

# Post-CHL Accelerator Start up Process Review, Spring 2016



Accelerator Operations Department

# Outline

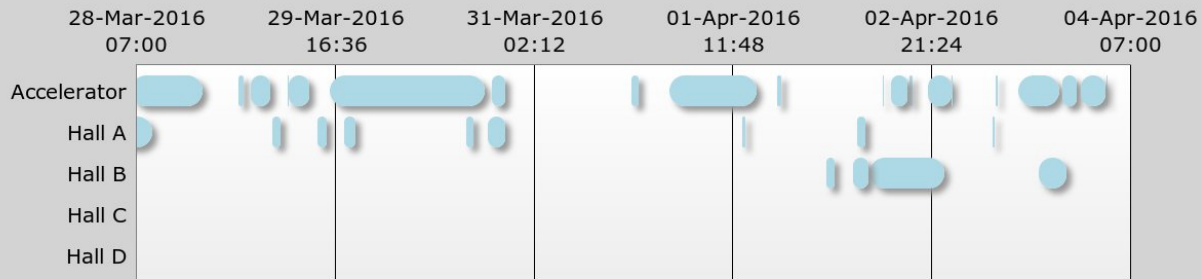
- Why a team?
- What was found?
- Who is on the team?
- The investigation
- Some open questions



# Why a Repair Escalation Report?

## Event Timeline

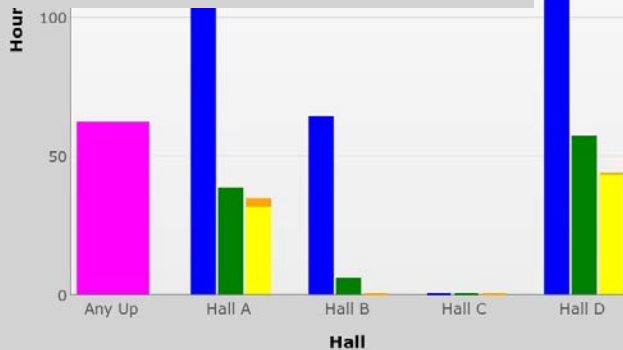
March 28 - April 4, 2016 (07:00 - 07:00)



## Accounting

April 4, 2016 (07:00 - 07:00)

Any Up	61.9			
	A	B	C	D
Sched.	158.0	64.0	0.0	158.0
UP	38.3	5.5	0.0	56.8
ABU	31.6	0.0	0.0	43.5
BANU	2.7	0.0	0.0	0.0



# What was found?

The hottest of hot spots  
(25R on contact)

xy 3.10a: /tmp/tmp.c0sQEPTu3.1 <unregistered>

HPY-SUR-001	Rev. 4	07/16/2012	RADIATION CONTROL DEPARTMENT RADIOLOGICAL SURVEY FORM	Page 1 of 1
Location SOUTH LINAC	Accelerator Operating Conditions 5 p.m. to 10 p.m.	Instrument: Ge50 AD-5 Serial #: 13272 Calibration Due: 8-2-16	Survey Number NA	RWP 2016-5m2

Reason for Survey: Escorted Survey

LEGEND  
All readings in mR/hr unless otherwise noted  
--- Delineates posted area  
○ Delineates smear location (Refer to page 2 for results)  
□ Contact dose rate  
○ Whole body dose rate  
--- Area description  
□ Delineates area not surveyed

Approved Abbreviations  
RA - Radiation Area  
HRA - High Radiation Area  
CA - Contamination Area

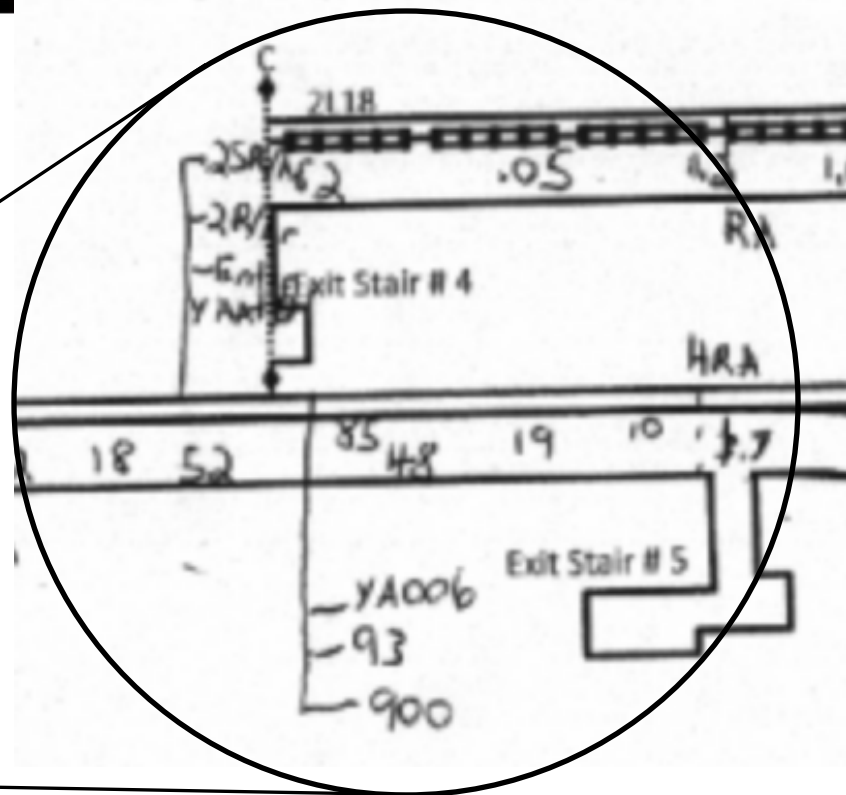
For Beam Enclosure Entry Surveys:  
 Full survey, all areas posted  
 Partial survey with continuous surveillance  
 Partial survey with exclusion zones posted

Comments:

Performed By (PHYS): *Boyd R. Turner / Bruce Hays*  
Time: 0710  
Date: 2016-07-16

Phys. Control (PHYS): *DEWEE'S TURNER*  
Time: 1134  
Date: 2016-07-04

REC'D (RWP):  
Time: \_\_\_\_\_  
Date: \_\_\_\_\_



# RAR Team

- Matt Bickley (Team lead)
- Todd Satogata (CASA/Bteam)
- Brian Freeman (Operations)
- Ken Baggett (Engineering)
- Joe Gubeli (Knowledgeable objective party)



# The Investigation Process

- Review of logbook and downtimes
- Analysis of optics data collected
- Interviews with operations, CASA and engineering staff
- RAR team discussion and integration of information



# Some of the week's significant events

- Difficulties with separator (3/27 e3392509; 3/29 DTM:2022; 3/30 DTM:2024; 3/30 DTM:2031; 4/3 DTM:2050)
- BLM weird behavior (3/27 e3392625)
- Vacuum issue (related? 3/28 DTM:2012; 3/29 DTM:2022)
- BLM voltage lowered (3/27 e3392641)
- BLA investigation (3/31 DTM:2034) Integration limit changed (3/31 e3394022)
- BLM trips (4/3 DTM:2050)



# Corrective actions

- Complete retune of machine [executed successfully starting 4/4]
- BLA integrated trip point returned to 1uA
- New protocol: no MPS set point changes without approval from director of operations
- Get 750MHz separators to produce designed separation
- Revive beam troubleshooting guides





# Action items

- BLM calibration on a test bench (VME) and with beam
- Need a policy for reviewing changes to all MPS devices and setpoints
- Improve RF separator setup procedure
- Complete 750 MHz separator commissioning [already done]



# Lessons Learned

- Accelerator setup: first principles versus snapshot of prior state
- Complete commissioning of hardware
  - BLM responses (CAMAC vs. VME) not normalized
  - Not all BLMs have been commissioned with beam
  - 750 MHz separator measurements were not finished
- Need to improve management of endstation/operations interactions

# Some Questions...

- Who owns the role of beam loss hound?
- How do we balance programmatic pressures against other pressures that affect reliability (design, test, and commissioning time; documentation)?
- Are we effectively communicating risks?
  - Engineering->Operations [Hardware readiness]
  - Operations->Management [Machine availability]
  - Operations->Users [Impact on experiments]
  - CASA->Operations [Machine configuration]

