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Minutes of the AGS Radiation Safety Committee

Thursday, April 4, 1991

Present: D. Beavis, G. Bennett, A. Carroll, D. Dayton,
A. Etkin, E. Lessard, S. Musolino, W. Pemberton

Subject: E850 in C1 Beam Line

The C1 beam line is an existing beam line in which only the downstream experimental area has been modified. The discussion was based on the description provided by A. Carroll (Attachment #1) distributed with the meeting notice.

The experiment will run tests and fault studies this year. All tests are at a factor of 10 lower in beam intensity than desired next year. All tests this year will be run with a normal intensity of Class III for direct in-beam exposure. The committee will review the results of the fault studies before making a final recommendation on the requirements of the desired full intensity running.

The committee recommends that a collimator be locked and tagged in a fixed aperture to limit the beam intensity for tests this year (CK-C1-1).

The experiment desires to run in either polarity. The highest intensities are possible in the positive polarity at high energy. The experiment desires to run up to 20 GeV/c positives. However, the highest energy an experiment has been allowed to run is 18 GeV/c with the 24 GeV/c extraction energy. Since the experiment does not need to run at this high an energy this year, the committee will review the request for high positive energy at a later date.

The committee recommends that the experiment be allowed to run at 18 GeV/c or lower in positive mode. This is already established for E814 in the C5 beam line. The two beam lines share the same front end beam transport optics. An energy limit of 16 GeV/c would be preferred (CK-C1-2).

The normal placement of NMC paddles in the beam line is immediately downstream of the exit of C1P5 in the elevated C1 secondary area.

The committee recommends that dual NMC units be placed in the beam immediately downstream of C1P5 (CK-C1-3).

The committee recommends that the intensity limit on the paddles be less than 2×10^7 particles/spill which keeps the direct in-beam exposure at Class III or less.

The C1 secondary area has air gaps in the beam transport which would allow full body exposure. Since the experiment is intending to run high levels next year, this area should have the interlocks upgraded.

The committee recommends that the C1 secondary area have the access interlocks upgraded to be consistent with a Class I area except for the fully enclosed requirement before high intensity running (CK-C1-4).

The C1 secondary area has several thick counters that act as sources for secondary particle emission. In addition, mis-tuning of the pitching magnets before this area can create a substantial fault in the area. There is substantial shielding in the area.

The committee recommends that a fault study be conducted to determine what conditions, if any, are necessary to protect adjacent areas from beam faults in this area (CK-C1-5).

The committee recommends that a barrier be placed around the beam gap near the building column (CK-C1-6).

The quadrupole platform is an elevated area around the last quadrupole in the beam transport. The area is fenced and has a locked gate. There are no gaps in the beam pipe.

The committee recommends that this area be padlocked with an H.P. padlock (CK-C1-7).

The committee will review at a later date what additional requirements are necessary for this area for high intensity running.

The experimental area is complex with several elevated platforms. The committee members were not able to judge if access from one platform to another could be reasonably prevented. When the platforms are installed, several committee members will inspect the area to make a final judgment.

The committee recommends that the main experimental area with direct access to the beam should be protected with dual independent interlocks with a reset gate (CK-C1-8).

The committee recommends that the elevated platforms near the experimental area be protected by a chipmunk to prevent levels above those allowed for a radiation area due to fault conditions. Fault studies will verify that the chipmunk provides protection for the areas on both sides from faults and determine its location (CK-C1-9).

The committee recommends that the plug which prevents access into the solenoid be locked in the closed or open position by H.P. with an H.P. lock. The sweep procedure will require that the plug be checked that it is locked (CK-1-9). This locking will prevent the need for sweeping this enclosed area every time the outer experimental area is accessed.

The committee recommends that a fence enclose the magnet area and be classed as a Class IV area (CK-C1-10).

Simulations with CASIM suggest that the area outside the building will not have high levels but will be high enough to classify this area as a radiation area.

The committee recommends that this area be posted as a Radiation Area with signs and tape until the fault studies determine the location to place a permanent barrier (CK-C1-11).

A subcommittee of A. Carroll, A. Etkin, D. Beavis, and A. McGearry will review the interlock logic developed for the areas.

mvh/minutes.mtg

Attachment (file only)

#1-Radiation Safety Analysis for C1 Beam Line.

Distribution: Radiation Safety Committee
RSC Info. List
Department Administration
Others Present at Meeting
AGS Main Control Room