

**DRAFT  
Meeting Minutes  
DEFT Team  
October 1, 1998  
1:00pm to 5:00pm**

**Participants**

Mike Friis, Peter Rhoads, Jim Buell, Jim White, Gary Bobker, Mike Thabault, Matt Vandenberg, Serge Birk, Gary Stern, Paul Fujitani, BJ Miller, Pete Chadwick, Karl Halupka, Joe Miyamoto, Elise Holland, Bruce Herbold, Peter Louie, George Barnes

**Ron's Opening Statement**

- Draft DEFT report distributed to DEFT: comments due by Tuesday the 6th by end of day.
- Mid-December preferred alternative
- late October scenarios
- late November scenario analyses

**Flexible Operations and Fish Triggers - Peter L.**

- Objectives: reduce fish mortality and recovery export opportunities
- flexible operations acknowledges varying zone of influence of export pumps
- salvage patterns are a proxy for take limits - improvement over yellow and red light process.

Peter presented 16 year composite charts for 5 species of fish in salvage data base. Need to define triggers or signals for adjusting operations to reduce salvage losses of the five species.

**Comments:**

1. Potential problems in interpreting the salvage pattern if it is the only parameter used for trigger. Everyone agrees that other non-salvage triggers should be included.
2. Some believe salvage trigger is too late to respond to a problem.
3. Salvage is a function of spawning time, growth, and local population distribution.
4. This approach makes you overly optimistic about ability to protect fish from salvage losses.

Mike Thabault suggested a reactionary trigger that induces more protection for fish is not the way to go. Better to use trigger to lessen protection from a high protective state. This is a key philosophical difference in approach.

## Flexible Operation Simulation - Russ B.

Russ presented a simulation using salvage densities as a trigger to reduce export rates. Fish trigger based on salvage density can be adjusted to be more or less protective and water supply impacts analyzed. Salvage triggers varied from 6/TAF for steelhead to 100/TAF for salmon.

### Comments:

5. We really have 8 or 9 species not five, if you count salmon races.
6. Simulation assumes constant fish density and distribution; we should expect changes in exports to affect distribution, and indirect effects of adjusted exports.
7. We should also expect indirect effects in upstream and other system operations as a consequence of altering export patterns.
8. We could observe fish responses to shifts in exports in historical data to see if there are any distinct patterns that we could account for and build into the simulation to make it more realistic.
9. Adjusting exports may shift demand patterns and cause complications on the operations side.
10. There appears to be risk associated with adjusting export rates to save fish.

BJ Miller suggested a process to follow:

- a. First set trigger as Russ did.
- b. Then run model and observe results.
- c. Simulate water supply cost of export adjustments
- d. Determine how water supply might be developed to make up water cost of action.
- e. The model estimate of either change will likely be accurate, but that is ok, because we will have some confidence that mortality would be reduced and water supply is protected.

Mike T. agreed with a caveat: does not account for the fact that once you see the event its too late to protect fish. You may reduce salvage, but fish have already been drawn into the south Delta where they are likely doomed. He again suggested the alternative approach where triggers are set that would allow more export from preexisting stringent export rules - "front end load the protection", and adaptively or progressively relax constraints on exports after observing fish response not only in salvage but other indicators such as real-time monitoring.

Bruce H. was concerned that if we go down this path the burden will be on agencies. Every year there will be 71,000 delta smelt at the pumps and even if we cut salvage, we won't know how populations responded. If the population is stressed from other factors, then we won't be able to assess the effect of an export reduction.

George B. stated that the ability to cut exports will evolve through adaptive management in Stage 1. We simply need to define a process or approach to cutting exports under defined triggers and

then observing response. We should learn a lot as we employ this action/tool. Mike T. responded that in such a case the triggers would have to be very protective.

George further recommended that we start with the Accord. If you decide that more could be exported than allowed by Accord, then you get env. credit, which could be spent later. Mike T. agreed that we will have flex operations above the Accord and that some pre-pumping will be OK, but he can't agree that we can only then protect to the level of credit accrued.

Mike T. suggested we look at level of protection simulations ranging from 10 to 90 %. Everyone agreed with this concept.

Bruce H. presented concepts he had in email. He pointed out failing of Accord and how we can direct our attention in this simulation to those failures. We should develop triggers for species/periods that include salvage and monitoring parameters. For example, we know a lot of salmon fry come down to the Delta in wet years - how might we protect them (Dec-Feb)?

BJ stated we need to incorporate some concept of the relative importance of the loss at the pumps to the population abundance or viability. Is entrainment important? Because we want more protection and more water supply, we want to ensure that reducing exports gives us true population benefits. Importance of mortality should be factored into triggers.

Jim Snow spoke about potential limitations or constraints on implementing this tool on operations. Will be looking at constraint using details of daily operations. Will be working with Russ and Peter L. to provide a more accurate simulation, particularly in terms of potential water supply savings.

Bruce H. stated that the more flexibility, the less we would rely on regulations, and the more difficult it will be to provide ESA assurances. It will be difficult to state how much better it will be for water supply or environment. We won't be able to use George's model for everything - some risk involved. Failing to meet recovery criteria and predict benefits because of high variability and uncertainty will be problem.

Gary S. stated that for winter run BO, salvage is not a primary tool - other things are. Concerned about salvage estimates data reliability and hatchery fish blocking wild fish patterns. Confidence intervals on salvage numbers are wide. The salvage database may be too weak for the purposes we intend in our simulations.

**More Comments:**

11. We need to look at the zone of influence triggers
12. Can't understand why salvage reductions would not be considered a positive.
13. Need to account for different races of salmon, especially winter run: problem because it is hard to differentiate races in salvage and occurs infrequently because of low numbers.
14. Triggers for salmon could be non-salvage, or salvage in combination with other factors.

15. We could limit the credit or benefit to species predicted by the simulation to something less than estimated.
16. We should use monitoring to help with triggers.
17. Salmon have some early warning indicators.
18. Caution could lead to harm, but not likely.
19. It is not clear how we build actions for OCT/NOV - how do we get there?
20. What species and level of cutbacks do we want to simulate?
21. We have to see how useful this tool will be.

### **Ron Polls Group on Tool**

Unanimous yes, but some qualifiers:

22. Must do a sensitivity analysis.
23. Look at cost in water per unit of protection
24. Need to define how we implement triggers (to reduce or increase protection)
25. Need to decide on level of protection.
26. Need to be cautious about benefit statements - more conservative - don't overstate.
27. Need to focus on potentially negative aspects, not just positive attributes of oper. flex.
28. Need to look at hatchery salmon differently.
29. Need different trigger approaches in our preliminary analyses
30. Will need an interactive process to get balanced scenarios.
31. We need to examine the multispecies simulations carefully to get right balance.

### **Ron asks what is next.**

- various levels of sensitivity should be tested (10-90% mortality reduction.
- email refinements to group

### **Comments:**

32. Gary, Mike, and Jim W. may have some ideas of what would be comfortable - get these put into tool.
33. Practical application of the tool is a concern.
34. We need to include some factor representing the importance of the salvage losses (e.g. adult equivalence)
35. We should operate to reduce salvage by 90% and then set triggers to back off and allow more export if salvage or other triggers so indicate.
36. Use Bruce's triggers in simulation model.
37. We should simulate 10-90% reductions, but also see how much water supply costs for each and how we might make up for these costs by defining what water supply actions could provide that amount of water.
38. Need to see the whole scenario - with reductions, trigger, water supply improvements, operational changes, and upstream effects.
39. Two ways to get water supply: adjust exports/operations and add new facilities.

40. Look at delta smelt monitoring data and provide new triggers for Russ.
41. Put in assumptions that make the model more realistic.
42. From simulation output lets put together various scenarios which we can rigorously define and get George to model.
43. The scenarios should be comprehensive - covering all species.
44. Scenarios could have differing themes. Differing degrees and approaches to reducing fish mortality and making up water cost.
45. Scenarios could be bookends.

#### **Ron asked about roles of DEFT versus DNCT in process of developing new scenarios**

Bruce H. had two keys in mind: (1) lets not be too species specific; we should not hurt one to benefit another - multispecies and ecosystem reminder; and (2) we do not know how important salvage losses are for delta smelt. **We should not start over - we should patch those things where the Accord proved ineffective.**

George B. encouraged staying in the corral of what is doable. Use of real-time information makes sense. There are lots of ways to capture and store water in times of surplus. Start with Accord and play with flexibility in Stage 1. Determine what is successful and what isn't. After 7 years we may decide we need something else to meet objectives.

#### **Ron final directions**

- net to set priorities on actions in our scenario
- what are priorities from fisheries standpoint?
- which would you do first?
- what chance of success should figure into priority
- species team should look into benefits of actions
- uncertainties
- need order of implementation
- next time we meet give priorities
- need to come up with 5 balanced scenarios with different themes such as more storage, more transfers, more relaxation.
- DNCT will do balancing

#### **Final Comments:**

Serge B. is concerned about developing scenarios in a vacuum without realism - causing a large feedback process that could waste our time - need to work together to get to realistic scenarios as quickly and reliably as possible. We have to rely on our historical patterns to develop scenarios.

Many on team felt it unproductive to work in vacuum from DNCT and not consider water supply when DEFT works on scenarios and scenario evaluations. We should work together. We should not dilute either teams efforts. Need to work on benefits to both env. and water supply together because of feedbacks. Flexible operations requires working at both together.

Mike T. related that we shouldn't mix evaluation process with recommendation process. DEFT needs to evaluate extremes. He needs to see the extremes to help him get to right decision and where it would work for him.

MWD data is available on FTP site 144.166.176.152 pub/upload/nd