E158 Target Mover Operating Procedure

Draft3.5

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There are 2 separate systems, one for moving the liquid hydrogen target (which moves vertically up and down) and one for moving the solid targets (which move horizontally). These systems are interlocked to avoid running them into each other and damaging the hydrogen target. The interlock logic is straightforward:

1) The hydrogen target will not move down unless the solid target table is in its outermost position (it can move up regardless of the solid target table position)
2) The solid target table will not move unless the hydrogen target is in its uppermost position

Additionally, the liquid hydrogen target will not move down unless the scattering chamber is under vacuum

Note there are only two acceptable positions for the hydrogen target: fully up or fully down. The beam is interlocked and will not come to End Station "A" (ESA) unless the target is in one of these positions. **DO NOT MOVE THE HYDROGEN TARGET WITHOUT SUPPRESSING THE BEAM TO ESA.**

I) Moving the Hydrogen Target

1) Ensure that the solid target table is in its outermost position. Look at the Table Control Panel (Rack 50). The OUT LED should be lit and the encoder should read 1571, approximately.

2) **Notify MCC (x2151) that you are going to suppress the beam to ESA. On the Beam Suppression Panel (Rack 17) press the White Button to the left of the key switch.**

3) Using the Target Control Panel (Rack 50) move the target all the way to its down position. The DOWN LED should light and the encoder should read 1054, approximately. There are contact switches that will stop target motion when it reaches its bottom position.

4) To raise the hydrogen target to its uppermost position, use the up switch on the Target Control Panel until the UP LED is lit and the encoder reads 293, approximately. There are contact switches that will stop target motion when it reaches its top position.

5) To enable the beam to ESA press the White Button to the left of the key switch on the Beam Suppression Panel (Rack 17).

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II) Moving the solid target table:

1) Ensure that the liquid hydrogen target is in its uppermost position. Look at the Target Control Panel (Rack 50). The UP LED should be lit and the encoder should read 293, approximately.

2) Use the Table Control Panel (Rack 50) to move the desired solid target into the beam line. Please see the attached table below for the correct positions.
   DO NOT JOG THE SWITCH QUICKLY.
   DO NOT REVERSE DIRECTION QUICKLY.

Solid Target Table Positions (approximate)

Table at IN limit switch, encoder displays "912"

Solid Target Positions
#1, Halo 1 (2.5 inch)----------------------------set encoder to "922"
#2, Halo 2 (1.75 inch)--------------------------set encoder to "988"
#3, Super-thin C with crack--------------------set encoder to "1053"
#4, Super-thin C---------------------------------set encoder to "1119"
#5, 1 Thick Block C (2.1 gm, 5% r.l.)--------set encoder to "1184"
#6, 4 Thick Blocks C (8.4 gm, 20% r.l.)-----set encoder to "1249"
#7, 20 mil C (down-beam)---------------------set encoder to "1314"
#8, 20 mil C (up-beam)-------------------------set encoder to "1379"
#9, 20 mil C (middle of table)-----------------set encoder to "1444"

Table at OUT limit switch, encoder displays "1571"