Memorandum

Michael Lindgren
Division Head

Accelerator Division
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Office: 630.840.8409
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Date: November ~~26~~ 27, 2019
To: Todd Sullivan
From: Michael Lindgren
Re: Approval for Running Meson Primary

Message:

Safety documentation and procedures for approval to run beam through Meson Primary are now completed and in place. Therefore, you are hereby authorized to run beam through Meson Primary.

c.c. M. Convery
P. Czarapata
T. Kobilarcik
E. McHugh
M. Schoell
N. Chelidze

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ADAP-11-0001
REV. 8

SYSTEM START-UP SIGN-OFF

The signatures below, unless noted in the comments section, indicate that the relevant systems are ready for the restart of beam operation. Indicate in the comments section any remaining work that would affect the restart of beam operations. Indicate N/A for departments that did not do any work on the system.

SYSTEM BEING SIGNED OFF: (Circle as Applicable) Linac NIF MTA Booster [8-GeV Line-MI-10 Region] [MI-20-MI-62/Recycler] BNB NuMI P1-P2 Muon P3-Switchyard Meson Primary MT MC NM FAST PIP-II _____

DEPARTMENT	DATE	SIGNATURE (Department Head/Designee)
1. Controls	10/28/19	[signature]
2. ~~Cryogenics~~		
3. E/E Support	11/23/19	[signature]
4. RPO Manager	11/27/19	Madelyn Schoell
5. ~~LSO~~		
6. External Beamlines	11/27/2019	[signature]
7. Instrumentation	10/23/2019	[signature]
8. Interlocks	11/21/2019	[signature]
9. ~~Main Injector~~		
10. Mechanical Support	10/23/2019	[signature]
11. ~~Muon~~		
12. Operations	11/27/2019	[signature]
13. ~~Proton Source~~		
14. ~~RF~~		
15. ENG Support	10/24/19	Paul C Garapato
16. ~~Target Systems~~		
17. Shutdown Coordinator	11/5/19	[signature]

Comments and special conditions (please mark comment with department # to connect comment with appropriate department):

The Meson Primary radiation shielding meets the requirements documented in the 2003 "Shielding Assessment for the Switchyard 120 Project." 2017 "P3 to Switchyard Absorber Incremental shielding assessment.

FINAL APPROVALS

System Department Head [signature] Date 11/27/2019

Assigned RSO N. Chelidze Date 11/27/2019

AD Division Head [signature] Date 11/27/2019

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BEAM PERMIT
11/27/2019

Meson Primary Accelerator Safety Envelope (ASE) Limit

The maximum hourly beam power transmitted through Meson Primary to the M01 Target Train is limited as follows:

Meson Primary: 1.03×10^{16} protons per hour at 120 GeV

No accelerator or beam line will transmit beam without an operational beam interlock safety system.

Meson Beamline Operating Limits

The maximum hourly operational charge transmitted through Meson Primary to the M01 Target Train is limited as follows:

Meson Primary: 1.68×10^{14} protons per hour at 120 GeV

Examples: Protons/hr = number of pulses/hr x number of protons/pulse

Meson Primary: 60 pulses per hour at 2.8×10^{12} protons per pulse = 1.68×10^{14} protons per hour

Special conditions and comments:

Reviewed by Todd Sullivan 11/27/2019
Operations Department Head

Reviewed by Thomas K Kobilarcik 11/27/2019
Systems Department Head

Reviewed by N. Chelidze 11/27/2019
Assigned RSO

Reviewed by Madelyn Schoell 11/27/2019
ESH&Q Radiation Physics Operations Department Head

Approved by Michael Zisman 11/27/2019
Accelerator Division Head

Operator Signatures

Crew Chiefs

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Crew A

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Crew B

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Crew C

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Crew D

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Crew E

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Other

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Running Condition
Meson Primary

November 27, 2019

Area RSO Nino Chelidze

Mode of Operation Beam to the M01 Target Train

Beam Limits

Beam Energy	ASE Limit	Operating Limit
120 GeV	1.03 E16 protons/hr	1.68 E14 protons/hr

Critical Devices S:MLAM1 & S:V204

Enclosures Protected F1,F2, F3, M01, M02, M03, M04 & M05

Preferred Monitoring Devices* Intensity is monitored via S:F1SEM and/or F:MC1SEM

*Other methods of monitoring intensity may be used.

Requirements

Access Devices S:MLAM1 and S:V204 must be disabled in order to access the enclosures protected

Cool Off Period none

Special Interlocks The CDC Inputs including failure mode devices may all be found on the Safety System Status pages.

Special Concerns Any work performed on critical devices or obtaining a critical device key requires prior RSO approval.

Gates, Fencing and Passive Shielding Requirements There is no access to radiologically fenced areas without prior RSO approval.
All fencing from M01 through and including M05 must be intact. The following gates must be secured with a Rad Fence lock to safely transport beam: M01PAE, M01PAW, M02PAE, M02VAE, M02PAW, M02VAW1, M02VAW2, M03PAW, M03VAE, M03PAE1, M03PAE2, M04PAE, M04VAE, M04VAW.

Shielding, fencing and posting are in accordance with the following shielding assessment document: 2003 "Shielding Assessment for the Switchyard 120 Project"

Assigned RSO approval also signifies that all necessary Interlock Tests have been completed and Removable Shielding is installed.

Ops. Dept. Head Approval Todd Sullivan 11/27/2019 **Assigned RSO Approval** N. Chelidze

Sys. Dept. Head Approval Thomas O'Neill 11/27/19 **AD Head Approval** [illegible]

Operational Comments

MCR must be appropriately staffed according to the Accelerator Safety Envelope.

It is acceptable to transport beam to the Meson Target Train using both slow spill and single turn extraction.

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Running Condition
Meson Primary

November 27, 2019

Area RSO Nino Chelidze

Instrument Information

There are no interlocked detectors associated with beam to M01 that specifically trip the Meson Primary critical devices.

MUX	Type	Location	QF	R/I Mode	Trip Level	CDC	Device(s) Tripped
none	none	none	none	none	none	none	none

Note: QF only included for chipmmunks

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Running Condition
Meson Primary

November 27, 2019

Area RSO Nino Chelidze

Operator Signatures

Crew Chiefs	Crew A

Crew B	Crew C

Crew D	Crew E

Other