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the use of hydraulic shears will provide for debris-free severance of the dry tubes without the filings and cutting debris inherent to the abrasive saw technique. This feature of the hydraulic shears offers a clear benefit in the contamination control area, because less radioactive material is released from the cut piece into the RPV water. Consequently, there is a lower source term contribution to the RPV water and less radioactive material to build up on the associated water filter media. This, in turn, provides for lower "shine" doses to workers inside the RPV and reduces the required frequency of filter change-out and attendant personnel exposure.

In terms of worker proximity to the radiation source, i.e. to the piece being cut, there is no difference between the use of the hydraulic shearing tool and use of a hydraulic abrasive saw. Both techniques involve remote operation with the same amount of water shielding and distance provided.

Beyond the ALARA benefits described above, there are no features of the hydraulic shears, relative to hydraulic abrasive saws, which would adversely affect considerations addressed in the DP accident analysis, airborne or liquid release estimates, radioactive waste forms or quantities, or other environmental impacts. There are no catastrophic failure modes associated with hydraulic shears.

Thus, upon receipt of verbal approval from the NRC as noted earlier, LIPA proceeded to sever the dry tubes using hydraulic shears. The personnel radiation exposure incurred during performance of the dry tube removal was approximately 10 millirem.

Dryer/Separator Guide Rods

In the reference 1 and 2 letter, LIPA informed the NRC Staff that it would make the lower cut of the guide rods using the underwater metal disintegration machining (MDM) method. The cutting technique for this cut, if necessary, has been changed to underwater plasma arc because it offers schedule and cost benefits with no real additional radiological impacts. (The dryer/separator guide rod removal was accomplished with virtually no measurable personnel radiation exposure). Also, using PAC, there will be less potential for water clarity problems because the cutting residue will settle out, whereas with MDM, the finer cutting debris will more likely remain suspended.

The following is a description of the subject cutting techniques:

MDM is a machining process which uses the electromotive disintegrating machining technology. MDM uses a constant current power supply and vibrating electrode to remove metal from a work piece. MDM produces a fine talc-like particulate removable from the work area via flushing or filtration.