

BEAM PERMIT
11/18/2020

Recycler Accelerator Safety Envelope (ASE) Limit

The maximum beam intensity transmitted through the Recycler Beamline is limited to:
 1.27×10^{18} protons/hour at 8 GeV

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

Recycler Beamline Operating Limits

The maximum beam intensity transmitted through the Recycler Beamline is limited to:

2.25×10^{17} protons/hour at 8 GeV

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

#1 1,440 pulses/hour at 1.56×10^{14} protons/pulse = 2.25×10^{17} protons/hour.

#2 720 pulses/hour at 3.13×10^{14} protons/pulse = 2.25×10^{17} protons/hour.

Special conditions and comments:

Reviewed by	Todd Sullivan	Digitally signed by Todd Sullivan Date: 2020.11.18 13:09:53 -06'00'
	Operations Department Head	
Reviewed by	Ioanis Kourbanis, UID:ioanis	Digitally signed by Ioanis Kourbanis, UID:ioanis Date: 2020.11.18 12:55:44 -06'00'
	Systems Department Head	
Reviewed by	Susan McGimpsey	Digitally signed by Susan McGimpsey Date: 2020.11.18 12:58:42 -06'00'
	Assigned RSO	
Reviewed by	Madelyn Schoell, UID:maddiew	Digitally signed by Madelyn Schoell, UID:maddiew Date: 2020.11.18 13:01:49 -06'00'
	ES&H Radiation Physics Operations Department Head	
Approved by	Michael Lindgren, UID:mlindgre	Digitally signed by Michael Lindgren, UID:mlindgre Date: 2020.11.18 13:34:36 -06'00'
	Accelerator Division Head	

Operator Signatures

Crew Chiefs

Michael Grogan 11/18/20
Kellie 11/18/20
Michael J. O'Neil 11/19/20
Dell J. O'Neil 11/19/20
John 21 Nov 20

Crew B

Crew D

Ken P. McDonough 11/19/20
Troy Thayer 11-19-20
Jesse Schaffter 19 Nov 2020
Kevin 11/19/20

Other

_____ 2020-11-18

Crew A

Jerry Turhammer 11-21-20
Caleb Pottage 11-21-20
Chris Ope 11/21/20
Paul Decker 11/21/20
John 11-22-20

Crew C

Judith O'Neil 11/18/20
Kurtis Light 11/18/20
Shelley Perez 11/18/2020
John T. Hagan 11/20/20

Crew E

Heather Nelson 11/19/20
Cory J. Bratting 19 Nov 2020
Sara Shedd 11/19/20
Hayden Horschman 11/19/20

Running Condition Recycler

November 18, 2020

Area RSO

Sue McGimpsey

Mode of Operation Transferred Beams

Beam Limits	Beam Energy 8 GeV	ASE Limit 1.27 E18 protons/hr	Operating Limit 2.25 E17 protons/hr
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Critical Devices R:LAM10 & BS10

Coasting beam critical devices are CBV621A & CBV621B which are open to achieve coasting beam

Enclosures Protected MI-20--MI-62, TeV F Sector, MI/TeV Crossovers

Preferred Monitoring Devices* Intensity is monitored via R:TOR853 on the \$BE event

*Other methods of monitoring intensity may be used.

Requirements

Access Devices R:LAM10 and R:BS10 must be disabled in order to access the enclosures protected. Access is also dependent on Main Injector critical devices.

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. Access to MI-40 Absorber room requires prior RSO approval. RCTs may obtain MI-40 Absorber room key without prior RSO approval.

Gates, Fencing and Passive Shielding Requirements There is no access to radiologically fenced areas without prior RSO approval. The A150 & P150 ODH barrier gates have been locked in the open position since the shielding physically provides the barrier and isolates the Tevatron from the Main Injector. Shielding, fencing and posting is in accordance with 2012 "Recycler Ring incremental shielding assessment 2.25E17 protons/hr.

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

ps. Dept. Head Approval

Todd Sullivan

Digitally signed by Todd Sullivan
Date: 2020.11.18 13:11:18
-06'00'

Ioanis Kourbanis,
UID:ioanis

Digitally signed by Ioanis Kourbanis,
UID:ioanis
Date: 2020.11.18 12:54:55 -06'00'

Assigned RSO Approval

Susan McGimpsey

Digitally signed by Susan McGimpsey
Date: 2020.11.18 12:58:07 -06'00'

Michael Lindgren,
UID:mlindgre

Digitally signed by Michael Lindgren, UID:mlindgre
Date: 2020.11.18 13:35:09 -06'00'

Sys. Dept. Head Approval

AD Head Approval

Operational Comments

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

Defense-in-Depth Controls

The Main Injector and Recycler rings utilize defense-in-depth controls to reduce the probability, duration, and likelihood of beam loss accident conditions. These consist of Beam Loss Monitors, Vacuum Interlocks and Power Supply Regulation and Permit Interlocks connected to the Beam Permit System, LCW radiation monitors, Beam Switch Sum Box (BSSB), Time Line Generator (TLG), Main Injector/Recycler Transfer Permit, Main Injector/Recycler Orbit Controls and software Alarms and Limits.

The Beam Permit System, Beam Switch Sum Box (BSSB), Time Line Generator (TLG), Main Injector/Recycler Transfer Permit and the LCW Chipmunk Detectors are required to be operational when the Main Injector or Recycler rings are transporting or accelerating beam.

Individual inputs to the beam permit system from the Beam Loss Monitors, Vacuum Interlocks and Power Supply Regulation and Permit Interlock may be masked on an as needed basis under the direction of the MI Department. Any inputs masked from these three systems and any administrative controls directed by the MI Department are required to be logged in the MCR E-log.

Running Condition Recycler

November 18, 2020

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Sue McGimpsey

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Dolph King 11/19/20

John 21 Nov 20

Crew B

Crew A

Jay Zimmerman 11-21-20

Andy Peters 11-21-20

Chris 11/21/20

Victor Fend 11/21/20

Jalques M... 11-22-20

Crew C

Judd Mack 11/18/20

Nathan Kuff 11/18/20

Gilberto Perez 11/18/2020

John T. Harper 11/20/20

Crew D

Ken P. McDaniel 11/19/20

Tray Thor 11-19-20

Jacob Schaeffer 19 Nov 2020

Wm ... 11/19/20

Crew E

Heidi ... 11/19/20

Lenka ... 19 Nov 2020

John ... 11/19/20

Hopkin Hasch 11/19/20

Other

2020-11-18