

Hall C Qweak Target Operator Essential Responsibilities

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This document outlines the responsibilities of the Qweak target operator. It summarizes the minimum understanding of the system required to safely operate and monitor the Hall C Qweak cryotarget. This document describes *what* the target operator needs to know, not *how* to do it. How to perform each responsibility can be found in the target “How-tos”, and to some extent in the target training talk which is posted at the target website http://www.jlab.org/~smithg/target/Hall_C_Cryotarget.html.

1. Training Requirements:

Qweak has special training requirements. Every target operator must understand these requirements and keep his or her training up to date as described in: <http://qweak.jlab.org/DocDB/0012/001206/001/Target%20Training%20Rules.pdf>. Beyond the formal training requirements, every target operator must know how to do each of the items listed in this “Essential Responsibilities” document.

2. Emergency Contacts

Emergency contacts can be found posted next to the target operator console in the Hall C counting room, and also on the Hall C target website http://www.jlab.org/~smithg/target/Hall_C_Cryotarget.html.

3. Essential Responsibilities:

- 3.1. Power-requirements: At the beginning of the shift the target operator should determine which target is in position, and the power load on the targets (the beam off power of the high power heater). He/she should also verify with the shift leader that the present settings will be compatible with the shift's program. The target operator must insure that at least 100 W of heater power are present when the beam is on in order to keep the target temperature stable.

- 3.2. Alarm-handler: At the beginning of the shift the target operator must verify that there is a working alarm handler available from every workspace of the window manager. That is to say, the alarm handler GUI must always be visible.
- 3.3. Configuration: At the beginning of the shift the target operator should make sure that he/she understands the configuration of the system. For the Qweak experiment this includes knowing the goal parameters for each target: 35 psia & 20 K for LH2, and the temperature limits for the array of solid targets. The operator must know where to find the operational restrictions which state the beam current and raster limits for each target. In addition the status of all the motion mechanisms should be checked and the target operator must know which target is in the beam.
- 3.4. Checklist: Make a picture of the target GUIs and stripcharts and stick them in the Hall C electronic logbook. Do this at least once per shift.
- 3.5. Logging: The target operator must verify that the data logging is on at the beginning of each shift.
- 3.6. IOC-reboots: All IOC reboots must be entered in the electronic logbook, preferably with the keyword--target ioc reboot.
- 3.7. Alarm-servicing: All alarms must be serviced from the lowest level in the tree. This will insure that the operator can identify the parameter which is outside normal operational bounds. All nuisance alarms should be reported to an "expert" (see call list above). The expert will determine if the limits should be changed or if a hardware fix is needed. **Do Not Change Alarm Set Points** without consulting an expert.
- 3.8. Target-motion: It is necessary to contact MCC **prior** to making any target motion. The target operator must know the appropriate beam current limits for each target, or how to find them. The desired beam current (and raster size if necessary) must be communicated to the MCC operator when going to a different target.
- 3.9. JT valve adjustment: The operator must know how to adjust the coolant JT valves to respond to changing conditions. The operator must also know how fast these valves can be changed. Changing JT valves too fast can crash the CHL and/or the ESR.

4. **Required Knowledge:** The tasks listed below should be second nature to any trained operator:
 - 4.1. Target-motion: All operators must be able to use the various target motion GUI's.
 - 4.2. IOC-reboot: All target operators must be able to recognize the common symptoms of a sick IOC and be able to perform a reboot, and restore GUI operations to normal (ie, alarm handlers, etc.).
 - 4.3. Alarm-handling: All target operators must be able to properly service alarms.
 - 4.4. Heatload-adjustment: All target operators must be able to adjust the heat load of a target to match the running conditions. This involves the high-power heater limits, the JT-valves and the pump frequency.
 - 4.5. GUI: All target operators must be able to log into the controls Linux computer and start the GUI and charts.
 - 4.6. Off-normal event procedures: The target operator must be familiar with the recommended responses to emergencies and “off-normal events” described in the Qweak LH2 Target TOSP. A target expert must always be contacted when an off-normal event occurs.