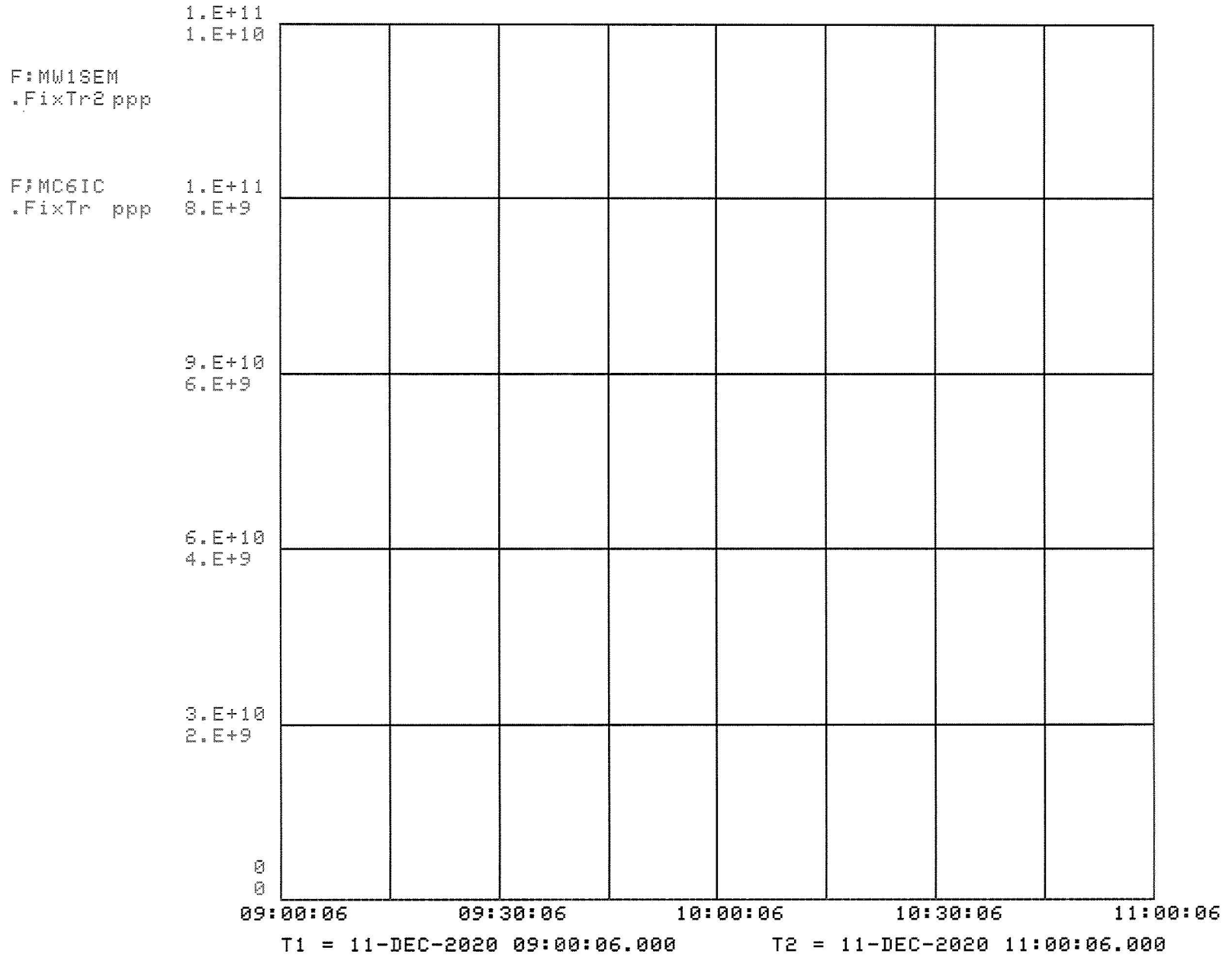


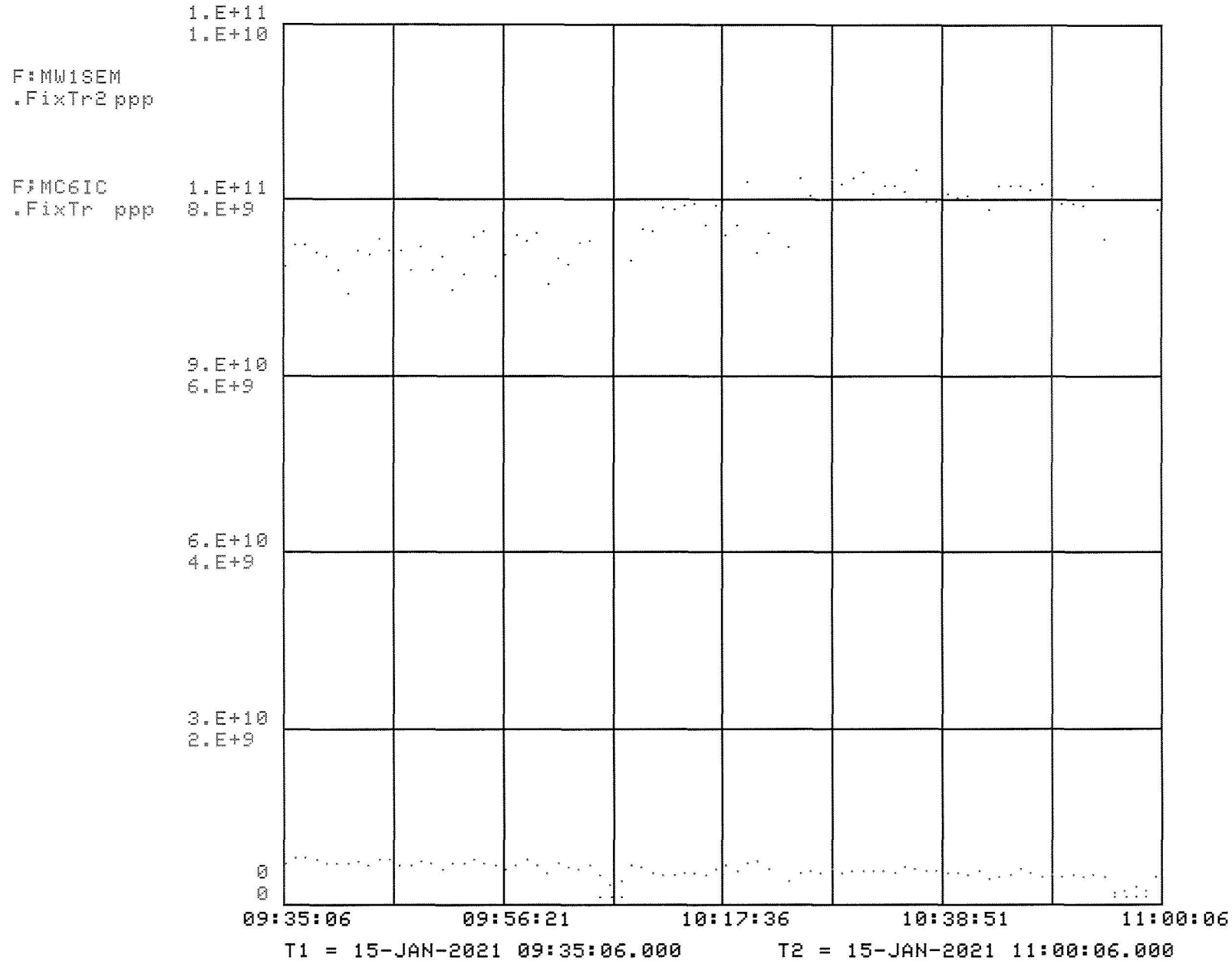


Fri 15-JAN-2021 12:48:06





Fri 15-JAN-2021 11:43:26



# SwitchYard Primary

## Gamma Survey Results

### Bicron Results

Location	Background (cpm)	Gross Beam-On (cpm)	Net Beam-On (cpm)	Standard Deviation	Net ± St. Dev.	L <sub>c</sub>	N <sub>D</sub>
1	1201	934	-267	46.21	-267 ± 46.21	80.609	163.958
2	1048	1179	131	47.19	131 ± 47.19	75.299 !	153.337
3	1044	1106	62	46.37	62 ± 46.37	75.155	153.049
4	2224	2180	-44	66.36	-44 ± 66.36	109.693	222.138
5	2069	2080	11	64.41	11 ± 64.41	105.801	214.354
6	1560	1627	67	56.45	67 ± 56.45	91.870	186.485
7	1085	1162	77	47.40	77 ± 47.4	76.617 !	155.973
8	1316	1388	72	52.00	72 ± 52	84.380	171.502
9	1368	1289	-79	51.55	-79 ± 51.55	86.031	174.804
10	1464	1411	-53	53.62	-53 ± 53.62	88.998	180.740
11	1247	1546	299	52.85	299 ± 52.85	82.138 !	167.017
12	1500	1375	-125	53.62	-125 ± 53.62	90.086	182.916

### Converted to mR/hr

Background (mR/hr)	Gross Beam-On (mR/hr)	Net Beam-On (mR/hr)	Standard Deviation	Net ± St. Dev.	D <sub>D</sub>
0.006	0.005	0.000	0.0002	0 ± 0.0002	0.001
0.005	0.006	0.001	0.0002	0.001 ± 0.0002	0.001
0.005	0.006	0.000	0.0002	0 ± 0.0002	0.001
0.011	0.011	0.000	0.0003	0 ± 0.0003	0.001
0.010	0.010	0.000	0.0003	0 ± 0.0003	0.001
0.008	0.008	0.000	0.0003	0 ± 0.0003	0.001
0.005	0.006	0.000	0.0002	0 ± 0.0002	0.001
0.007	0.007	0.000	0.0003	0 ± 0.0003	0.001
0.007	0.006	0.000	0.0003	0 ± 0.0003	0.001
0.007	0.007	0.000	0.0003	0 ± 0.0003	0.001
0.006	0.008	0.001	0.0003	0.001 ± 0.0003	0.001
0.008	0.007	0.000	0.0003	0 ± 0.0003	0.001

## SwitchYard Primary

### Neutron Survey Results

Location	Average Background (mrem)	Average Background (mrem/hr)	Gross Beam-On (mrem/hr)	Net Beam-On (mrem/hr)	Sample Standard Deviation (mrem/hr)	Net ± St. Dev. (mrem/hr)	L <sub>C,N</sub>	D <sub>D,N</sub>
1	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
2	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
3	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
4	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
5	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
6	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
7	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
8	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
9	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
10	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
11	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04
12	0.01933	0.01933	0.000	0.000	1.08E-04	0 ± 0.000108	2.52E-04	5.04E-04

# SwitchYard Primary

Scaling Dose Rates to Operating Limit Intensity & Calculate Annual Dose

Location	At Survey Intensity		Scaled to Operating Limit Intensity at Standard Beam Up-Time					
	Gamma	Neutron	Gamma			Neutron		
	Net Beam-On (mR/hr)	Net Beam-On (mrem/hr)	Net Beam-On (mR/hr)	2,000 hr Working Year (mrem)	24/7/365 (mrem)	Net Beam-On (mrem/hr)	2,000 hr Working Year (mrem)	24/7/365 (mrem)
1	0.000	0.000	0.000	0.000	0.000	0	0.000	0
2	0.001	0.000	0.016	32.432	96.160	0	0	0
3	0.000	0.000	0.000	0.000	0.000	0	0	0
4	0.000	0.000	0.000	0.000	0.000	0	0	0
5	0.000	0.000	0.000	0.000	0.000	0	0	0
6	0.000	0.000	0.000	0.000	0.000	0	0	0
7	0.000	0.000	0.000	0.000	0.000	0	0	0
8	0.000	0.000	0.000	0.000	0.000	0	0	0
9	0.000	0.000	0.000	0.000	0.000	0	0	0
10	0.000	0.000	0.000	0.000	0.000	0	0	0
11	0.001	0.000	0.016	32.432	96.160	0	0	0
12	0.000	0.000	0.000	0.000	0.000	0	0	0

Intensities (protons/hr)	
Survey	Op. Limit
3.70E+13	6.00E+14

Beam Up-Time	
# Weeks	44
Efficiency	80%
<b>67.7%</b>	