

# ROSS BOX REBUTTAL

RE: "The Significant Innovations of the ROSS BOX Sluice Box's New Design"  
Published on pages 12-13 & 22-23 of the Alaska Miner, February 2011

**By Randy Clarkson P. Eng**

I feel obligated to respond to this article as the author (Scott Plumber) has referenced my research (Placer Gold Recovery Research - Final Summary) and appears to be distributing his own «misconceptions» in your publication.

Scott Plumber, the author of «*The Significant Innovations of the ROSS BOX Sluicebox's New Design*» should read my earlier report «*Placer Gold Recovery Research - Final Summary*» before referring to it. Unlike Mr. Plumber's report, my report was about field and laboratory research based on the scientific method and statistical analysis of test data. The information it contains has been backed up by hundreds of radiotracer tests in the Yukon, Alaska and Guyana, South America from the period 1988 -2000 as well as work done by Professor Dan Walsh from the University of Alaska, Fairbanks MURL.

The recommendations in my «Final Summary» report are as valid today as they were when it was written. If Mr. Plumber wants to read a more recent report, he could have downloaded an updated peer-reviewed 2010 version «*The Use at Nuclear Tracers to Evaluate the Gold Recovery Efficiency of Sluice Boxes*» from the Australian Institute of Mining and Metallurgy (AusIMM) site (Gravity Gold 2010.)

I have tested dozens of triple-run sluiceboxes with gold recoveries as low as 29%. Some of these tests were on Ross and Pearson triple run boxes and some were on homemade triple-run sluiceboxes. Thirty years ago many of these sluiceboxes had incorporated some 01 RMS Ross's most recent «innovations» including: enlarged dump boxes with stepped punch plate over expanded metal/Nomad matting; adjustable side runs; water supply nozzles at the top end and middle of the box; and gates to adjust the allocation of pay gravels and water to the various runs. The Pearson and many of the homemade triple-run sluiceboxes had gated lully-adjustable side runs which could be raised and lowered easily on a gantry and were clearly superior to the Ross Box.

The problem with any triple run box is simple - you must incline the dump box and center run very steeply and run enormous amounts of water over them to move the cobbles and boulders. About 60-80% of the water in the sluicebox is directed to the center run to push the boulders down, along and over the punch plate and/or riffles. Most of the water must stay above the punch plate to move cobbles/boulders. Fine gravel and gold are entrained in this extremely turbulent water and carried at high velocity to the tailings pile. Whatever water is able to get under the punch plate is very turbulent and this flow is not conducive to proper vortex formation and efficient gold recovery.

Generally, some gold is recovered in the dump box area, a little bit in the center run and most of whatever makes it to the side runs. Radiotracer testing indicated that the gold particles recovered under the punch plate and/or in open riffles in the dump box and center runs were easily remobilized and carried away to the tailings pile by the turbulent water.

Mr. Plumber must not have ever tested the new ROSS BOX with credible methods as he refers to the recovery of some of the fine gold and the recovery of 110% of the drilling program projections as demonstrations at efficiency. Both at these are invalid recovery efficiency tests. If you have a lot of fine gold in your deposit, any gold recovery system will recover some portion of the fine gold. Catching most of the fine gold is the objective.

A properly conducted and supervised drilling program in some conditions can provide a reasonable estimate of the grade of a placer deposit, especially if the gold is relatively fine and well disseminated. However the best drilling program projection is only an estimate. In this case the projection was conservative as 110% of the projected gold was recovered. It is possible that the drilling program projections were very conservative with only 50% of the gold recovered by the Ross Box. This does not demonstrate the efficiency of the new model Ross Box. You cannot assess sluiceway efficiency unless you do credible tests of the sluiceway tailings.

To have an efficient gold recovery sluicing system you must pre-screen the pay gravels to at least minus one inch (finer if you don't have coarse gold) - full stop. Any credible mineral recovery professional from 100 years ago to the present day would agree. Stationary punch plate located in dump boxes or center runs is a very poor substitute for a screen deck or trammel and leads to high gold losses - full stop. The gold losses from some of the triple run boxes I tested could pay back an investment in an efficient pre-screened sluiceway in a few weeks of operation when gold was less than \$400 per fine ounce.

In my professional opinion the present and former Ross Boxes are/were not «ingenious» as some of the single run sluiceways I have tested had higher gold recovery efficiencies. If any would-be placer miners are still keen to have a Ross Box you may be able to pick up one of the dozens of abandoned ones in the Klondike region of central western Yukon. You should act quickly as most of them have been cannibalized to build efficient pre-screened gold recovery systems or have been cut up for scrap.

Regards,

Randy Clarkson P. Eng

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