

Key #4 _____

Key #5 _____

Safety Switch #2 (behind linac) _____

2. Remove key from maze survey box. With safety switches #1 and #2 in "run" position, verify that a visual check cannot be made.

Maze survey box _____

Pit survey box _____

3. With safety switches #1 and #2 in "run" position and maze survey box key in captive position, verify that a pit survey cannot be made with the cell-pit gate open. _____
4. Verify that pit door cannot be closed without a pit survey. _____
5. Make maze survey and verify that horn/light system both operate and that survey cancels in approximately 20 seconds. _____
6. Make maze survey and verify that placing safety switch #1 in "safe" position will cancel the survey. (Key #1- #5) _____
7. Make maze survey and verify that placing safety switch #2 in "safe" position will cancel the survey. _____
8. Make maze survey and verify that pushing the emergency switch (next to safety switch #1) will cancel the survey. (Note: emergency switches are self locking.) _____
9. Make maze survey and verify that pushing the emergency switch (next to the maze survey box) will cancel the survey. _____
10. Make maze survey and exit pit by pit door. Close pit door and verify that horn stays activated for approximately 5 - 15 seconds after door is closed. _____

10a. Verify that a pit survey cannot be initiated from the pit survey box with any safety switch in the "safe" position.

Maze

Key #1 - #5 = Safety Switch #1	PBCS-HP	CHM
Key #1	_____	_____
Key #2	_____	_____
Key #3	_____	_____
Key #4	_____	_____
Key #5	_____	_____
Safety Switch #2	_____	_____

11. Return to control room and verify that pit is secure by turning on modulator high voltage.

12. With modulator high voltage on, gamma monitors set at alarm levels (5 mr), press calibrate button until set level is reached. Modulator high voltage interlock chain should open: (Note: 90 Deg. Tunnel can't trip unit with internal source)

Instrument Room Radiation Alarm	_____	_____
Spectrograph Room Radiation Alarm	_____	_____
Cell I Room Radiation Alarm	_____	_____
Cell II Room Radiation Alarm	_____	_____
Cell II Instrument Rm. Radiation Alarm	_____	_____
90 Deg. Tunnel Radiation Alarm (Set @ 500 mr)	_____	_____

- 13. With modulator high voltage on, withdraw Cell I beam plugs and verify that modulator high voltage interlock opens. _____
- 14. With modulator high voltage on, note if electro-mechanical lock on cell/pit gate is activated. _____
- 15. With modulator high voltage on, open cell-pit gate and verify that modulator high voltage interlock chain opens. _____
- 16. Enter pit and move the moveable target switch #2 to the "through" position. Survey pit and exit by cell-pit gate. Verify that the modulator high voltage interlock chain is open. _____
- 17. Enter pit by cell-pit gate and verify that pit door can be opened from pit side. _____

CELL I TESTING

The test is started with the following conditions:

- A. Pit secured
- B. Movable target switch #2 - "through" position
- C. Cell I wall plugs - out
- D. Cell I door – open/out
- E. Cell I survey box - activated
- F. Cell II wall plugs – in/closed

- 18. Verify that a cell survey cannot be initiated from the cell survey box with any safety switch in the "safe" position.
Key #1 - #5 = Safety Switch #3

Key #1 _____

Key #2 _____

Key #3 _____

Key #4 _____

Key #5 _____

- Safety Switch #4 _____
19. Remove key from cell survey box and verify that a cell survey cannot be initiated. _____
20. Verify that cell door cannot be closed without making cell survey:
- Switch - cell side _____
- Switch - hall side _____
21. Make cell survey and verify that horn/light system both operate and that the survey cancels in approximately 20 seconds. _____
22. Make cell survey and verify that placing any safety switch "safe" position will cancel the survey.
- Key #1 _____
- Key #2 _____
- Key #3 _____
- Key #4 _____
- Key #5 _____
23. Make cell survey and verify that placing safety switch #4 in "safe" position will cancel the survey. _____
24. Make cell survey and verify that pushing emergency switch (next to safety switch #4) will cancel the survey.
Note: Emergency Switch is not self-locking. _____
25. Make cell survey and verify that pushing emergency switch (next to safety switch #3) will cancel the survey. _____
26. Make cell survey and verify that cell door will not close from cell side. _____

- 27. Make cell survey and exit cell. Close cell door and verify that the horn stays activated for approximately 15 seconds after cell door is closed. _____
- 28. With modulator high voltage "on", open cell door and verify that high voltage chain opens. _____
- 29. Enter cell, making cell survey. Exit cell and close cell door to partial close. Turn on modulator high voltage and verify that a reading on the cell I gamma monitor that is above the set alarm point will open high voltage interlock chain. _____
- 30. With the medium pulse line (approximately 6 usec) and the klystron running at maximum power and 60 Hz, monitor and record the radiation readings.

Klystron #1 cabinet back end 7 Ft.up=_____mr @ 6 cm
 Klystron #1 cabinet back end 7 Ft.up=_____mr @ 30 cm

	A	B	C
	Knee	Above	Below
	Level	Lead	Lead
Highest reading outside klystron #1 cabinet #1 mark	_____	_____	_____
Highest reading outside klystron #1 cabinet #3 mark	_____	_____	_____
Highest reading outside klystron #2 cabinet #2 mark	_____	_____	_____
Highest reading outside klystron #2 cabinet #4 mark	_____	_____	_____

- 31. Remove from interlock chain, final relays K5 & K8 (relay contacts in series) and check contacts with check box. _____
- 32. Remove from interlock chain, facility relays K4 & K7 (relay contacts in series) and check contacts with check box. _____
- 33. Enter cell through pit and cell-pit gate and verify that cell door will open from cell side. _____

EMERGENCY ALARM PART B

B. In coordination with the appropriate persons, activate the Emergency Alarm and verify that the emergency message is received. _____

Signature PBCS-HP _____

Signature CHM _____

Instrument used _____

JUSTIFICATION FOR CHANGE IN PROCEDURE

Revised March 16, 1992 - 1. The addition of the 5 key safety switches in Pit, Cell I and Cell II.

2. The addition of survey boxes in 135° and 90° tunnels. 3. Starting conditions for Cell II test changed. 4. Revised October 28, 1992 as indicated below. 5. Order of steps 18, 19, 20, 21, 22, and 32 changed to more logical sequence. 6. Step 48 added.

Revised March 19, 1996 – Steps 51 and 52 added, Step 50 changed from 120 Hz to 60 Hz (New P.S. limited).

Revised February 15, 1999 - Laser Room in Cell I no longer used and locked out. Removed steps 18, 19, 20.

Revised November 23, 1999 - Renumbered all of the steps in the correct order. Added the testing of the new Emergency Alarm

Revised May 30, 2000 - Remove Cell 2 material. Move the check of the pit survey lockout box (CDJ).

Revised December 6, 2000 – Change pulse line from 3 usec to 6 usec.

Revised May 22, 2001 – Remove pit monitor from check.

Revised June 14, 2001 – Remove response check of area monitors and checking of source. Also move the check for Emergency Alarm system check.

Revised May 3, 2002 – Minor terminology changes, addition of instrument line and signature line at end of document.

Other Changes

Approved: 
Chairman, Safety Committee