

Accelerator Division Safety Procedure

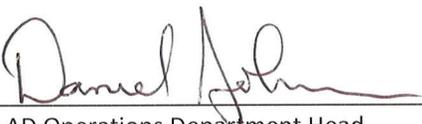
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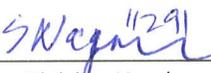
Response to Excursions above the Accelerator Operating Limits

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## 1.0 Purpose and Scope

This procedure establishes the response to be taken by the Accelerator Division (AD) Operations Department following a beam intensity excursion above the permitted Operating Limit for an area.

The accelerator operating limits are the beam energy and intensity approved for continuous operation within each section of the Fermilab accelerator facility. It is intended that the Crew Chief be allowed to operate the accelerator or beamline at the assessed operating limits. The operating limits are derived from the Fermi National Accelerator Laboratory Safety Assessment Document as assessed in the shielding assessment for the area, and established in ADAP-11-0003 *Approved Accelerator Beam Intensity Operating Limits*. The operating limit is always below the Department of Energy approved Accelerator Safety Envelope (ASE). Operating at the Operating Limit intensities ensures that enclosure shielding is adequate for possible accident loss conditions and conforms to the requirements of the Fermilab Radiological Control Manual while providing the users the maximum amount of deliverable beam.

The Beam Permit and Running Condition documents will be used to convey to the Operations Department the authorized operating limits associated with each section of the accelerator complex.

## 2.0 Definitions

### 2.1 Operating Limit

The optimal hourly integrated intensity for a machine or area. Normal fluctuations around this level are permissible. The expectation is that beam intensities are nominally maintained at or below the specified Operating Limit.

### 2.2 Excursion

- An excursion is defined as a period of running where the operating limit, established in ADAP-11-0003 *Approved Accelerator Beam Intensity Operating Limits*, is exceeded and a response is triggered.

## 3.0 Responsibilities

### 3.1 AD Head

- Responsible for approving this procedure.

### 3.2 AD ES&H Department Head

- Responsible for ensuring the preparation and maintenance of this procedure.

- Responsible for tracking beam intensity excursions to ensure compliance with this procedure.

### 3.3 AD Operations Department Head

- Responsible for instructing the Operations Department Crew Chiefs and Operators on the requirements of this procedure.

### 3.4 AD Operations Crew Chief

- Responsible for establishing an accelerator timeline that supports the Fermilab experimental program and maintains operations at the approved Operating Limits for each area.
- Responsible for implementing an immediate response to beam intensity excursions above the Operating Limit.

## 4.0 Response to Beam Intensity Excursions

The following sections outline the required response to beam intensity excursions in excess of an Operating Limit.

### 4.1 Beam Intensity and Energy Limits Prescribed on Beam Permits and Running Conditions

To ensure that off-normal machine operations do not produce accident conditions greater than those assessed through the shielding assessment process, beam intensities in each portion of the accelerator are monitored. The operating limit on the Beam Permit and Running Condition documents specifies the beam intensity and energy limits approved for accelerator operations. It is intended that the Operations Department Crew Chief be allowed to operate the accelerators at these operating limits.

### 4.2 Crew Chief Actions When Exceeding the Operating Limit

When an excursion occurs, the Crew Chief is required to take action to reduce the accelerator beam intensities to the approved operating limits.

The Crew Chief is to then verify that the excursion has not exceeded the ASE beam intensity limit. Follow ADSP-02-0101 *Response to Violations of the Accelerator Safety Envelope* for any possible ASE violations.

The Crew Chief or designee is to document any beam intensity excursions of more than 5% above the Operating Limit in the Main Control Room logbook, and is required to notify the AD Radiation Safety Officer (RSO).

## **5.0 Distribution**

An electronic controlled copy of this procedure is maintained on the ES&H Department web site at: [http://ad-esh.fnal.gov/ad\\_adsp.html](http://ad-esh.fnal.gov/ad_adsp.html)