JUNE 1999 CHIEF JOSEPH SPILL TEST

1. The near-field spill test took place from 4 - 11 June 1999. Days 1 and 2 consisted of sensor installation; days 3 and 4 had various spill treatments; day 5 coordination and more manual field measurements; days 6 and 7 more spill treatments; and day 8 sensor removal.

2. Strings of 2 to 5 dissolved gas sensors were installed at several transects stretching across the river:

- on the upstream face of the dam and powerhouse
- a few hundred feet downstream of the stilling basin
- at the fixed monitoring station 3/4 mile downstream of the spillway
- upstream of Brewster Flats, a.k.a. the Okanogan River Delta
- downstream of Brewster Flats
- on the upstream face of Wells Dam, 30 miles downstream of Chief Joseph Dam

3. Additional, single sensors were installed at places of interest below the dam and powerhouse, such as on top of the stilling basin endsill.

4. TDG data along the length of the river was collected manually to check that we were not exceeding limits placed on the test to protect fish. Wells Dam has a fixed monitoring station on the upstream side of the dam. These data were also used to monitor the test.

5. The treatment schedule followed version 8 of the plan of study with some minor adjustments on the last 2 days. The length of a few spill treatments were shortened to allow data collection during daylight hours.

6. Gas levels as measured by the fixed monitoring station below Chief Joseph Dam were predictably high with values around 110% saturation between tests and an occasional value of 130 to 137% during the tests. Daily average values reached a high of 120%. It should be noted that these high levels reflected only the spill side of the river; the powerhouse side was much lower, around 110%.

7. Dissolved gas as measured at Wells Dam never reached high enough levels to require modification of the spill test plan. A coordination call occurred on day 5 in the middle of the spill treatments to provide an opportunity for agencies to monitor the progress of gas in the river and to adjust the treatment schedule if needed. During that call we were able to report that, despite spills of up to 5.4 kcfs/spillbay (total spill of 97 kcfs), gas levels at Wells Dam reached a high of only 114% saturation for a few hours. After the final 2 days of the tests, the highest gas level reached at Wells Dam was 116%. These lower-than-expected results were due primarily to low gas levels in the forebay of Chief Joseph Dam, around 110%.

8. Velocity data was collected with an Acoustic Doppler Current Profiler via a boat that maneuvered as close to the spill as possible. These velocity measurements will be used to calibrate the physical models of spillway flow deflectors for Chief Joseph Dam.

9. A single "fishy incident" was reported by visitors to the dam. A very large steelhead was seen trying to jump over the dam during the largest spill test. What the visitors saw was actually a sensor that was placed on top of the stilling basin endsill -- a 200-pound weight being thrown 30 feet in the air by turbulence of the water.

10. The final report of this test will not be completed for several months (after extensive data analysis and review). Of particular interest are the data from the spill test sensors that were placed upstream and downstream of Brewster Flats. These data will provide the best estimate of off-gassing in that 5-mile or so reach.

11. The spill test was not without costs, particularly to BPA. The final tab for the spill alone was $410,000, according to BPA.

12. The regional coordination it took to make this test successful was a good experience. Participation by many organizations was helpful in shaping the test plan. Mary Todd was instrumental in coordinating the test within and outside of the Corps.

13. Personnel at Chief Joseph Dam were indispensable. They provided radios and access to the dam, and manipulated the powerhouse and spillway to meet the test needs and allow free access to many parts of the project.

14. Each day of the test was long and hard. The test crew, which made outstanding contributions, included:

- Calvin Buie from Waterway Experiment Station (WES), did some of everything, including video documentation and getting brakes repaired.
- Ron Wierenga and Mark Gunter, contract employees working with Joe Carroll. They were experts at the logistics, prepared equipment, drove the boat, took measurements and more.
- Joe Carroll and Mike Schneider from WES designed the test and will do analysis of the results and produce the report.
- Carolyn Fitzgerald and Dave van Rijn.
- Kathy Hacker, project manager of the Chief Joseph Dam Gas Abatement Study, jumped through hoops to get the money to make this all possible.

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