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UNITED STATES DISTRICT COURT  
DISTRICT OF OREGON

NATIONAL WILDLIFE FED’N, et al.,	)	
Plaintiffs,	)	Civ No. 01-00640-RE
v.	)	Declaration of
NATIONAL MARINE FISHERIES SERVICE	)	Stephen R. Oliver
and UNITED STATES ARMY CORPS OF	)	
ENGINEERS,	)	
Defendants.	)	
	)	

I, Stephen R. Oliver, declare as follows:

1. I am a member of the US Senior Executive Service and have 30 years of experience in electricity marketing, rates and regulation in the Western Electricity Coordination Council, one of the ten electric reliability councils in North America responsible for facilitating electric system reliability. I have been with the Bonneville Power Administration (BPA) since 1991. I am currently the Vice President of Generation Asset Management and responsible for the power operations interface with

the US Army Corps of Engineers (Corps), US Bureau of Reclamation (Reclamation), and Energy Northwest, a joint operating agency of twenty utilities in the state of Washington. I am also responsible for the streamflow forecasting, hydro generation forecasting and power planning and scheduling functions. I serve as the co-Regional Coordinator for the US Entity for the Columbia River Treaty.

### **Summary**

2. On April 3, 2007 a combination of required flood control drafts, higher than forecast federal loads, marketing commitments made by BPA, and human error created a situation that made it difficult to meet all the demands placed on the federal system. At the time BPA made marketing commitments for April 3<sup>rd</sup>, BPA fully expected to be able to meet those obligations without impacting fish protection measures. As it became increasingly clear that there were potential issues meeting morning power demand, also referred to as peak loads, BPA purchased all energy possible and coordinated with other federal agencies to increase output from any available generation resources. However, BPA was still left with a generation deficit and requested that the Corps operate some generating units in the Lower Columbia River outside of 1% peak efficiency, which provided enough additional energy from the turbines to meet the power demand.

3. This action did not reduce spill committed to benefit migrating fish. The required spill for fish passage on the Lower Columbia River does not begin until April 10 each year. Therefore, fish spill operations on the Lower Columbia River were not affected by this operation. BPA did not request a reduction in spill on the Lower Snake River to accommodate additional generation.

4. In reviewing the transcript of the voice mail received by the Court on April 10, 2007, it states that BPA over marketed power and then requested an emergency condition from our Transmission Services dispatchers in order to deliberately violate the FY 2007 fish operations. To the best of my understanding the phone call to the Court is referring to difficulties we dealt with on April 3, 2007, the first day of FY2007 spill operations on the Lower Snake River. I have reviewed the transcripts of communications between our hydro duty scheduler (Power Services) and the BPA transmission dispatcher (Transmission Services) for the early hours of April 3rd. Although they discussed the option of declaring an emergency, one was not declared. It is my opinion that BPA hydro duty schedulers took all reasonable actions to purchase any available power to meet load, and when that was insufficient, they made the most prudent decision available to them and that was to request turbine operations outside of 1% efficiency at three Lower Columbia projects for a brief period of time in order to assure we could meet firm power commitments the morning of April 3rd. Based on my review, I do not agree with the claims made in the anonymous phone call.

5. In an attempt to meet April 3 obligations, BPA purchased power for \$1,080,000 on April 3 that it had originally sold for \$380,000 with the expectation of fully meeting those obligations without impacting 2007 FOP operations. BPA did not intentionally make marketing decisions and operate the system to lose \$700,000, nor to negatively impact 1% efficiency turbine operations.

#### **Specific Deviations**

6. The specific deviations from the required FY2007 Fish Operations Plan operations were: McNary Dam operated outside of 1% peak efficiency for 2 hours; The

Dalles Dam operated outside of 1% peak efficiency for 4 hours; and Bonneville Dam operated outside of 1% efficiency for 1 hour. The amount of energy provided through the requested operational variance was 1750 MWh. The value of the energy generated above 1% peak efficiency equates to approximately \$50,000 using typical prices from that period. The required spill for fish passage on the Lower Columbia River does not begin until April 10 each year, therefore the variance from 1% operations did not impact spill.

7. There was no request from Bonneville to reduce spill at the Lower Snake projects in order to increase generation.

### **Background**

8. In late March and early April, Grand Coulee Reservoir needed to draft heavily to achieve the April 10 Biological Opinion Objective Elevation of 1259.2 feet. In addition to water flowing into the reservoir, we needed to lower Lake Roosevelt reservoir elevation by 13 feet between March 25<sup>th</sup> and April 10<sup>th</sup>. (Please see Table 1 below at paragraph 16.) This placed us in a mode of marketing very aggressively to evacuate reservoirs to meet Biological Opinion objective elevations and Corps required flood control elevations at Grand Coulee.

9. As the water released from Grand Coulee travels downstream and reaches the Lower Columbia River dams, it has only two major routes for passing each dam, either through the turbines or through the spillways. Water can be passed through a generating unit to produce power only if the produced power has been sold and can be delivered to a consumer. In other words, power resources must always match power loads.

Alternatively, water can pass through the spillways. However, when spill occurs, BPA power schedulers and Corps operators must be careful to remain within Total Dissolved

Gas (TDG) limits. The week before April 3, the level of spill needed to pass the water (due to lack of load for power generation), reached 110% TDG.

10. Consequently, during this period, to accommodate the large Grand Coulee drafts, the BPA attempted to operate the system relatively close to capacity (i.e. find high volumes of power sales to allow water to be passed through the turbines) during the day when load was heavier. The amount of energy that was being generated was still significantly above BPA's long term firm load at the time. So BPA made commitments to sell additional energy as surplus energy.

11. During the week of March 25 (i.e., the week preceding April 3), BPA was not able to sell enough energy on an hour-to-hour basis to move the large volumes of water through generating units. In order to assure that BPA acquired sufficient market share to move the high volumes of power associated with meeting April 10<sup>th</sup> objective elevations, BPA decided to concentrate the majority of the marketing to the day-ahead market.

12. The bottom line was that BPA was in the mode of marketing significant amounts of surplus power throughout this time period in order to manage the volume of water moving through the system, and, even with these efforts, volumes of water still exceeded that needed for generation and passed dams as spill. In the days immediately preceding our marketing decisions for April 3, we were "forfeiting" roughly 20,000 MWh each day. In this case, "forfeiting" generation consists of spilling at Lower Columbia River and Lower Snake projects, running Grand Coulee Dam inefficiently to pass extra water through the turbines, and asking Columbia Generating Station (CGS) to operate at reduced output. Again, please see Table 1.

**Table I:** Draft achieved at Grand Coulee in late March and early April. The table also shows the surplus energy sold in the Day Ahead market, energy sold in the Real-Time Market, and energy generation that BPA forfeited due to lack of load and inability to market excess energy. Generation reductions stemmed from spill at Lower Snake River and Lower Columbia River Projects up to the 110% TDG limits, deliberate inefficient generation at Grand Coulee Dam, and reduced generation at Columbia Generating Station (CGS).

	GCL Forebay Elevation (ft)	Forebay Elevation Change (ft)	Day Ahead Blocked Marketing (MWh)	Real- Time Hourly Marketing (MWh)	Forfeited Generation for Lack of RT Market (MWh)
Saturday, March 24, 2007	1271.8	-0.5	68,062	12,871	4,311
Sunday, March 25, 2007	1272.2	0.4	65,123	10,572	3,893
Monday, March 26, 2007	1271.9	-0.3	57,266	15,162	576
Tuesday, March 27, 2007	1271.6	-0.3	56,353	27,450	22,827
Wednesday, March 28, 2007	1270.8	-0.8	69,668	17,141	20,863
Thursday, March 29, 2007	1269.9	-0.9	68,251	22,950	18,645
Friday, March 30, 2007	1268.6	-1.3	84,040	30,722	9,110
Saturday, March 31, 2007	1267.7	-0.9	87,510	18,973	7,631
Sunday, April 01, 2007	1266.8	-0.9	56,542	11,250	3,720
Monday, April 02, 2007	1265.6	-1.2	65,267	2,819	912
Tuesday, April 03, 2007	1264.1	-1.5	60,905	(13,096)	-
BiOp Target: Tuesday, April 10, 2007	1259.2				

### Friday Marketing Decision

13. On Friday afternoon (March 30), BPA Power Services (formerly PBL) held its regular daily meeting to make marketing decisions for Monday (April 2) morning when power would be sold in the day-ahead market for Tuesday (April 3). (The power is typically sold around 5:30-7 am on weekdays for the next day, so recommendations are made on the previous business day with notes for adjustments according to conditions Monday morning.) Based on our marketing experience the prior week, the BPA team planned to sell a significant portion, of our projected surplus energy on the day-ahead market. By not selling all of the energy on the day-ahead market, we were leaving a margin of energy that we thought would be enough to cover possible changes to

forecasted loads. If loads were not significantly higher than forecasted, this energy could either be sold on real-time on the hourly spot market or spilled.

14. On March 30 BPA used its modeling tools to calculate the “expected” operation for Tuesday (April 3). Unfortunately, a BPA analyst made a calculation error. The error resulted in an overstatement of the available surplus hydroelectric power supply on Tuesday April 3, 2007 by 650 aMW.

#### **Monday, April 2, 2007**

15. On Monday morning, the weather forecast for Tuesday was updated to indicate colder temperatures. This caused the load-forecasting model to predict higher loads for Tuesday. Through the day Monday, other utilities with flexible contracts to take power from BPA, scheduled their power deliveries, and BPA realized that its load for Tuesday would be even higher.

16. By Monday afternoon, as the combined implications of higher loads, other operational changes, and the calculation error from the previous Friday were assessed, BPA realized that we would have difficulty meeting power demand the next morning and worked with the Corps and Reclamation to arrange for additional generation at any available facilities; these cooperative actions resulted in the increase of generation at Dworshak Dam (250 MW over the morning peak with an offsetting reduction later in the day), Hungry Horse Dam (70 aMW all day), and bringing the Willamette’s generation up to peak early on April 3rd. The night shift personnel were given instructions to begin buying energy as early as possible to cover the anticipated shortage over the morning hours when electricity demand peaks. Given the updated load schedules and load

forecasts, BPA Power Services and Power Marketing felt that BPA would be able to purchase the needed energy through the real-time hourly market.

**Tuesday April 3, 2007**

17. During the night, BPA encountered even higher demands for energy—higher load than forecasted and scheduled as of Monday afternoon due to colder-than-forecasted temperatures and additional energy demand from customers. The BPA real-time marketer was instructed to buy at any price. Ultimately, BPA purchased 14,037 MWh, mostly between 2 am and noon on the real-time market at a cost of \$1,080,508, to offset energy BPA had sold on the day-ahead market for \$382,253. For a variety of reasons, as BPA began to attempt to purchase large volumes of power for the morning peak hours, the market was not particularly deep. The NW market had less energy available than the previous week as other utilities may not have expected the cold temperatures themselves when making day-ahead marketing arrangements. Also, many regional thermal power plants had temporarily shut down operations, probably because day-ahead sales had been plentiful and inexpensive in the region, and owners of thermal plants bought inexpensive energy in lieu of operating their thermal plants. Once these large plants are shut down, they require several hours to warm back up and return to full generation, thus their energy was not available on the real-time market in the timeframe needed.

18. Facing expected morning peak hour shortfalls, BPA Power Services contacted its Transmission Services group to explore options for balancing generation and load during the early morning hours of 4/3/07.

19. Due to industry standards applicable to reliable operation of the transmission system, BPA Power Services provides the Transmission Services group a balanced

schedule for power for each and every hour. This means we must provide a sufficient source of power supply to meet our hourly load obligations. This places BPA Power Services group in the position of essentially buying or generating power if we find ourselves short, rather than being able to break our sales contracts. If we did not supply a balanced schedule to our Transmission Services group, their Automatic Generation Control (AGC) systems likely would simply increase generation from certain projects in the federal hydro system in order to force such a balance.

20. Through conversations of the BPA Power Services group with the BPA Transmission Services group, it was clear that BPA Power Services does not have the authority to unilaterally cut power service schedules for delivery of power to purchasers. Power Services can only cut schedules by mutual agreement with the purchaser. Only the Transmission Services side of BPA can cut power service schedules unilaterally, and would only do so if there were a serious problem with transmission grid reliability. In any event, BPA has always been reluctant to cut scheduled energy delivery to another utility, because it places that utility in the position of possibly blacking-out their customers which is a threat to public health and safety.

21. Ultimately, having exhausted all available alternatives, including extensive purchases and requesting increased generation at various facilities including Dworshak, Hungry Horse Dam, and the Willamette projects. BPA could not provide enough generation to meet its load commitments on April 3rd. Therefore, BPA asked three projects on the Lower Columbia River, where spill for fish migration had not yet started, to operate outside the 1% turbine efficiency range. Specifically, McNary Dam operated outside of 1% peak efficiency for 2 hours; The Dalles Dam operated outside of 1% peak

efficiency for 4 hours; and Bonneville Dam operated outside of 1% efficiency for 1 hour. The value of the energy generated above 1% peak efficiency equates to slightly less than \$50,000 (1,750 MWh). BPA power schedulers made this decision because they thought it was the most prudent action available at the time.

22. Around 8:30 am, BPA received permission from the Bureau of Reclamation (request made at 7:13 am to the Grand Coulee Project Manager, who has the sole authority) to draft additional water from Grand Coulee Reservoir, providing additional generation at the Grand Coulee project beginning at 9 am. Normally, the reservoir can only draft 1.5 feet per day for fear of bank-sloughing (similar to erosion). BPA obtains permission to draft an extra 0.5 feet per day about 5 to 10 times per year for special circumstances such as heat waves or cold snaps. These additional draft rights at Grand Coulee along with continued power purchases by BPA produced sufficient power supply to meet all power obligations by late morning and throughout the rest of the day, without any additional impact to FY2007 FOP operations.

### **Summary of Mitigation Actions**

23. As stated above, BPA took the following actions to mitigate the problems encountered on April 3, 2007.

- Arranged for additional generation at Dworshak, Hungry Horse, and the Willamette Project dams
- Bought all-available energy on the real-time market, at any price
- Explored cutting delivery schedules
- Arranged for permission to draft additional water and for additional generation from Grand Coulee Dam

## Biological Impacts

### Smolt Passage Index

24. Technical experts on my staff have explained to me that migrations of juvenile salmon and steelhead are gauged/monitored by a smolt passage index. The smolt passage index is a number which is expanded from fish actually sampled at the dam. It is not a population estimate, but does help fishery managers gauge smolt run-timing by providing a relative estimate of the daily portion of the entire smolt run passing each project for the season.

25. Smolt passage index data for McNary, John Day, and Bonneville dams as reported on the Columbia River Dart website indicates the Smolt Index for all rearing types of yearling Chinook salmon (most abundant migrant present this time of year) on April 3, 2007 to be: 0 smolts at McNary, 740 smolts at John Day, and 319 smolts at Bonneville (Table 2). The Dalles Dam is not equipped with juvenile bypass facilities; therefore no passage index data are available for The Dalles.

Table 2. Smolt passage index for yearling Chinook salmon in 2007 ([http://www.cbr.washington.edu/dart/pass\\_com.html](http://www.cbr.washington.edu/dart/pass_com.html)).

Date	Passage Index			Notes
	McNary	John Day	Bonneville	
4/3/07	0	740	319	
4/10/07	293	1653	588	Spill began on Lower Columbia
4/20/07	14564	25985	14484	

26. Although smolt index numbers cannot be used as absolute measures of the number of fish passing each dam, they are useful to illustrate the relative magnitude of passage for a given day compared to other days during the passage season. As shown in Table 2, it is evident that the smolt outmigration for 2007 was just beginning on April

3rd. Historically, at McNary Dam, the portion of the smolt run passing this dam has been less than 1% of the total during the first week in April (Table 3). Also, voluntary spill for fish passage began at 12:01 am at all Lower Columbia River dams on April 10.

**Table 3: Yearling Chinook Migration Timing Characteristics at McNary Dam**

Year	Passage Dates								Middle 80% Days
	First	1%	5%	10%	50%	90%	95%	Last	
1997	04/05	04/06	04/18	04/24	05/10	05/27	06/01	08/29	34
1998	04/03	04/05	04/08	04/20	05/07	05/27	05/31	08/31	38
1999	04/01	04/05	04/09	04/18	05/13	05/27	05/30	08/28	40
2000	04/01	04/10	04/22	04/28	05/15	06/02	06/08	08/08	36
2001	04/02	04/26	05/06	05/11	05/26	06/07	06/15	08/31	28
2002	04/03	04/17	04/24	05/01	05/17	05/27	05/31	08/31	27
2003	04/03	04/15	04/25	04/29	05/13	05/29	05/31	08/27	31
2004	04/03	04/17	04/23	04/27	05/12	05/29	06/06	08/28	33
2005	04/03	04/19	05/01	05/05	05/15	05/29	06/06	07/23	25
2006	04/03	04/15	04/21	04/21	05/09	05/21	05/23	08/15	31

Source: Columbia River DART: 10 Year Historical Run Timing Smolt Passage Index Yearling Chinook at McNary Dam ([http://www.cbr.washington.edu/dart/pass\\_hrt.html](http://www.cbr.washington.edu/dart/pass_hrt.html))

### Potential Impacts to Fish Passage and Survival

27. It is important to note that only a portion of the smolts passing these projects pass through turbines. Taking this into account, along with the smolt passage index value of zero at McNary Dam on April 3rd, the impact to the overall population passing the dam on this day was likely minimal. Also, considering the relatively low smolt passage

index number at Bonneville Dam, (319 smolts/24 hrs or ~13 smolts/hour) the impact to the overall population passing the dam during the one hour Bonneville Dam was operated outside of 1% was also likely minimal. Without index values available at The Dalles, one cannot estimate the smolt impact there, though seeing the smolt passage index at both John Day and Bonneville dams was low relative to later in the month, it is reasonable to assume a similar index with minimal impact to smolts passing The Dalles.

28. *Spill Passage* – Since voluntary spill had not yet been initiated at lower Columbia River dams on April 3, 2007, operating turbine units beyond the  $\pm 1\%$  efficiency range (increasing turbine discharge) did not reduce the number of fish passing through spill at these projects.

29. *Fish Guidance Efficiency (FGE)* – It is possible that increasing turbine discharge may result in a corresponding decrease in Fish Guidance Efficiency, thereby routing more fish through turbines that may otherwise pass through the juvenile bypass system. However, recent studies conducted at McNary Dam in 2004 and 2005 designed to determine the effect of operating turbines beyond the  $\pm 1\%$  efficiency range on Fish Guidance Efficiency, indicate the reduction in Fish Guidance Efficiency was likely negligible, at least at McNary Dam (Moursund *et al.*, 2004, 2006). Moursund *et al.* (2004, 2006) compared upper 1% turbine operation to turbine operation beyond the upper 1% efficiency range and consistently found no significant statistical difference in Fish Guidance Efficiency between the two operations. If the performance of juvenile bypass systems at John Day and Bonneville dams is similar to McNary, it is plausible to conclude that operating turbines beyond the  $\pm 1\%$  efficiency range at these projects likely did not result in any measurable reduction of Fish Guidance Efficiency.

## **Reporting**

30. The Technical Management Team is a group of federal, state, and tribal participants responsible for making recommendations on dam and reservoir operations to benefit salmon and other fish species. On Tuesday April 3rd, 0855, BPA Technical Management Team representative Scott Bettin left a voice message for NOAA Fisheries Technical Management Team representative Paul Wagner and contacted USFWS Technical Management Team representative David Wills prior to a meeting of the Fish Passage Advisory Committee. At the time of those calls the magnitude and duration of the problem were not known. It was relayed to them that BPA was short on energy and was operating outside 1%. Additional information would be provided at the next day's Technical Management Team meeting.

31. At the April 4, 2007 Technical Management Team meeting BPA representative Tony Norris reported which projects had exceeded their 1% peak efficiency criteria and the approximate duration of the exceedance. Tony was candid in his reporting at the meeting in particular with the fact that the problem was the result of BPA errors and unintentional actions. Tony also reported that BPA was already investigating how this type of event can be avoided in the future.

32. It was reported to me that other TMT representatives expressed their appreciation that BPA was "up front" with the details and were pleased that we were making an effort to avoid future occurrences.

33. It was also reported to me that no TMT member requested any further action regarding the response to the situation. Parties that were represented at the TMT meeting on April 4, 2007 included USFWS; NOAA Fisheries; the States of Montana, Idaho, and

Oregon; Columbia River Intertribal Fish Commission; the Nez Perce Tribe; the Corps; Reclamation; and BPA.

### **Procedural Safeguards that are in place**

34. On the morning of April 3, I called for an internal investigation of April 3 operations and marketing that led to the 1 % variance and a list of follow-up actions. The fact basis of this declaration is based on that After Action Review.

35. The communications between the Power Services Group and the Transmission Services Group that led to these decisions are conducted by telephone. I asked my staff to transcribe communications by the Power Services group with the Transmission Services group and others in the Power Services group during the morning of 4/3/07 regarding balancing of generation and load, and I attach a compilation of these transcripts to my declaration. See BPA Attachment A. To the best of my knowledge, this compilation contains all conversations between the parties occurring during the morning hours of 4/3/07 relevant to the decision to operate outside 1% peak turbine efficiency.

36. Foremost, I directed BPA staff to market more conservatively on the day-ahead market, despite the fact that this will lead to potentially lower revenues and higher risk of spill above the Total Dissolved Gas (TDG) limitation. One component of marketing more conservatively is to incorporate a larger buffer into the load forecast to account for forecast uncertainty; this was implemented immediately. BPA is performing a thorough review of its load-forecasting tools and business practices to ensure that it can forecast its loads as well as possible.

37. BPA and the Corps have recently established a weekly review of fish operations in order to ensure that any deviations from the Fish Operations Plan are identified and remedied as quickly as possible.

38. BPA is continuing to work with the Technical Management Team to formalize the list of emergency procedures for situations that may impact fish operations. Further, BPA is reviewing the list of actions to pursue to first--all the actions it has available to manage problems before it would impact fish. The goal is to avoid impacting fish operations entirely and to use even the first list as infrequently as possible

39. BPA has been working closely with the Northwest Power Pool, a forum in the electrical industry for reliability and operational adequacy issues in the Pacific Northwest, BPA Transmission Services, and other regional utilities since last summer to develop a mechanism to better share information on power deficits and surpluses when a utility is facing a power shortage.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge. Executed this 1st day of May, 2007, in Portland, Oregon.

  
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Stephen R. Oliver