AUSTRALIAN NATIONAL UNIVERSITY
DEPARTMENT OF NUCLEAR PHYSICS
14UD TANK OPENING REPORT NO 67

23 May 89 to 30 June 89

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Reason for Tank Opening

Sparking in Unit 9

Preamble

Machine closed on 23 May 1989. The immediate problem was chain slippage due to excessive oil. Running the chains continuously for 3 days dispersed the oil from the chains eliminating the slippage problem.

The machine was conditioned up to 15.1 MV and in the following 20 day period, the only problem was the charging current on chain #2 dropped to half that of chains #1 and #3. Sparking in U19 was inconsistent with continuation of the schedule, so a tank opening was decided on.

Tank Opening 26 June 89

Half the gas taken out Friday with the balance taken out Monday, allowing us to get into the 14UD, 3 pm Monday.

Resistors: Sparking problem in Unit 9 was due to a column resistor coming unscrewed at its base and laying in its tube. In Unit 14 a tube resistor lead was found unplugged and the loose end of the lead was touching the resistor lead below, hence it shorted out two or three gaps. All resistor aluminium sockets and mating plugs were individually inspected and all blackened plugs or frayed leads replaced. It was decided not to use the electrical jointing compound EJC No 2.

Tube resistors that are mounted on flanges coinciding with castings have been remounted so they are at a tangent to the tube. This gives greater clearance between the casting and resistor leads without the need for the resistors to be out of plane.

Charging System

Pieces of DC idler conducting ??? from the up side of chain #2 were spread through the HE end of the machine. This was an obvious cause for the charging current on chain #2 dropping to half that on chain #1 and #3. The

DC idler on the down side of chain #3 had lost its contactor wire. These had been replaced at the last tank opening.

Two of the old style DC idlers were modified from a contactor spring held by a screw parallel to the wheel axis to one that is at right angles to axis. The alteration involved cutting two slots 180° apart and at 90° to the original slots. Before any adjustments were made to DC idlers, we checked their speed and found the up side on chain #1 running at 60% of correct speed.

Stringers

Our standard test of putting 30 KV between stringers after the column has been closed paid dividends. We found one resistor that had not been connected.

Whilst checking Unit #1 with the 30 KV supply, the youngsters noticed a sound of corona. With all platform lights off, we were able to see a corona 10mm long starting at the "Z" bend on the upper stringer and pointing towards the upper casting. We relocated the stringer 180° around from where it was and attached it to the underside of the flange rather than the top side. Positioning the stringer here kept it as far as possible from other surfaces. Other corona sounds could be heard when checking the rest of the accelerator with the 30KV supply but these were much quieter and not visible.

Charging Test

Standard charging test done with no change in chain #1 performance after DC idler adjusted. All readings as what is normal for the past 1–2 years.

Castings

All castings were wiped clean using chamois, water and RBS. Entire accelerating column blown down with nitrogen before closing units.