

# Hazard Analysis

Work Package # 30801 - Exchange of two flow controllers on QT manifold  
 Hazard Analysis - Form 2023-22984

**Dates** 21-APR-2023 — 21-APR-2023

**Managed By** PPD — Particle Physics Division

**Performed On** Particle Physics Division

**Authorizing Supervisor** Tesarek, Rick (12680N) 630.840.8609

**Project Name** E1039

**Prepared By** Nakano, Kenichi (14489V) 630.840.

**Job Description** It is to exchange the inlet controller of Liquefier B (FC501B) and the outlet controller of Liquefier A (FCA) on the QT manifold at NM4. The reason for the exchange is that the specification of FCA (upstream = 15 psi, downstream = 10 psi) is suitable for the inlet side.

**Workflow Status** Approved

**Point of Contact** \_\_\_\_\_

**Pre-job Briefing Conducted by** \_\_\_\_\_

## Package Location

Type	Name	Building Manager	Org
Floor	KTeV / NM4   Ground Floor [630]	AFM: (Huey, Steve) TL: (Nelson, Leonard)	PPD

# Hazard Analysis

Check the MS Equipment Database for equipment you can use to complete your job: ([MS Equipment DB](#))

Check out questions that should be used when job planning or conducting pre-job briefing: ([Job Planning/Pre-Job Brief Questions](#))

## Emergency Work

Check this box to indicate this is emergency work that is required to be done immediately before electronic approvals can be obtained. (NOTE: Electronic approvals should still be obtained retroactively.)

## Additional Details

The overall procedure is described in the attachment, "Procedure\_for\_Exchanging\_FC501B\_and\_FCA.pdf".

**Check the boxes next to all types of work and known hazards you may encounter on this job.**

---

**COVID-19 Protective Measures ([Guidance Documents](#))**

- Maintain 6 ft. or greater social distance when possible
- Surgical Mask or other Lab-approved Mask
- Face Shield
- Safety Glasses / Goggles
- Impervious Gloves
- Clean Surfaces Used
- Wash/Sanitize Hands
- Other Protective Measures Not Listed Above (List in Text Box below)

**Close Proximity Work < 6 feet**

- 1. Check this box to select the D/S personnel performing the close proximity work (check ALL that apply)
  - 2. Check this box to select where the close proximity work will be performed (check ALL that apply).
- 

**Industrial Hazards**

- Flammable Gas Areas
- Heat Stress / Cold Stress
- Structural Demolition
- Excavation
- Scaffold Erection
- Scaffold Use
- Ladder Use
- Steel Erection
- Fall Protection - Fall Exposures >4 feet (>6 feet for construction)
- Overhead Crane
- Powered Industrial Truck (e.g. forklift)
- Mobile Elevating Work Platform (MEWP) (e.g. Scissor Lift, Aerial Lift, Bucket Truck, etc. )
- Mobile Crane (Complete eJulie Prior to Setting up Crane)
- Below-the-Hook Lifting Device
- Critical Crane Lift
- Crane Personnel Basket
- Rotating Equipment
- High Pressure air/fluids
- Welding/Cutting/Brazing/Grinding
- Lead (Lead paint, moving bricks, cutting sheets, soldering)
- Chemical Use (cleaners, solvents, adhesives, etc.) - If checked attach or link SDS to the HA [Upload Files](#)  
[Add Hyperlinks](#)

- Lasers
- Non-ionizing radiation (RF, UV, magnets)
- Confined Space
- Ergonomics (overexertion, repetition, heavy lifting, awkward lifting, static posture)
- Silica (machining - concrete, asphalt, grout, mortar)
- Loud Noise (continuous, instantaneous)
- Asbestos (presumed or suspect building materials, e.g. tile, pipe insulation, roofing materials, etc.)
- Nanomaterial (1-100nm, ex. buffing solutions, surface material coating, 3d printing)
- Beryllium
- Potential Oxygen Deficiency - ODH 1 or ODH 2 Area
- Robotics

### **Electrical Hazards**

- Manipulative Energized Work
- Diagnostic Energized Work (inc. LOTO verification)
- Working within 25 feet of 345kV overhead utilities
- Working within 10 feet of overhead utilities

### **Environmental Hazards**

- Impact or release to surface, sanitary, or ground water
- Impact to new or existing air emission sources, including equipment/generators
- Generation of regulated waste (hazardous, special, universal)
- Use of refrigerants (NOTE: Refrigerant work must be performed by an EPA certified technician and coordinated through the FESS Refrigerant Manager.)
- Use of Oil (> 55 gal) or new oil filled equipment
- Release of a chemical or use of a new chemical
- Impact to a naturally sensitive area or historical site

### **Radiation Safety**

- Posted Radiological Area (Radiation Area, HRA, Contamination, Airborne)
- Radioactive Material, Ionizing Radiation, Radiation Sources, RGDs, RAW systems, Exhaust Systems, Beamline Components - including targets & absorbers
- Area working in  $\geq 100$  mrem/hr
- Worker receiving  $\geq 50$  mrem for the job

### **General Hazards**

- Traffic Control
- Working above others
- Biological Hazards
- Other Hazards not listed here? Enter them in the text box below.

---

**Check the boxes next to all types of PPE and Controls you will need for this job.**

**Personal Protective Equipment (PPE)**

- Hardhat
- Bump cap
- Steel-toed boots
- Steel-toed shoes
- Gloves - leather
- Gloves - chemical
- Gloves - electrical
- High visibility clothing
- Gloves - Cryogenic
- Gloves - Nitrile
- Safety Glasses
- Safety goggles
- Safety goggles - chemical
- Safety goggles - impact/face shield
- Welding goggles/helmet
- Fall Protection
- Respirators (air purifying), cartridge
- Respirators - supplied air
- Long Sleeve Shirts
- Long Pants without Cuffs
- Arm - cut protection
- Leg - cut protection
- Apron - Cryogenic
- Whole body - electrical
- Whole body - Dust, chemical, heat
- Tyvek Coveralls
- Tyvek Boot Covers
- Earmuffs (enter noise reduction rating (NRR) in text box below)
- Ear Plugs (enter noise reduction rating (NRR) in text box below)
- Other PPE not listed here? Enter them in the text box below.

**Controls**

- Danger tape & signage
- Orange Construction Fence / Snow Fence
- Barricades - solid
- Barricades - soft (caution tape)
- Soil/erosion control
- Road Closure
- Site dust control
- Other Controls not listed here? Enter them in the text box below.

--

**Hazard / Mitigation**

Step #	Critical Step	Process Step	Hazard Details	Mitigation Details
1	No	Steps 1.1-3.4: Described in the attachment.	N/A	N/A
2	No	Step 3.5: Remove FCA from the gas line.	The helium gas flows out to the atmosphere.	The gas flow is suppressed by confirming that the pressure is low at step 1.2.
3	No	Steps 3.6-4.2: Described in the attachment.	N/A	N/A
4	No	Step 4.3: Open SVNA.	The helium gas flows out to the atmosphere.	The gas flow is suppressed by lowering the pressure at step 1.1 and by limiting the flow at step 4.2. The gas flow is made warm by using the long flex hose.
5	No	Steps 4.4-6: Described in the attachment.	N/A	N/A

**Workflow | State Complete | Outcome Approved**

**Workflow Tasks**

Role	State	Submitted	Responder	Comments	Responded	Outcome
Start Notification	Complete	19-APR-2023 16:45			19-APR-2023 16:45	Notified
Supervisor 12680N	Complete	19-APR-2023 16:45	Tesarek, Rick	Approved provided all conditions noted in the procedure are followed (liquefier B not running, dewar B at room temperature).	04-MAY-2023 12:44	Approved
Notify	Complete	04-MAY-2023 12:45			04-MAY-2023 12:45	Notified

Managed by Fermi Research Alliance, LLC for the U.S. Department of Energy Office of Science [www.fnal.gov](http://www.fnal.gov)




Fermilab  
Fermi National Accelerator Laboratory

**Dates** 21-APR-2023 — 21-APR-2023

**Managed By** PPD — Particle Physics Division

**Performed On** Particle Physics Division

**Authorizing Supervisor** Tesarek, Rick (12680N) 630.840.8609

**Project Name** E1039

**Prepared By** Nakano, Kenichi (14489V) 630.840.

**Job Description** It is to exchange the inlet controller of Liquefier B (FC501B) and the outlet controller of Liquefier A (FCA) on the QT manifold at NM4. The reason for the exchange is that the specification of FCA (upstream = 15 psi, downstream = 10 psi) is suitable for the inlet side.

**Workflow Status** Approved

**Point of Contact** \_\_\_\_\_

**Pre-job Briefing Conducted by** \_\_\_\_\_

The tasks have been reviewed in the work area where they will be performed, and the workers on this crew have been through required training.

NAME and ID (Please Print)	Signature	Date