Main Injector/Recycler Power Outage Response

Reviewed by _____

If the Main Injector service buildings or power supplies are affected by a power outage, use the guidance below to aid in the investigation and recovery. Steps don't need to be done in the order they're written. Some can be done simultaneously and some can be skipped depending on the situation. As always, the major objective during any power outage is to ensure the safety of personnel and equipment, and to restore power.

Contact Personnel as Necessary:

- Duty Electrician
- Main Injector Department Head
- Main Injector Machine Coordinator
- RF Department Head
- Mechanical Support Department Head or alternate
- Operations Specialist for Main Injector
- Operations Department Head

Main Injector LCW/RAW Systems:

Since the Main Injector LCW and RAW systems are located in the Main Injector service buildings, they may also be affected by a Main Injector power outage. Monitor the status of these systems:

- Main Injector magnet LCW system at each house.
- Main Injector RF and Cavity LCW systems.
- MI-40 Abort RAW system.
- MI-52 LCW system.
- MI-62 LCW system.
- 2.5MHz RF systems at MI-31.

Scout:

If personnel are available, a field team can try to ascertain the extent of the outage.

- Bring a flashlight and tour Main Injector service buildings and make note of the areas that are without power.
- Make note of any other issues found such as strange odors and water on the floor.

Monitor:

If the Controls System is running, it can be used to monitor the following:

- Supply and Return pressures and temperatures for the Main Injector Magnet, RF, and Cavity LCW Systems.
- Supply and Return pressures and temperatures for the MI-40 Abort RAW system.
- Main Injector service building temperatures.
- Status of Main Injector power supplies and RF.
- Status of Main Injector interlocks.

Actions:

If you discover signs of trouble with any Main Injector system, take reasonable action to protect associated equipment.

- For LCW system issues, turn off associated Main Injector power supplies and/or RF. This can be done via the Controls System, or some power supplies can be expediently done by disabling the Main Injector ESS.
- Monitor all of the Main Injector and Recycler RF systems.
- If LCW leaks are discovered, the leak can be valved out.

Follow all guidance given by the experts who are contacted. They may have additional instructions.

In the event of an extended power outage:

Monitor sumps in the affected MI tunnels, as well as the MI-40 Abort sump. If water levels are in danger of overflowing a generator may be required to supply power to the sumps. Coordinate with the MI Machine Coordinator.

When Power Returns:

- Inform everyone who has already been contacted.
- Validate alarms to ensure everything that should be monitored is being monitored.
- Continue to monitor Main Injector LCW and RAW system pressures, temperatures, and levels.
- Tour the Main Injector service buildings as time and personnel availability permit. Look for any signs of lingering complications.
- Work with experts to begin recovering affected systems (vacuum, RF, magnet power supplies, etc.)
- Verify that all Main Injector nodes are responding to the node poll.
- Restore all Main Injector CAMAC crates to a recent good running file via D2.
- You may also need to restore I2, I3, R2, and R3 ramp files.
- Reset 8GeV Line magnetic fields.
- When beam returns, verify that the MI-8 Line Autotune is up and running.

Make sure to document all steps taken in the MCR e-log.

***A word file for this document is kept on the BD/Operations Staff Sharepoint.**

NOTES: Please use this area to note any problems encountered during recovery.