through the effluent outlet.

48. Article 60 of the Statute indicates with the utmost clarity that the only disputes covered *ratione materiae* are those relating "to the interpretation or application . . . of the Statute". It follows that air pollution extending beyond the river itself falls outside the Court's jurisdiction under Article 60.

VII. CARU WATER QUALITY STANDARDS HAVE NOT BEEN VIOLATED

49. Now let me turn to the proposition that CARU's water quality standards have not been violated. If we look at Botnia plant's impact on water quality in the River Uruguay, we are really looking at its lack of any impact — if we measure that by reference principally to the water quality standards established by CARU and Uruguay. As reported by EcoMetrix and DINAMA, we can see that the Botnia plant has had no effect on the river. DINAMA's monitoring plan for Botnia requires water quality monitoring for more than 60 parameters, at 16 representative stations along the river, both before and after the plant started up. Monitoring covered all seasons throughout

2008 and the first half of 2009, and, of course, it continues. It includes periods of low river flow and high river flow. It has resulted in the analysis of thousands of samples. You will see, I hope, on the screen — yes — the location of these monitoring stations, some of them upstream, some of them adjacent to, and some of them downstream from the plant.

50. The findings reported by EcoMetrix in its third report show very clearly that effluent from the Botnia plant has not resulted in any violation of applicable CARU water quality standards. DINAMA's findings confirm this conclusion, which was predicted with great accuracy, initially by DINAMA, and then by the Final Cumulative Impact Study carried out for the World Bank. The CIS study found that "*the mill discharge would have minimal effect on water quality within the Rio Uruguay under both average and extreme low flow conditions*"[52]. That has indeed turned out to be the case — and even Argentina's scientific report does not suggest otherwise, although you would not have learnt that from their counsel. Indeed in Argentina's Biogeochemical study, which measured what they called "standard water quality parameters" — they are their words — from November 2008 to April 2009 (p. 10), Argentina's report concludes that "All parameters [all parameters] show relative(ly) normal values for the River Uruguay" (p. 15). It is very strange when you read that and recall what the Court was told last week.

51. So, Argentina's own evidence thus confirms Uruguay's findings. For example, if you look at DINAMA's graph, it shows that levels of nitrogen throughout the river were lower in 2009 than in the baseline year and the plant's first year of operation[53]. Similarly, it is still impossible to detect dioxins and furans at the stations closest to the Botnia plant, or elsewhere[54].

52. One conclusion from all of the monitoring undertaken before the Botnia plant began operations is that phosphorous levels were too high. Unsurprisingly, this is still the case. However, it is important to realize that monitoring has determined that the levels of phosphorus in the river *have not increased*. DINAMA's most recent data confirms that phosphorous concentrations in the waters above and below the plant are highly variable, but the 2009 total phosphorus graph is very similar to previous years, including the baseline year before the plant

[52]Third EcoMetrix Report, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7, para. 4.5; emphasis added.

[53]DINAMA, July 2009, Water Quality Report, p. 17, Fig. 4.23.

[54]DINAMA, July 2009, Water Quality Report, p. 21, para. 4.1.11.5.

started to operate[55]. This is not at all what would be expected if the plant really had made any difference to water quality.

53. Now the third EcoMetrix Report independently comes to the same conclusion. With respect to phosphorus it says: "Total phosphorus levels are comparable to the baseline levels previously reported for the Río Uruguay . . . [and let me emphasize the next point, they say] *The present and past levels of total phosphorus are not attributed to the mill effluent discharge*."[56] But although neither Botnia nor Uruguay is the sole or even primary cause of the phosphorus in the river, Uruguay has made diligent efforts to reduce inputs of phosphorus and other nutrients from municipal wastewater, and from agricultural and other land-use activities.

54. As we said in the Rejoinder, and as was recommended by the final CIS and the IFC, the Botnia plant will soon start to treat the municipal wastewater of Fray Bentos[57]. According to the final CIS this "reduces the total loading of organics and nutrients, in particular phosphorus, to the Rio Uruguay"[58], and they go on to say it "*virtually off-sets the net loading of organics and nutrients from the Botnia mill . . .*"[59]. Phosphorous discharges in the immediate vicinity of the plant would thus be reduced by some 8.8 tons per year, or nearly three quarters of the plant's annual discharge predicted in the final CIS[60].

55. Secondly, Uruguay is also engaged in expanding and updating other municipal wastewater systems across Uruguay, including systems that discharge to the river[61]. For example, the planned wastewater treatment system in Salto will reduce phosphorous discharges to the Uruguay river by approximately 25 tons annually, or about twice the predicted discharge from the Botnia plant[62].

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[55]DINAMA, July 2009, Water Quality Report, p. 18, fig. 4.24.

[56]Third EcoMetrix Report, Uruguay's Submission of New Documents, 30 June 2009, Ann. S7, para. 4.2; emphasis added.

[57]See Agreement between OSE and Botnia Regarding Treatment of the Municipal Wastewater of Fray Bentos, 29 Apr. 2008, RU, Vol. III, Ann. R71.

[58]Final CIS, Ann. D, pp. D4.5-4.6, CMU, Vol. VIII, Ann. 176.

[59]*Ibid.*, p. D4.6; emphasis added.

[60]RU, para. 4.93. See also OSE, Discharge of Residual Liquids in the Uruguay River Basin, RU, Vol. II, Ann. R13; Final CIS, Ann. D, p. D4.6, CMU, Vol. VIII, Ann. 176.

[61]World Bank, Press Release, RU, Vol. III, Ann. R69.

[62]RU, paras. 4.93-4.95.

56. And finally, Uruguay is implementing a comprehensive conservation and control plan to reduce soil erosion and run-off containing phosphorus and other nutrient contributions from farming and livestock[63]. When fully implemented, all of these measures together should more than offset the discharge of phosphorus from the Botnia plant. It would, of course, be excellent if Argentina would join in co-ordinating measures of this kind under Article 36 of the Statute. But not only has Argentina not done so, but its own discharge of nutrients is a large part of the problem.

57. Argentina's complete failure to deal with these inputs into the river is probably the most glaring weakness in its case. Far from showing that the river is highly sensitive, it shows the contrary. After hearing from Argentina about the 1975 Statute creating a community of interest in the river, it may surprise Members of the Court to learn that only Uruguay regulates phosphorus[64]. Neither Argentina nor CARU has a water quality standard for phosphorus, or for the soluble reactive phosphorus about which its counsel held forth so eloquently last week.

58. If the river really is as sensitive as Argentina says, why has it not adopted a water quality standard for phosphorus in whatever form? Why has it not proposed that CARU should adopt one? Plainly, Uruguay could have no objection. Presumably there is no CARU water quality standard for any type of phosphorus because Argentina does not want one.

59. And why has Argentina not done much more to address these problems itself? To choose only one example: the evidence shows that Argentina's phosphorous inputs from the Gualeguaychú river represent a far greater proportion of the total phosphorous loading than inputs from the Botnia plant. Uruguay's experts have estimated that phosphorous loadings from the Gualeguaychú river watershed alone totalled some 350 tonnes per year[65]. This is more than 25 times the total amount of phosphorus contributed by the Botnia plant to the whole river[66]. It is also rather less than Argentina's own evidence. And Argentina has not challenged these calculations. It acknowledges, *Argentina* acknowledges in its pleadings, that the elevated level of

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[63]Ministry of Livestock, Agriculture and Fishing, "Campaign for Responsible Land Use", 16 Apr. 2009, Uruguay's Submission of New Documents, Ann. S1; Affidavit of Eng. Andrés Berterreche, Undersecretary of Livestock, Agriculture and Fishing of Uruguay, 11 July 2008, RU, Vol. IV, Ann. R95.

[64]RU, Decree 253/79.

[65]The conservative estimate for nitrogen is over 3,400 tonnes, RU, para. 6.28.

[66]Exponent Report, Sec. 4-2, RU, Vol. IV, Ann. R83.

phosphorus in the beach area at Ñandubaysal is most likely caused by its proximity to the mouth of the Gualeguaychú river[67], not surprisingly.

60. In failing to minimize these inputs Argentina is neither acting diligently to prevent pollution in accordance with the Statute nor equitably in its own use of the river as a shared resource. It complains about far lower inputs of nutrients from the Botnia mill, yet it appropriates a grossly inequitable share of the river's domestic, industrial and agricultural uses for its own effluents. In effect, what Argentina asserts is a servitude, intended to allow it to pollute the river indefinitely. It defends itself by claiming that existing Argentine uses of the river have priority over newer Uruguayan uses, or by attributing every pollutant in the river to the Botnia plant when this is plainly not the case.

VIII. THE RIVER'S ECOLOGICAL BALANCE AND ENVIRONMENT HAVE NOT BEEN HARMED

61. Let me then turn to the river's ecological balance, and I have not got a great deal more to say. Argentina made some specific claims last week about harmful effects on fish and rotifers. Mr. Reichler's speech will show the Court why these claims are not credible. All that I need say is that Uruguay's monitoring programme includes detailed assessments of the plant's effects on river fauna, and on the sediments where local fish species feed. Uruguay has not found any evidence of changes in the ecology of the river. On the contrary, its monitoring shows a river just as healthy as before the plant began to operate.

62. In August the Directorate for Aquatic Resources, otherwise known as "DINARA", publicly reported on the results of ichthyofauna monitoring carried out during the second year of operation of the Botnia plant[68]. This covered the stretch of river from kilometre 80 to kilometre 110 of the lower Uruguay river. The results were then compared with those reported in the baseline study and in the previous year. The purpose was obviously to evaluate the existence of possible changes in the short and medium term.

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[67]MA, para. 6.32.

[68]DINARA, Report on Ichthyofauna Monitoring in the Botnia Cellulose Plant Area, 2nd Year of Operation, 2009. Deposited with the Court.

63. DINARA's very comprehensive report — which has been given to the Court — concludes that compared to 2008 and 2009 there is no change in species biodiversity and the average length and average weight calculated for the four fishing stations showed no variations of importance.

64. DINAMA has also monitored the sediments where some fish species feed. I will simply quote from the text of its July 2009 report: "*The results of the monitoring of the sediments done in February 2009 . . . show once again that the quality of the sediments at the bottom of the Uruguay River has not been altered as a consequence of the industrial activity of the Botnia plant*"[69].

65. Uruguay was criticized last week for allegedly harming the Ramsar Convention wetland at Esteros de Farrapos. This site is wholly in Uruguay. Argentina's claim that the site has been damaged was supported only by a photograph allegedly showing the February algal bloom reached areas near the southern boundary. Mr. Reichler will show that the algal bloom originated not at the Botnia plant but much further upstream.

66. In my submission to the Court in 2006, I pointed out that Esteros de Farrapos was not included in the list of Ramsar sites whose ecological character is threatened — otherwise known as the "Montreux record"[70]. Nor has the position changed. As of last Tuesday 15 September 2009 when I did a Google search, Argentina had failed to secure a listing of the site on the Montreux record. This is not surprising — Argentina has no evidence of damage. It has produced no data to show that it took relevant samples at Esteros de Farrapos, or that it measured the flow of the river at this point. We do agree that under certain conditions the model shows the effluent plume could reach Esteros de Farrapos, which is some 16 km away from the plant. Regrettably this information was not available to me and I therefore could not make it available to the Court in 2006. But even if the effluent plume did reach Esteros de Farrapos, it would do so at the dilution of 1:1000 indicated on the slide that Professor Colombo so very helpfully showed the Court last week. One would expect effluent from the mill at a dilution of 1:1000 to be quite harmless and below any concentration capable of constituting pollution.

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[69]DINAMA, Follow-Up Plan Cellulose Plant at Fray Bentos Surface Water and Sediment Quality Data Report (Semester January-June 2009), p. 29, para. 5.2; emphasis added.

[70]www.ramsar.org

IX. CONCLUSIONS

67. Mr. President, and Members of the Court, that, happily, brings me to my conclusions. All of the studies undertaken prior to Uruguay's decision to authorize the operation of the plant concluded that there was no risk of significant harm to Argentina, no risk of pollution of the river, no likelihood of significant changes to the river's ecological balance. Uruguay took full account of these studies and of Argentina's representations before approving the plant. The evidence provided by independent monitoring reports, and by DINAMA, since the plant started to operate, confirms the accuracy of all of these predictions. And specifically, if I may summarize for the Court, what the evidence that we have put before the Court shows is the following, and I have got seven conclusions:

1. There has been no change in water quality when the pre- and post-operational data are compared — no change.
2. Phosphorous and nitrogen levels in the river have not changed since the plant began to operate — no change.
3. Levels of persistent organic pollutants, including dioxins and furans, have not changed since the plant began to operate — no change.
4. Effluent discharges from Botnia are below the levels specified in all of the applicable discharge regulations and permits, and Argentina has not argued otherwise.
5. Effluent discharges from the mill have not resulted in the river's water quality falling below the applicable standards set by CARU and agreed by both States, and Argentina has not argued otherwise.
6. The plant's effluent discharges have not caused any alteration in the ecological balance of the river or harmed the aquatic environment.
7. And finally, cumulatively, these conclusions point inescapably to the further conclusion that effluent discharges from the Botnia plant have not caused harmful pollution in violation of the 1975 Statute of the River Uruguay, and I will return to that point on Wednesday.

68. Mr. Reichler will now show the Court that Argentina's evidence leads to exactly the same conclusions — that Argentina's evidence leads to exactly the same conclusion.

Mr. President, this may be a convenient time for a coffee break. And Mr. President, Members of the Court, that concludes my speech this morning.

The VICE-PRESIDENT, Acting President: Indeed, it is a good moment to take our coffee break. I thank you, Professor Boyle, for your presentation, and I suspend the sitting for 15 minutes.

The Court adjourned from 11.15 to 11.30 a.m.

The VICE-PRESIDENT, Acting President: Please be seated. The hearing is resumed, and Mr. Reichler, you have the floor.

Mr. REICHLER:

THE PERFORMANCE OF THE PLANT: ARGENTINA'S EVIDENCE (PART I)

1. Mr. President, Members of the Court, as always for me it is a special honour to appear before you, and I am especially privileged today to speak on behalf of Uruguay.

2. I will address you today, and also tomorrow, on the evidence concerning the environmental issues in this case. In particular, I will review with you the evidence that has been presented by Argentina, and I will demonstrate to you that it fails to support Argentina's case.

3. In fact, the failure of Argentina's evidence is dramatic. As you heard last week, the applicant State invested more that two years in producing its Scientific and Technical Study, which was presented to the Court only on 30 June of this year. According to Argentina, more than 90 people, at all levels, were involved in this effort, which was performed by the science departments at two Argentine universities, under contract to the Argentine Government[71]. It appears that no expense was spared. Nonetheless, as you will see, the data collected as part of this massive study do not support the claims you heard last week.

4. In fact, and this is quite remarkable given the size, the breadth, the cost and the purpose of Argentina's scientific study, the data collected by Argentina fully support Uruguay's claims:

(i) that the Botnia plant has *not* affected the water quality of the Uruguay river;

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[71]New Documents Submitted by Argentina, Vol. I, Scientific and Technical Report (hereafter "Argentina Scientific and Technical Report"), 30 June 2009, Executive Summary, p. 1.

(ii) that the plant has *not* increased the concentrations of phosphorus, or nitrogen, or any other substances in the river;

(iii) that the plant did *not* cause — indeed, based on Argentina's own data from its *own* study, the plant could *not* have caused the algal bloom of 4 February 2009;

(iv) that the plant has *not* affected the biodiversity of the river or its ecosystem;

(v) that it has *not* harmed aquatic organisms such as clams or rotifers;

(vi) that it has *not* harmed fish;

(vii) that it has *not* introduced nonylphenols into the river; and

(viii) that it has *not* introduced dioxins or furans into the river.

5. For four days last week, we sat through an artful presentation by Argentina's very able counsel. The picture they painted of the Botnia plant was horrible — in two different senses of the word. They portrayed the plant as a horrible environmental nightmare. But the picture painted by Argentina was horrible in another sense. It was a horrible likeness. In the end, Mr. President, as you and the distinguished Members of the Court will see, the picture of the plant painted by Argentina's counsel was no Vermeer. It was not Dutch realism. It was the surrealism of Salvador Dalí.

6. Mr. President, in the course of the days that follow, Uruguay will give you the facts — facts, not as we choose to portray them, but as they are. You will see that the evidence before the Court, especially including Argentina's own Scientific and Technical Study, does not sustain Argentina's case. Botnia has not caused any harm to the river, to its water quality, or to any aspect of the aquatic environment; nor is there any evidence that it is likely to do so in the future. In fact, you will see that the Botnia plant is performing far better, and to far higher environmental standards, than even the IFC and its independent experts predicted it would.

7. Mr. President, I must begin by asking your indulgence because, contrary to my desire, the use of technical and scientific terms is unavoidable. Mindful of the numbing effects an abundance of technical words and numbers can have on even the most patient listener, I will try to keep both the scientific language and the mathematics within manageable limits, and I will rely heavily on visuals — maps, satellite photos and charts — to ease the Court's task in absorbing a considerable amount of complex, but highly relevant, information.

I. REVERSE FLOW

8. Mr. President, Members of the Court, we heard a lot from Argentina last week about the reverse flow of the Uruguay river. We heard from Argentina's experts and counsel that the Uruguay river flows in reverse, that is, it flows upstream, quite frequently. In fact, many rivers do. Reverse flow in tidal estuaries is a common phenomenon, and quite a number of the others are also sites for pulp mills, as Mr. McCubbin will discuss tomorrow. There is nothing new, or surprising, at least to Uruguay, about the hydrodynamics of the Uruguay river, including the frequency of its reverse flow. Uruguay, and DINAMA in particular, have been familiar with this since long before Botnia first arrived in the country.

9. Last Monday, Professor Sands displayed a chart, which I will have more to say about later in my speech. His chart purported to show the frequency of the river's reverse flow, which he told us occurred with some significance on 23 per cent of the days of the year[72].

10. Professor Sands and his colleagues told us, many times, that this is one of the most important — if not *the* most important — aspects of Argentina's case, because, according to them, the reverse flow of the river prevents the Botnia plant's effluents from washing away downstream. Instead, according to Argentina's counsel, effluents such as phosphorus and nitrogen accumulate in the part of the river adjacent to the plant, until they reach concentration levels harmful to water quality and biodiversity[73].

11. According to Argentina, Uruguay's biggest sin is that it neglected to take the river's reverse flow into account in deciding to authorize the Botnia plant. I will not refer here to all the times we heard this last week, but there were at least 13 such occasions[74], all cited in the footnotes to my speech that will appear in the compte rendu. This is a central theme of their case: that Uruguay failed to take the river's reverse flow into account when it authorized the plant, either because of DINAMA's sheer incompetence or because, as Professor Kohen unkindly put it, Uruguay bent its knee before Botnia[75].

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[72]CR 2009/12, pp. 41-42, paras. 12-13.

[73]For example, CR 2009/12, pp. 38-39, paras. 7-9.

[74]CR 2009/12, p. 38, para. 8; p. 39, para. 9; p. 39, para. 9; p. 41, para. 13 ; p. 47, para. 22 ; p. 51, para. 32; p. 53, para. 36; CR 2009/14, p. 52, para. 29 (Colombo); CR 2009/14, p. 57, para. 7 (Sands); p. 60, para. 11; p. 60, para. 12; CR 2009/15, p. 13, para.6 (Sands).

[75]See CR 2009/13, p. 25, para. 35 (Kohen).

12. We heard further, that Uruguay did things backwards: first they authorized, then they assessed. Even when Uruguay finally got around to assessing, Professor Sands said, Uruguay got it wrong, because they erroneously assumed that the river only flowed in reverse on rare occasions, and seriously underestimated the frequency of this occurrence[76].

13. Mr. President, Members of the Court, I am afraid that it is my good friends on the other side who got it wrong. To be sure, Argentina's counsel are all extremely forceful, articulate and effective advocates, and well versed in the law, as they all demonstrated last week. But, and especially in light of the deep regard I have for all of them, it is with considerable regret that I say this: they do not know the evidence. They do not know the evidence in this case.

14. The evidence, the evidence that has been before the Court as part of the record of these proceedings for years, the same evidence that was presented by Uruguay to Argentina within the GTAN negotiations that took place between August 2005 and January 2006, before construction of the plant was authorized, this evidence establishes the following six facts:

1. Uruguay thoroughly and painstakingly and correctly assessed the river flow, and especially the tendency of the river to flow in reverse, long before it authorized construction of the Botnia plant[77]. The citations to the record will be reflected, for all of these points, in the footnotes to my speech appearing in the compte rendu.
2. Uruguay studiously assessed flow patterns across a wide swathe of the river, not just at a single point like Argentina, to obtain a truer picture of flow volume and velocity, as well as direction, and to more accurately predict how quickly, and to where, Botnia's effluent would disperse[78].
3. Uruguay used a well-known water quality numerical model for determining effluent dispersion, and displayed the results in a simulated animation video like the one Argentina presented in Court last week. Based on its flow analyses, Uruguay determined that, for purposes of

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[76]CR 2009/12, p. 42, para. 13 (Sands).

[77]DINAMA Environmental Impact Assessment Report for the Botnia Plant (11 Feb. 2005), CMU, Vol. II, Ann. 20 (hereafter "DINAMA EIA Report"), paras. 1 and 4.1; Additional Reports 5 of the Botnia Environmental Impact Assessment, Ann. VIII, Studies of Plume Dispersion and Sediment Studies (12 Nov. 2004), CMU, Vol. VII, Ann. 164 (hereafter "Botnia Hydrodynamic Study"); Analysis of the Fluid Emissions Derived from the Botnia and M'Bopicuá Pulp Mills, prepared by Chemical Engineer Cyro Croce, Hydr. and Environmental Engineer Eugenio Lorenzo, DINAMA (7 Nov. 2005) (GTAN/DU/24/07-11-05), CMU, Vol. V, Ann. 143 (hereafter "DINAMA Hydrodynamics Presentation at GTAN"); Hydrologic Analysis for the Proposed Botnia Cellulose Plant on the Uruguay River, Dr. J. Craig Swanson and Dr. Eduardo A. Yassuda (Applied Science Associates, Inc.) (June 2007), RU, Ann. 214, pp. 6-9.

[78]*Ibid.*

calculating the amount of effluent that the river could safely accept without harming water quality or aquatic species, it should take an extremely conservative approach and presume that the river flows in reverse 29 per cent of the time. That is, Uruguay presumed, in its consideration of the Botnia project, that the river flows in reverse even more frequently than Argentina says[79].

4. Uruguay concluded, based on this extremely conservative presumption, and other equally cautious presumptions about the volume and velocity of the flow, as well as its direction, that the Botnia effluents would dilute and disperse long before reaching concentration levels that pose any risk of harm to water quality, or aquatic species, including fish[80].

5. Based on these conclusions, and only after they were presented to Argentina, and explained to Argentina, and subsequently confirmed, Uruguay authorized the construction of the plant in January 2006. Actual operation of the plant was not authorized for another 22 months, until November 2007, after the IFC and its independent experts confirmed the validity of the conclusions that Uruguay had reached[81].

6. Uruguay's assessments of river flow, including reverse flow — including calculations, conclusions, and the model itself, both in the form of slides and a simulated animation video — were provided to Argentina during the GTAN process, and discussed thoroughly with Argentina, in 2005[82]. We have the documents, in the record of this case, to prove all of this.

15. Argentina's counsel told you last Wednesday that they could find only one document — one document — in the entire record of this case that reflected Uruguay's awareness of the reverse flow issue, and they flashed on the screen a single piece of paper prepared by Botnia in

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[79] *Ibid*; DINAMA Remarks on the Argentine Government Report on the Problem of Phosphorous, Ann. 43 (May 2008), RU, Vol. II, Ann. R11, p. 2. See also CR 2009/12, p. 41, para. 13 (Sands).

[80] DINAMA EIA Report, paras. 1 and 4.1; Botnia Hydrodynamic Study; DINAMA Hydrodynamics Presentation at GTAN; DINAMA Remarks on the Argentine Government Report on the Problem of Phosphorous, Ann. 43 (May 2008), RU, Vol. II, Ann. R11, p. 2.

[81] DINAMA EIA Report, paras. 1 and 4.1; First Report of the Uruguayan Delegation to the GTAN (31 Jan. 2006), CMU, Vol. V, Ann. 154, p. B2 (note regarding GTAN/DU/12/14-09-05 provided to Argentine delegation: "CD containing effluent dispersion model of the Botnia company"); DINAMA Hydrodynamics Presentation at GTAN; RU, para. 6.62.

[82] First Report of the Uruguayan Delegation to the GTAN (31 Jan. 2006), CMU, Vol. V, Ann. 154, p. B2 (note regarding GTAN/DU/12/14-09-05 provided to Argentine delegation: "CD containing effluent dispersion model of the Botnia company"); DINAMA Hydrodynamics Presentation at GTAN. See also, First Report of the Uruguayan Delegation to the GTAN (31 Jan. 2006), CMU, Vol. V, Ann. 154, p. B3 (note regarding GTAN/DU/24/07-11-05); Final Report of the Argentine Delegation to the GTAN (3 Feb. 2006), RA, Vol. IV, Ann. 1, p. 9 (quoting Botnia's "Studies of Plume Dispersion and Sediment Studies" that flow reversals are "frequent in the area").

December 2003 purporting to record flow direction on a single date during that month. This is all there is in the entire record of this case, Argentina's counsel assured you[83]. Well, they must not have looked at the record very diligently, if they looked at all.

16. Had Argentina's counsel *really* searched the record of this case, here are some of the documents they would have found. I say "some" because I am sure the Court would not be happy to have me spend the rest of my speech describing everything there is in the record of this case evidencing each of the six points about Uruguay's reverse flow analyses that I just emphasized — *all of which* was provided by Uruguay to Argentina during the GTAN consultations before this case began. [Slide 1.] This is at tab 5 of your judges' folder. As you can see from this list and the charts that follow it at tab 5, Uruguay gave Argentina an extensive number of documents containing its hydrodynamic studies of the river, including its studies of the frequency of reverse flows. Just by way of example, let us look at the third of these documents listed on the screen. [Slide 2.] These are some of the slides from the animated simulation of the model Uruguay used to assess reverse flow, and to explain its assessment to Argentina. They are at tab 6 of the folder. The actual simulation was presented to Argentina electronically on 14 September 2005[84]. On 7 November 2005, Uruguay showed and explained the simulation to Argentina as part of a slide presentation during the GTAN negotiations between the two States[85]. That this is a simulation is indicated by the little clock icon in the lower left. [Slide 2 *(a)*.] You can see from some of the slides that Uruguay modelled the effluent flow from three discharge points, including the Botnia plant, the ENCE plant — which was then contemplated — and the Fray Bentos municipal sewage discharge. [Slide 2 *(b)*.] You can also see that Uruguay's model showed the reverse flow extending for some distance upstream beyond the Botnia plant.

17. Mr. President, as you can see from these slides, there is some similarity between the model Uruguay gave to Argentina in November 2005 and the one Argentina displayed in Court last

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[83]CR 2009/14, pp. 60-61, para. 12 (Sands).

[84]First Report of the Uruguayan Delegation to the GTAN (31 Jan. 2006), CMU, Vol. V, Ann. 154, p. B2 (note regarding GTAN/DU/12/14-09-05 provided to Argentine delegation: "CD containing effluent dispersion model of the Botnia company"), CMU, Vol. V, Ann. 143. See also, RA, Vol. IV, Ann. 2, Ann. B, p. 101 (same).

[85]DINAMA Hydrodynamcis Presentation at GTAN; First Report of the Uruguayan Delegation to the GTAN (31 Jan. 2006), CMU, Vol. V, Ann. 154, p. B3 (note regarding GTAN/DU/24/07-11-05). See also, RA, Vol. IV, Ann. 2, Ann. B, p. 102 (same).

week, except that the Uruguay model was more conservative, assuming a 29 per cent reverse flow rate, as compared to Argentina's 23 per cent. Slides that were also presented to Argentina in November 2005, and which provide the underlying, complex, hydrodynamic and mathematical analyses, from which Uruguay's 29 per cent flow rate assumption was derived, are also included at tab 6 of your judges' folder. And they can be found at Annex 143 to Uruguay's Counter-Memorial.

18. It would seem then, Mr. President, that Argentina has no ground to complain about Uruguay's assessment of flow reversal. Uruguay assumed in 2005 an even more conservative, worst-case, 29 per cent reverse flow rate that was more cautionary than the 23 per cent rate Argentina advocated last week. Argentina's vehemence on this point is all the more difficult to understand in view of the evidence showing that Uruguay presented, and explained, all of this to Argentina in the GTAN process, between September and November 2005[86]. [Slide 12 *(c)*.] This excerpt is from Annex R-11 of the Rejoinder, at page 2. For context, the entire page of this DINAMA document is in the folder; it is at tab 6. The entire document is in Volume II of the Rejoinder. The language on the screen is a direct response to Argentina's previous report favouring a 23 per cent flow reversal rate. In view of the statements last week by Argentina's counsel and its experts, it is worth reading aloud:

> "However, what the authors [that is, the Argentine authors] appear to neglect is that the models used in both the Botnia study and the Ecometrix study assume a particularly critical scenario that includes flow reversal events more demanding than those discovered by the AGR [Argentine Government Report]. In particular, the Botnia study assumes that flow reversal events occur 29.23% of the time . . . "

And then it states that this is a datum that is implicit in the calculations presented in the GTAN documents, at tab 6, given by Uruguay to Argentina on 30 September 2005[87].

19. Professor Sands told the Court on Wednesday, in the emphatic conclusion of his speech, that "Uruguay had introduced no evidence on river flow"[88]. In fact, collectively all of Argentina's advocates told you last week, not once, but 13 times, that Uruguay never assessed the tendency of the river to flow in reverse, or the frequency with which this occurs, before authorizing

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[86] *Ibid.*

[87] DINAMA Remarks on the Argentine Government Report on the Problem of Phosphorous, Ann. 43 (May 2008), RU, Vol. II, Ann. R11, p. 2

[88] CR 2009/14, p. 65, para. 18.

construction of the plant, and Uruguay never shared any assessment or consulted with Argentina about it. In telling you this, they did prove one thing very clearly: they do not know the evidence.

20. Yet they continued to insist that Uruguay got it wrong; that when Uruguay finally and belatedly got around to thinking about reverse flow, which, according to them, was not during the GTAN negotiations but after construction of the plant was authorized, Uruguay badly underestimated how frequently reverse flows occur. According to Professor Sands, Uruguay dismissed this as a "rare" event[89]. But, as we have seen from the evidence, Uruguay presumed that the river flows in reverse substantially more frequently than Argentina did, by 29 per cent to 23 per cent of the time. It is unfortunate, but they just do not know the evidence.

21. The question remains, however, whether Uruguay and DINAMA got it right. Was their flow reversal presumption conservative enough to assure that the Botnia plant would not pollute the river? As Argentina's experts explained — and we do agree with them on this point — the answer to this question lies in the water chemistry of the river. Reverse flows, at whatever frequency, are not harmful in themselves. They are harmful only if they prevent the Botnia effluent from dispersing down the river, and if they cause it instead to accumulate and rise to harmful concentration levels.

22. So, to determine whether Uruguay and DINAMA got it right, we have to look at the water chemistry, and especially at the concentrations in the water of the particular elements that Argentina singled out last week — phosphorus and nitrogen — especially in the part of the river allegedly influenced by the Botnia plant, and we have to determine whether the plant has caused the concentration levels of these elements to increase, and if so, whether the concentrations are now, or likely to be, harmful — to the river, to its water, to aquatic life.

II. WATER CHEMISTRY

23. Mr. President, Members of the Court, the evidence demonstrates that the Botnia plant has had no impact on the concentration levels of phosphorus or nitrogen in the Uruguay river. I said: no impact. Yes, the Botnia plant discharges what has been made to sound like a lot of phosphorus and nitrogen into the river. Our colleagues on the other side were quite pleased to give you the

[89]For example, CR 2009/12, p. 39, para. 10.

annual tonnages, and they did so repeatedly. We take no exception to that. The data on which they rely come from DINAMA. However, the evidence shows that all of the phosphorus and nitrogen discharged by the plant — all of the phosphorus and nitrogen discharged by the plant — is quickly dispersed and washed away by the river, ultimately into the Atlantic Ocean. None of it is accumulating or causing the concentration levels in the river to increase. This conclusion is fully established by the repeated tests of water chemistry — and particularly the tests of phosphorous and nitrogen concentrations — performed by both Parties.

24. Mr. President, the evidence — *all* the evidence — shows that the water chemistry at and near the Botnia plant is unchanged. It has not changed since the plant began to operate nearly two years ago. It is the same as or better than the water chemistry elsewhere in the river. The evidence shows that concentration levels of phosphorus and nitrogen at or near the Botnia plant have not changed since the plant started up, and that they are the same as, or lower than, they are in other parts of the river. This can only mean that these effluents have been properly diluted, dispersed and washed away into the sea.

25. Now, as my colleague Professor Boyle has already told the Court, the evidence submitted by Uruguay, based on the comprehensive monitoring programme conducted by DINAMA, and the expert reports of the IFC's independent consultants, show that the Botnia plant has *not* increased concentration levels of phosphorus or nitrogen in the river[90]. Since Professor Boyle has already discussed this evidence, I will make only a few passing references to it in the course of my speech today. Instead, I will focus on Argentina's evidence. What may surprise the Court, especially in light of what you heard from Argentina's counsel last week, is that Argentina's own evidence — Argentina's own evidence — demonstrates conclusively that the Botnia plant has not altered the concentrations of phosphorus or nitrogen in the Uruguay river. Let me be more specific. Argentina's own Scientific and Technical Study — the one that measured the impacts of the Botnia plant from November 2007 to April 2009; the 600-page document that they filed with the Court on

[90]Uruguay's Submission of New Documents (30 June 2009), Ann. S2, DINAMA Performance Report for the First Year of Operation of the Botnia Plant and the Environmental Quality of the Area of Influence (May 2009), App. I, para. 4.1; Ann. S7, EcoMetrix Environmental Performance Review: 2008 Monitoring Year, Mar. 2009, p. ES.iii ("the water quality of the Río Uruguay has not changed as a result of the mill") and paras. 4.2-4.4. See also DINAMA July 2009 Water Quality Report, Spanish original available via a link entitled "Informe Agua Semestre Ene-Jun 2009" at http://www.mvotma.gub.uy/dinama/index.php?option=com_docman&Itemid=312. Translation submitted to the Court on 14 Sep. 2005.

30 June of this year; the one produced by the team led by Dr. Colombo; the principal piece of evidence Argentina has submitted on the actual performance of the plant — *that* Scientific and Technical Study — shows that the Botnia plant has *not* added to the concentration levels of phosphorus or nitrogen in the river.

26. Why is this evidence so important? Argentina's counsel told us why last week. According to them, it was the discharge of phosphorus and nitrogen by the Botnia plant, coupled with the reverse flow of the river on the days leading up to 4 February 2009 that produced accumulation and increased concentration levels of phosphorus and nitrogen to such an extent in front of the plant that an algal bloom occurred on that date. They repeated this charge several times: they insisted that the emission of phosphorus especially, from the Botnia plant, caused the algal bloom of 4 February 2009[91].

27. But the evidence does not support this conclusion. Even more to the point, Argentina's own evidence does not support it. In fact, Argentina's evidence thoroughly disproves Argentina's own argument about the emission of phosphorus and the cause of the algal bloom.

III. PHOSPHORUS

28. Let us look at phosphorus. Argentina's Scientific and Technical Study presents the results of two separate analyses of phosphorous concentrations in the river. One is presented in Chapter 4 of the Study, which addresses the "Extraordinary algal bloom of 4 February 2009"[92]. The other is presented in Chapter 3, which is entitled "Biogeochemical Studies". Chapter 4 of Argentina's Study shows that the Botnia plant does not alter the phosphorous levels of the Uruguay river. The study measured total phosphorous levels at nine different sites — two upstream, three in proximity to the Botnia plant, two in Argentina's Ñandubaysal Bay, and two farther downstream —, all at five different periods: in May, July, September, November 2008, and in January 2009 — the last one on the eve of the algal bloom of 4 February[93]. The conclusion of the Study is expressed at page 75 of Chapter 4, and can be found at tab 8 of the folder and on the

[91]For example, CR 2009/12, pp. 42 and 47, paras. 14 and 22 (Sands); CR 2009/14, pp. 6 and 62-64, paras. 6, 15 and 17 (Sands); CR 2009/14, p. 45, para. 45 (Colombo).

[92]Argentina Scientific and Technical Report, Chap. 4, pp. 3 and 115.

[93]*Ibid.*, Chap. 4, p. 63.

screen. [Slide 4.] "In general, similar mean values were observed in all zones along the study period. The maximum mean value was registered during May 2008 . . . upstream."[94] The same page of the Argentine Study has a chart supporting this conclusion, which is reproduced at tab 9. It is on the screen now. [Slide 5.] It shows the levels of phosphorus found at each site at each of the five times when tests were conducted. As the Court can see from this chart, phosphorous levels in the so-called area of "Botnia influence" are the same as or below those upstream, downstream and in Argentina's Ñandubaysal Bay.

29. This is easier to see if we look at the testing dates separately. Let us look at the first and the last of these, by way of example. [Slide 5 *(a)*.] Here are the graphic depictions of Argentina's test results for May 2008, when the testing began. As you can see, the highest concentration level at the time was at one of the upstream control sites, outside Botnia's alleged zone of influence. Equally apparent is that the test results at all three sites within the so-called Botnia influence zone — this is Argentina's terminology, it is their chart — show lower phosphorous levels than at the three sites in Ñandubaysal Bay, in Argentina. This is particularly interesting because, throughout its Scientific and Technical Study, Argentina repeatedly states that these sites in the Bay are in "an environment that is relatively detached from the river"[95], and "not tied to the river's natural and human-derived short-term variations"[96]. In this way, Argentina established these test sites in the Bay as control sites, not influenced by the effluents from the Botnia plant.

30. Let us now look at the test results for January 2009, shortly before the algal bloom of 4 February. [Slide 5 *(b)*.] Here we can see that, at this critical date, phosphorous levels at all three sites allegedly influenced by Botnia were below the levels at both of the upstream control sites, and equal to or below the levels at the two sites in Argentina's Ñandubaysal Bay, which again, is

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[94] *Ibid*., Chap. 4, p. 75.

[95] Argentina Scientific and Technical Report, Chap. 3.2, para. 4.1.2 (arguing that Argentina's scientists were able "to clearly set the bay apart, as it acts as an ecosystem that is relatively detached from the Uruguay river" and that the data "shows that the bay is an environment that is detached from the short term fluctuations of the river"), para. 4.3.1.2 (pointing to data that "reinforces the interpretation that the bay is an environment that is relatively detached from the river").

[96] *Ibid.*, Chap. 3.2, para. 1 (concluding that the Bay "is apparently not tied to the river's natural and human-derived short-term variations").

outside Botnia's "zone of influence". I remind the Court that these are all data produced and presented by Argentina in its submission of 30 June 2009[97].

31. What makes these results especially impressive is that this was hardly an unbiased test. To the contrary, it might even have been designed so that the Botnia plant would fail. This is suggested by the test sites selected by Argentina, as shown at tab 10 on this slide. [Slide 6.] Of the three test sites nearest to the plant that Argentina selected, one is opposite the town of Fray Bentos and very close to the point where its sewage is discharged into the river, and another is slightly downstream from the Fray Bentos sewage discharge point, where it is also impacted by the sewage and industrial effluent flowing from the Argentine city of Gualeguaychú and its industrial park, which come down the Gualeguaychú river into and through Ñandubaysal Bay[98]. In other words, two of the three test sites in the so-called "Botnia influence" zone were actually placed by Argentina's scientists directly in the pathway of all the human and industrial waste flushed or dumped into the river by more than 100,000 Argentines and Uruguayans totally unconnected to the Botnia plant[99]. Nevertheless, and in spite of these biases, the test sites in the supposed "Botnia influence" zone passed Argentina's test. Even Argentina's own scientists are forced to admit that there is no detectable contribution to phosphorous concentration levels by the plant: "Similar mean values were observed in all zones during the study period."[100]

32. The study reflected in Chapter 4 tested for total phosphorus. It did not test for soluble reactive phosphorus[101]. The Court may recall what Professor Sands said about this last Wednesday. He told the Court that DINAMA's monitoring of phosphorous effluents is insufficient, because it covers only total phosphorus and does not measure for soluble reactive phosphorus. He told the Court that the only proper way to measure for phosphorus is to look at soluble reactive phosphorus, or SRP, since this is the kind of phosphorus, he said, that stimulates algal growth and contributes to algal blooms. He even publicly thanked one of Argentina's

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[97] *Ibid.*, Chap. 4, p. 75.

[98] Argentina Scientific and Technical Report, Chap. 4, pp. 64-65, Fig. 28 and Table VI; CMU, para. 4.42; RU, para. 5.38.

[99] See CMU, para. 4.42; RU, para. 1.33.

[100] Argentina Scientific and Technical Report, Chap. 4, p. 75.

[101] *Ibid.*

experts, Dr. McIntyre, for pointing this out to him[102]. Strange then, that Argentina's own study, which states that it is addressed to the "extraordinary algal bloom of 4 February 2009,"[103] makes no mention of, and provides no data on, soluble reactive phosphorus.

33. Fortunately, SRP, as it is called, is covered in the other Argentine study of phosphorus, in Chapter 3 of the Scientific and Technical Study, and we are glad that it is. Chapter 3 is especially interesting because it was authored by Dr. Colombo himself. Now, Dr. Colombo's findings on phosphorus differ from those reported in Chapter 4. Where the scientists who authored Chapter 4 found that "similar mean values were observed in all zones along the study period"[104], Dr. Colombo found that "phosphorus nutrients have more contrasting differences between the stations"[105]. However, Dr. Colombo did *not* find that phosphorus was higher at any of the test sites allegedly influenced by the Botnia plant. [Slide 7.] To the contrary, here is what he wrote, which you can also find at tab 11: "Both SRP and TP [that is, both soluble reactive phosphorus and total phosphorus] are higher in Bellaco Bay . . . and to a lesser extent in Ines Lagoon."[106] Both of these sites, where phosphorus was found to be higher during the study period, are in Argentina's Ñandubaysal Bay. What is particularly significant about this finding, as I said previously, is Argentina's repeated acknowledgment, at several different points in the Scientific and Technical Study, that Ñandubaysal Bay and Inés Lagoon are in a relatively detached ecosystem, which are unaffected by effluents from the Botnia plant[107]. So Dr. Colombo's own findings are that concentration levels of both SRP and TP are higher in areas of the river unaffected by the Botnia plant, than they are in the areas that allegedly *are* affected by it, and that the highest levels of all are in Argentina's own Ñandubaysal Bay.

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[102]CR 2009/14, p. 63, para. 15 (Sands).

[103]Argentina Scientific and Technical Report, Chap. 4, pp. 3 and 115.

[104]*Ibid.,* Chap. 4, p. 75.

[105]*ibid.,* Chap. 3.1, p. 24.

[106]*Ibid.,* Chap. 3.1, p. 24.

[107]Argentina Scientific and Technical Report, Chap. 3.2, para. 4.1.2 (arguing that Argentina's scientists were able "to clearly set the bay apart, as it acts as an ecosystem that is relatively detached from the Uruguay river" and that the data "shows that the bay is an environment that is detached from the short term fluctuations of the river"), para. 4.3.1.2 (pointing to data that "reinforces the interpretation that the bay is an environment that is relatively detached from the river") and para. 1 (arguing that the Bay "is apparently not tied to the river's natural and human-derived short-term variations").

34. Now, as I said, Dr. Colombo tested for soluble reactive phosphorus as well as total phosphorus, so Professor Sands should be happy about that. He is likely to be less happy, however, about Dr. Colombo's actual findings. At this point, it is worth recalling what Professor Sands said about SRP and the Botnia plant. He told the Court on Wednesday that the Botnia plant was responsible for a huge increase, a huge increase in SRP concentration in the areas of the river influenced by the plant, and that this, in turn, resulted in the algal bloom of 4 February[108].

35. With Professor Sands's statements to the Court in mind, let us have a look at what Dr. Colombo actually found in regard to concentration levels of SRP. In Dr. Colombo's study, SRP is measured at each of seven different testing sites — three in what Argentina calls the plant's area of influence, and four outside it. One of these four control sites is upstream from the plant, and three are in Argentina's Ñandubaysal Bay, including the Inés Lagoon[109]. Measurements were made between 24 November 2007, just after the plant started operating, and 17 April 2009[110]. There are no baseline data, or at least none are presented. All the measurements presented by Dr. Colombo were taken after the plant began to operate. So it is impossible for him to compare post-operational levels of phosphorus or SRP with pre-operational levels at any of the chosen sites. This of course is a major weakness in his study. Another problem involves the choice of testing sites, shown at tab 12. [Slide 8.] Two of the three sites that Argentina considers to be within the "Botnia zone of influence," shown in this graphic are U3, perfectly placed directly across from the Fray Bentos sewage disposal pipes, and U4, slightly downstream, where it receives the sewage and industrial effluent from Gualeguaychú, as well as Fray Bentos[111].

36. In case the Court thinks I am going into such detail about the deliberate biases against the Botnia plant that were built into Dr. Colombo's methodology, in order to excuse or explain statistics showing high levels of SRP emanating from the plant, I hasten to assure you that there are no such data. [Slide 9.] This can be seen from Dr. Colombo's chart, presented at page 26 of Chapter 3, which is available to you at tab 13.

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[108]CR 2009/14, p. 63, para. 15 (Sands).

[109]Argentina Scientific and Technical Report, Chap. 3.1, pp. 7-8, table 1 and fig. 1.

[110]*Ibid.,* Chap. 3.1, p. 30, tab. 7 and Chap. 3.2, para. 3.2.3, table 7.

[111]*Ibid.,* Chap. 3.1, pp. 7-8, tab. 1 and fig. 1.

37. Now I must confess, Mr. President, that the first time I looked at this chart all I could think, was how glad I am it is not my electrocardiogram. SRP levels, as measured by Dr. Colombo, are virtually flatlined — extremely consistent and very low at all seven test sites, for the entire 18-month period of the study, with only one exception, which occurred on 18 March 2009 — six weeks *after* the algal bloom on 4 February.

38. Apropos of that algal bloom, the Court will note that, according to this chart, during the period leading up to and surrounding 4 February, there was no notable increase in SRP levels at the sites representing the Botnia plant. In fact, if you examine the underlying data on which Dr. Colombo's chart is based, as we did, you will see that on the testing dates surrounding the 4 February algal bloom, SRP levels at the so-called Botnia-influenced sites were *always* significantly below those in Argentina's Ñandubaysal Bay[112]. For example, on 14 January 2009, the last testing date for SRP before the algal bloom, the average SRP level at the three so-called Botnia sites was 14.7 micrograms per litre; while the average SRP level at the Ñandubaysal Bay sites was 54.5, almost four times higher[113].

39. So what does Dr. Colombo's study of SRP tell us? It tells us four things. First, SRP levels are *higher* in the parts of the river that are *not* influenced by Botnia than they are in the areas allegedly influenced by it. Second, SRP levels at the so-called Botnia sites were consistently *low* during the entire test period, which covered the first 18 months of the plant's operation. Third, there was *no* increase in SRP, let alone the extraordinary increase mentioned by Professor Sands, at or near the Botnia plant prior to the 4 February algal bloom. Fourth, there is no evidence of a *causal link* between SRP emissions from the Botnia plant and the 4 February algal bloom.

40. And it tells us again: my good friends on Argentina's team simply do not know the evidence. In regard to SRP, it would appear that they do not even know their *own* evidence. This is particularly troubling in light of the emphasis they placed on phosphorus emissions, and especially SRP emissions, from the Botnia plant, and their alleged influence on water chemistry, water quality and algal blooms.

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[112] Argentina Scientific and Technical Report, Chap. 3.1, pp. 26 and 30, fig. 10 and table 7.

[113] *Ibid.,* Chap. 3.1, p. 30, table 7.

41. On Thursday, Dr. Wheater told the Court that SRP levels at the Botnia site had "doubled" prior to the 4 February 2009 algal bloom, and that this is what caused the bloom to occur[114]. Well, let us go back to Dr. Colombo's chart and look again. [Slide 9 again.] Here again is what the chart shows for 14 January, Dr. Colombo's last test date before the algal bloom. Flatlined. No pulse. The underlying data, on which the chart is based, show that the concentration of SRP at so-called Botnia site U2, which is the one cited by Dr. Wheater, where rates allegedly doubled, was only 14 micrograms per litre. There was no lower concentration level recorded at any of the other test sites on that date. The SRP concentration levels at the test sites in Argentina's Ñandubaysal Bay on that date were 21 at site N5, and 88, or more than five times higher, the Botnia site, at N6[115].

42. So how could Dr. Wheater tell us that SRP levels at the Botnia site had "doubled"? We went back and checked again through all of Dr. Colombo's data. Nothing in it supported Dr. Wheater's statement. It took us quite a while, but eventually we discovered what Dr. Wheater appears to have done, and the lengths to which he went to be able to make his statement to the Court. [Slide 10.] This is a table containing all of the data showing Dr. Colombo's test results for SRP at all sites on all testing dates between 24 November 2007 and 17 April 2009[116]. The blanks are there because there are blanks in the data at certain test sites on certain dates. This table, which we prepared using only Dr. Colombo's data, and the next slides that you will see in this series are all located at tab 14. To show the Court in a few minutes what it took us several hours to uncover, let us focus on the results for site U1, the upstream control site, site U2 nearest the Botnia plant where Dr. Wheater claims that SRP levels doubled, and sites N5 and N6 in Ñandubaysal Bay, which Dr. Colombo says are not influenced by the plant. [Slide 10 *(a)*.] Again, it is at U2 where Dr. Wheater claims that SRP levels "doubled" prior to the February 2009 bloom. The Court will not fail to be impressed, I believe, by the creativity Dr. Wheater employed to achieve this result. First, he excluded or ignored three quarters of Dr. Colombo's data, that is, everything before

[114]CR 2009/15, p. 27, para. 17 (Wheater).

[115]Argentina Scientific and Technical Report, Chap. 3.1, p. 30, table 7.

[116]Argentina Scientific and Technical Report, Chap. 3.1, p. 30, tab. 7 and Chap. 3.2, para. 3.2.3, tab. 7.

31 October 2008[117]. [Slide 10 *(b)*.] He then averaged the values at each of the four test sites on the eight dates that were left. [Slide 10 *(c)*.]

43. He must not have liked the results. SRP was 39, as he said, at the Botnia site, U2, but that was 15 per cent lower than the level at the upstream control site, U1. But the really big problem for Dr. Wheater was that the data showed that SRP at the Botnia site was insignificant compared with SRP in Ñandubaysal Bay. SRP at site N5 in the bay averaged nearly double the level at the Botnia site, and SRP at N6, also in the bay, averaged more than three times higher than at the Botnia site. So what did Dr. Wheater do next? Well, since there is no support in Dr. Colombo's study, he looked elsewhere. And where did he look? He went to Botnia's pre-operational baseline testing data — the same data he told us on Thursday was absolutely worthless and wholly inadequate to support their EIA[118] — and he used the data from Botnia's test sites, which were not the same as the test sites used in Dr. Colombo's study, and came up with a figure of 20 micrograms per litre[119]. It is an entirely manufactured and meaningless number. To say he compared apples to oranges would be to give it too much credit. At least apples and oranges are both fruits. Yet, on this basis, on the basis of these exercises, the Court was told that SRP levels had doubled, from 20 to 39, at site U2. Now if it wishes, the Court can retrace Dr. Wheater's steps, as we did, by following up on the citations to Professor Sands's speech of last Wednesday at page 63, footnotes 163 and 164 of the compte rendu.

44. Let us go back to Dr. Colombo's data table. If the purpose is to examine SRP levels at the Botnia site nearest the time of the algal bloom of 4 February, then let us look at the data for January and February 2009. [Slide 10 *(d)*.] The figures for site U2 on those dates, the relevant ones, are 14 micrograms per litre on 14 January and 18.3 on 12 February. So even if we generously accepted Dr. Wheater's artificial benchmark of 20 as a baseline level, the SRP levels at the Botnia site on the testing dates closest in time to the algal bloom were *below* what they were

[117]See CR 2009/15, p. 27, para. 17, fn. 42 (Wheater) (citing only p. 30 of Chap. 3.1, which does not include another table of Dr. Colombo's SRP data, available at Chap. 3.2, para. 3.2.3, tab. 7).

[118]CR 2009/15, pp. 31-32 and 36, para. 25-27 and 38 (Wheater).

[119]See CR 2009/15, p. 27, para. 17, fn. 43 (Wheater) (citing to tab. A.4 in App. A of EcoMetrix's March 2009 report).

before Botnia started operating. By contrast, SRP levels in Ñandubaysal Bay were *much higher*, more than 300 per cent higher at site N6 around the time of the algal bloom.

45. The person on Argentina's team who appears to know at least something about the evidence is Dr. Colombo. After all, as the head of the study reported in Chapter 3, he developed these data. And that probably explains why he did *not* make the same irresponsible claims that we heard from Argentina's other advocates about the doubling of SRP levels near the Botnia plant. In fact, although he spoke for an hour last Wednesday, Dr. Colombo said absolutely nothing — nothing — about phosphorus concentrations at or near the Botnia plant or anywhere else in the river. He said nothing about SRP concentrations. That is quite remarkable, when you think about it. Notwithstanding the emphasis Argentina's counsel placed on phosphorus, and SRP concentrations in particular, throughout their four days before the Court, and their insistence that the plant caused increased phosphorus concentrations in its area of influence, which in turn led to an unprecedented algal bloom, the member of Argentina's team who actually studied phosphorus concentrations chose to say nothing about them.

46. Having shown that Argentina's own evidence, and that Dr. Colombo's own study, establish that SRP and total phosphorus emissions from the Botnia plant do *not* produce higher concentrations of phosphorus in the river — in other words, that they do *not* accumulate at or near the plant as Professor Sands and Dr. Wheater told us, but are instead quickly diluted and dispersed and washed down the river — let me now turn briefly to the evidence presented by Uruguay. It consists of the results of the water chemistry testing that DINAMA has done from August 2006, more than a year before the Botnia plant started operating, to the present[120]. [Slide 11.] As Professor Boyle mentioned, DINAMA has regularly tested the water chemistry at 16 different sites — shown at tab 15 in the judges' folder — which, of course, is nine more than the seven sites tested by Dr. Colombo in Chapter 3 of Argentina's study. Six of DINAMA's testing sites are upstream from the plant (as compared to just one in Dr. Colombo's study). Three of DINAMA's

[120]See Uruguay's Submission of New Documents (30 June 2009), Ann. S2, DINAMA Performance Report for the First Year of Operation of the Botnia Plant and the Environmental Quality of the Area of Influence (May 2009).

sites are located in genuinely close proximity to the plant, and seven are spread out at various distances downstream[121].

47. [Slide 12.] Here are the results of tests performed in December 2008 and February 2009[122]. As you can see on the screen, and at tab 16, there are no real variations in phosphorus levels in either December or February across testing sites, except at one point — the precise point where the Fray Bentos sewage is discharged into the river. Even then, the effects of the sewage discharge are rapidly dispersed, as reflected in the lower levels of phosphorus recorded at the next three downstream sites.

48. [Slide 13.] This chart, also at tab 17 of the folder, was also prepared by DINAMA, and shows the average level of phosphorus in the full year 2008, and in the first half of 2009, at each of DINAMA's 16 test sites. It compares this with the average level at each test site during the baseline period, before the Botnia plant began operating[123]. Unlike Dr. Colombo, DINAMA *does* have baseline data for the pre-operational period which can be compared to the data collected since Botnia began operating. [Slide 13 *(a)*.] The baseline here is in pink. [Slide 13 *(b)*.] The average phosphorous levels at all test sites for 2008 are in green. As you can see, at every single station the average level of phosphorus in 2008 was *below* the baseline level. This includes the levels of phosphorus at each of the three test sites most directly influenced by the Botnia plant, numbers 7, 8 and 9, which were all below baseline levels. After more than a full year of operation, phosphorous concentration levels were lower than they were before the plant started operating.

49. The results are similar for 2009. [Slide 13 *(c)*.]**.** Again, the baseline is pink. 2009 data are in blue. As the chart shows, average phosphorus levels at *all* locations in the first half of 2009 are not very different from what they were before the Botnia plant began operating. However, if we look particularly at the Botnia plant, at site 7, and downstream from it, we can see that phosphorous levels in the first half of 2009 were equal to or *lower* than the baseline levels — that is, lower even than the levels of phosphorus before the plant began operating.

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[121] *Ibid.* See also DINAMA July 2009 Water Quality Report.

[122] *Ibid*; DINAMA Algae Bloom Report (July 2009), Spanish original available via links under the heading "Floración de cianobacterias en el río Uruguay el 04/02/2009" at http://www.mvotma.gub.uy/dinama/index.php?option=com_content&task=view&id=122&Itemid=17. Translation submitted to the Court on 14 September 2005.

[123] DINAMA July 2009 Water Quality Report, p. 18, Fig. 4.24.

50. Now, it is not Uruguay's position that the Botnia plant *reduces* the levels of phosphorus in the Uruguay river. Uruguay makes no such claim. The fact that phosphorus is lower now than before the plant started operating reflects natural variation in phosphorous levels from year to year. But, it is worth keeping in mind, that the first part of 2009, which coincides with the South American summer, was characterized by extreme drought and very low water levels[124]. This means that any undispersed phosphorous effluent from the Botnia plant to the Uruguay river, would have been more readily detected, in the form of increased concentration levels. That this is not the case, in the parts of the river affected by the Botnia plant, further demonstrates that the plant does not increase phosphorous concentrations in the river. But we do not need Uruguay's evidence to prove this. Argentina's own evidence proves it. In particular, Argentina's own evidence proves that the Botnia plant has *not* added to the concentration of phosphorus in the river at any time since it began operating, and certainly not at any time proximate to the 4 February algal bloom. The algal bloom cannot be blamed on phosphorous emissions from the plant. Dr. Colombo's own data prove this.

IV. NITROGEN

51. So let us move on to nitrogen, the second of the two nutrients emitted by the Botnia plant that Argentina's counsel have attempted to link to algal growth and, in particular, the algal bloom of 4 February.

52. Just as Dr. Colombo failed to support the representations to the Court by Argentina's counsel about phosphorous concentrations, so too he maintained a studied silence about nitrogen concentrations. And with good reason. Here is what Dr. Colombo concluded about nitrogen concentrations in the Scientific and Technical Study submitted by Argentina on 30 June, in Chapter 3, at page 24: "nitrogen nutrients are spatially rather homogeneous". In other words, they are similar across all of his test sites. In other words, they are *not* higher at the test sites allegedly affected by the Botnia plant.

53. No wonder Dr. Colombo told us *nothing* about nitrogen concentration levels. His data on nitrogen completely contradict Argentina's argument that high nitrogen emissions from the

[124]See Uruguay's Comments on Argentina's New Documents (15 July 2009), Ann. C5 (17 Feb. 2009).

Botnia plant caused high concentrations of nitrogen in the parts of the river affected by the plant, which, in turn, stimulated high algal growth, including the algal bloom of 4 February. Unlike the other members of Argentina's team, Dr. Colombo knows the evidence that he himself developed. He knows that, according to his own study, nitrogen concentrations have been "spatially rather homogeneous,"[125] and therefore, no higher at the Botnia site than elsewhere.

54. Uruguay has also developed evidence on nitrogen, and it confirms the results of Dr. Colombo's study. DINAMA's test results, at tab 18, likewise show that nitrogen emissions from the Botnia plant did not add to nitrogen concentration levels in the river, or contribute to the algal bloom of 4 February. [Slide 14.] Testing performed in December 2008 and February 2009, before and after the algal bloom, show that on both dates nitrogen levels at all "Botnia influence" sites were below the levels at the six upstream control sites, and equivalent to the levels at the seven downstream sites, with one exception: there was an elevated level of nitrogen detected in December 2008 at site 13 — the one located directly in front of the pipes discharging untreated sewage from Fray Bentos into the river[126]. There were no abnormal nitrogen levels anywhere during February, the month of the algal bloom. [Slide 15.] The next chart, produced by DINAMA as part of its semi-annual monitoring report for 2009, and available at tab 19, shows the average levels of nitrogen across all 16 DINAMA test sites[127]. [Slide 15 *(a)*.] Again, the pink line represents the baseline, that is, the nitrogen concentration levels at the various test sites during the pre-operational period before the Botnia plant began to function. [Slide 15 *(b)*.] The blue line represents the average nitrogen concentration levels at all test sites for the first six months of 2009. Quite obviously, nitrogen levels in 2009 are below baseline levels at all sites. Again, it is not Uruguay's argument that the Botnia plant has *decreased* nitrogen levels in the river. But a conclusion that can be drawn from these data — the same conclusion that can be drawn from the data produced by Argentina — is that the plant has not caused an *increase* in nitrogen levels.

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[125]New Documents submitted by Argentina, Vol. I, Chap. 3.1, p. 24.

[126]See Uruguay's Submission of New Documents, 30 June 2009, Ann. S2, DINAMA Performance Report for the First Year of Operation of the Botnia Plant and the Environmental Quality of the Area of Influence, May 2009; DINAMA July 2009 Water Quality Report; DINAMA Algae Bloom Report, July 2009.

[127]DINAMA July 2009 Water Quality Report, p. 17, Figure 4.23.

55. Mr. President, the evidence, *all* of the evidence, including Argentina's *own* evidence, whether considered separately or together with DINAMA's evidence, shows conclusively that the Botnia plant has not increased either phosphorous or nitrogen concentrations in the Uruguay river — not at any time during its first 18 months of operation, and most certainly not at any time proximate to the algal bloom of 4 February. The evidence, including especially Argentina's own evidence, refutes Argentina's claim that phosphorous or nitrogen emissions from the plant accumulated in the river, increased the concentration levels in the water, stimulated algal growth, or caused the bloom of 4 February. The cause of that algal bloom must lie elsewhere. Tomorrow, we shall see exactly where. But before we get there, let us examine the evidence on one more substance measured by Argentina as part of its Scientific and Technical Study. Let us examine Dr. Colombo's test results regarding chlorophyll.

V. CHLOROPHYLL

56. Mr. President, Members of the Court, it may come as some relief to you to know that I do intend to finish early today. Now, chlorophyll is not produced or emitted by the Botnia plant. Not even Argentina suggests that it is. Chlorophyll, as I am sure we all remember from our high school biology or botany classes, is the substance that gives plants, including the algae that bloomed on the Uruguay river last February, their green colour. It is a component of the algae. It is vital to the process of photosynthesis, by which the chlorophyll turns sunlight into food so that the algae will grow and develop[128]. Where there is algae in the river, therefore, there must be chlorophyll. An abundance of chlorophyll in a body of water like the Uruguay river tends to mean an abundance of algae[129].

57. That is why Argentina measured chlorophyll. If it could establish where in the river there were high concentrations of chlorophyll, it could determine where there were high concentrations of algae, and algal proliferations and potential blooms similar to the one that occurred on 4 February. Obviously, they were hoping to find high concentrations of chlorophyll at test sites supposedly influenced by the Botnia plant. Well, you can already surmise, without me

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[128]DINAMA Algae Bloom Report (July 2009), p. 8. See also, e.g., "Chlorophyll," Wikipedia, available at http://en.wikipedia.org/wiki/Chlorophyll.

[129]*Ibid.*

telling you, what the results of Argentina's tests were. You can assume this because nobody on Argentina's team said anything about chlorophyll last week. Not a single word about chlorophyll in four days of speeches, even though Argentina tested specifically for it. You can be quite sure that if they had found what they were looking for, high levels of chlorophyll indicating the presence of high levels of algae at Botnia's doorstep, you would have heard about it. Their total silence on the subject allows you to assume that chlorophyll levels at or near the plant were lower than, or at least *no higher* than they were elsewhere in the river.

58. But you do not need to make any assumptions. The actual data collected by Argentina are better evidence. And better for Uruguay. [Slide 16.] Here, and at tab 20, is what Dr. Colombo concluded in Chapter 3 of Argentina's study about chlorophyll levels in the river, based on regular samples taken from seven sites every two weeks between November 2007 and October 2008, the first full year of the plant's operation: "The chlorophyll is low overall . . .; in the bay [Ñandubaysal Bay] the averages double those in the Uruguay River . . ."[130] As I said, the bay, of course, is Ñandubaysal Bay, in Argentina, which Argentina repeatedly tells us is not influenced by the Botnia plant[131]. When Dr. Colombo refers here to the Uruguay river, he means the area adjacent to the Botnia plant, because three of his four test sites in the river are located in what he called the "area of Botnia's influence"[132]. This is confirmed by another of Argentina's charts, which is figure 10 at page 26 of Chapter 3 of their study, and also at tab 21 of the folder.

59. As shown in the chart, and especially in the data on which the chart is based, which we reviewed, tests were conducted on 21 different days over an 18-month period[133]. On 20 of those days, chlorophyll was globally low, and lowest at the sites that Argentina tells us were influenced by the Botnia plant. On just one out of those 21 days was there a significant spike in chlorophyll levels, as you can see, and that was in March 2009, a month after the algal bloom of 4 February. With regard to the 4 February algal bloom, and its cause, the chart and the underlying data are quite

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[130]Argentina Scientific and Technical Report, Chap. 3.2, para. 4.2.2.

[131]*Ibid.*, Chap. 3.2, para. 4.1.2 (arguing that Argentina's scientists were able "to clearly set the bay apart, as it acts as an ecosystem that is relatively detached from the Uruguay river" and that the data "shows that the bay is an environment that is detached from the short term fluctuations of the river"), para. 4.3.1.2 (pointing to data that "reinforces the interpretation that the bay is an environment that is relatively detached from the river") and para. 1 (arguing that the Bay "is apparently not tied to the river's natural and human-derived short-term variations").

[132]CR 2009/14, p. 53, para. 28 (Colombo).

[133]Argentina Scientific and Technical Report, Chap. 3.1, p. 31, table 8 and Chap. 3.2, para. 3.2.3, table 8.

informative. What Argentina's chart and data show is that chlorophyll levels, and therefore algae levels, were very low at the test sites allegedly influenced by the Botnia plant on 15 January and 12 February — the two test dates closest in time to the occurrence of the bloom. On those dates, chlorophyll levels were significantly higher in Argentina's Ñandubaysal Bay than they were at the so-called Botnia sites. Take 15 January 2009, for example, the last testing date prior to the algal bloom. According to Argentina's data, the average chlorophyll level at the three test sites allegedly in the Botnia influence zone was 2.5 micrograms per litre. The same day, the levels at the Ñandubaysal Bay sites averaged 9 micrograms per litre, or more than 350 per cent higher than they were at the Botnia sites[134]. So, as of the last testing date before the algal bloom, there was *no build-up* of algae at or near the Botnia plant. But there *was* in the Bay.

60. Dr. Colombo's findings on chlorophyll are corroborated by satellite photography, at tab 22 of your folder. [Slide 18.] This is a satellite photo taken by a China/Brazil satellite on 2 February, two days before the algal bloom was observed[135]. Through a well-established and accepted algorithmic process developed by Ekstrand in 1992, the presence and relative levels of chlorophyll can be differentiated in various colours[136]. Red indicates the highest level of chlorophyll, yellow the next highest, down to green and down to blue, which is the lowest. As you can see from this photograph, the highest levels of chlorophyll and algae on 2 February 2009 — the red-coloured areas — were in Argentina's Gualeguaychú river, Ñandubaysal Bay, and slightly downstream along the Argentine coast. Argentina itself has explained that it takes some days for proliferations like this to fully develop into an algal bloom. It would appear from this photo that, as of 2 February, high levels of algae in Ñandubaysal Bay were being transported to the Uruguay river.

61. For a comparison, let us look at the area surrounding the Botnia plant. Blue. *All* blue. As the legend on the photo indicates, this means there were relatively low, in fact the lowest, levels of chlorophyll and algae present at and near the Botnia plant on 2 February, two days before the algal bloom. Looking further upstream, we can see other places in red, although the photo is

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[134]Argentina Scientific and Technical Report, Chap. 3.1, p. 31, table 8.

[135]CBERS-2B (2 Feb. 2009, 14:02). See also DINAMA Algae Bloom Report, p. 10.

[136]Ekstrand, S. (1992), "Landsat TM based quantification of chlorophyll-a during algae blooms in coastal waters", *International Journal of Remote Sensing*, Vol. 13, Issue 10, pp. 1913-1926.

obscured by cloud cover, we can begin to see further upstream other places in red where chlorophyll levels were very high on the eve of the algal bloom, indicating the likely presence of algal abundances at those upriver locations as well as in the Ñandubaysal Bay.

62. Mr. President, we are now ready to move to 4 February 2009, the date the algal bloom was observed, and draw our conclusions, from the *evidence*, as to what caused it. I suggest however, that this might be a good place for an intermission in my speech. And that, with your permission, if I may, I stop here for today, and resume from this point tomorrow morning at 10:00?

The VICE-PRESIDENT, Acting President: Thank you, Mr. Reichler. If you think this is a good moment to stop, you do that. I do need to recall that the Parties are under no obligation to use all the time allocated to them for the presentation of their argument. So, the Court now rises, and will resume tomorrow morning at 10 o'clock.

Mr. REICHLER: Thank you, Mr. President.

The Court rose at 12.50 p.m.