Digital Observer, Inc.

Project Proposal: **Floating Fish: A Quality Assessment**

Strategic Objective: **Research handling practices that are effective.**

Cost: **RSDA cost ~$30,000, may be ~$20,000 if other DO projects are funded.**

Project Duration: **April–December, 2014**

Problem Statement: To qualify for the complete bonus package, one Bristol Bay processor requires its fishermen to "float" their salmon in deep RSW. When a fishing boat arrives at the tender, the boat's chilled water must be high enough to be seen when a hatch cover is raised. Chilling fish this way is effective, but expensive. This method adds weight, deepens draft, and burns more fuel. In Bristol Bay, many RSW fishermen opt merely to spray chilled seawater onto their fish. The RSW trickles through the column of salmon, with the shallow water at the bottom often just a few inches deep. In 2014 all Silver Bay salmon must be chilled at time of harvest. I understand the Silver Bay fleet is now having an internal debate over the merits of floating fish vs. using the shallow system. The overriding question appears to be: "*Is the quality gain from floating fish worth the tradeoff of deeper drafts and higher fuel costs?"*

Prior Research: Simple common sense tells us we're likely to get hurt if we dive head first into a deep pool containing just a few inches of water. Conversely, we're unlikely to get hurt if the pool is full of water. If others jump in on top of us, everyone will fare worse in a nearly-waterless pool. This situation surely applies to salmon brailers in Bristol Bay. Although the question above appears related to chilling methods, it is really about bruising, gaping and crushing. Food science research is full of information about the negative effects on fish of bruising, gaping and crushing. I used Google Scholar to search the scientific literature. Keyword combinations varied, but included: "fish quality salmon effects bruising gaping crushing autolysis chill seawater RSW depth deep." I got hundreds of hits, looked at dozens of abstracts and read more than 20 articles. Although many articles discussed how important it is to chill fish while avoiding bruising, gaping and crushing, I could not find one article that specifically addressed the question above. All references to RSW on fishing boats and tenders were about deep RSW. No one discussed the shallow RSW method.

Project Proposal: We will produce a report that compares fillet quality associated with salmon chilled in deep RSW vs. shallow RSW. Fillets are the product form most likely to be negatively affected by bruising, gaping and crushing. During the 2014 sockeye season we will contract (i.e. pay) one or more drift boats that already chill with RSW. We will focus on boats that fish the N-K District, to minimize the quality loss due to time and distance. We will ask the skipper(s) to float fish one day and go shallow the next day. To avoid "hold bias," we'll ask the skipper(s) to give us ~500-lb. samples from the same hold and brailer every time. We will position two QC staff on tenders the skipper(s) will probably deliver to. The QC techs will randomly tag fish delivered on the deep and shallow days. They will also grade the tagged, whole salmon in the field. This will help us "ground truth" results from the shore plant. At the Naknek plant, tagged salmon will be sent, when possible, to the fillet line, where shorebased QC will grade the fillets and record those grades.

Cost: RSDA Share: approximately $30,000. In-kind support will come from the processor and tenders. It is possible there will cost sharing from the processor if they want to assign other QC duties to the tender-based techs. If the RSDA funds other Digital Observer projects in 2014, this cost could be reduced by about $5–10,000. I can't provide a full cost analysis here, due to space limits.

Mark K Buckley, President, Digital Observer Inc. I have read the BB-RSDA Strategic Plan and Bylaws.

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