TRIUMF

TO: ISAC OPS

DATE: May 2, 2002

FROM: John Drozdoff

FILE:

RE: ISAC Gas Monitoring System

CC:

The ISAC Flammable Gas Monitoring System described in the earlier Ion Book memo dated November 14, 2001 has been commissioned. Alarms annunciate in the 500 MeV Control Room as stated in that note.

The procedures both ISAC and 500 MeV Operators should follow in response to those alarms are filed in a binder near the controller rack.

The system also generates a 500 MeV Control Room alarm if it is turned off. Such was the case during yesterday's UPS failure.

ACH	TRC	DMG	MJH	JBM	CGP	HHQ	RKT	AT	VRT
	TC		MH					A.T.	V.T.

JTD:hs

Detectors 1 & 2

FLAMMABLE GAS ALARMS IN ISAC GAS SHACK

There are 2 flammable gas sensors in the ISAC Gas Shack:

Sensor #1 - calibrated for Hydrogen, positioned for lighter than air gasses
Sensor #2 - calibrated for Isobutane, positioned for heavier than air gasses

If either of these alarms go off:

A. During weekday working hours (8:00 AM - 8:00 PM)

Contact Robert Openshaw or Marielle Goyette. If neither can be contacted on-site follow instructions in (B) below.

B. If neither Robert Openshaw or Marielle Goyette are on site:

1) Go to the alarm control unit near the LN2 filling station on the east wall of ISAC Hall. Verify which of sensor #1 or sensor #2 alarms is active, whether it's a "trouble" indication, or a flammable gas alarm, and note the %LEL reading.

2) If the "trouble" light is on, contact Robert Openshaw or John Drozdoff via e-mail. (It is possible to temporarily jumper out individual detector alarm conditions on the system's rear connector)

3) If the either "high" or "low" alarm lights are on and the %LEL reading is > 20%:

i) Go to the external southeast corner of the gas shack and verify that the shack exhaust fan is working. If its not working make sure the fan switch (located beside the fan on the external wall) is switched on. IF THE FAN CANNOT BE MADE TO WORK, EVACUATE THE ISAC HALL. Contact Robert Openshaw or Marielle Goyette immediately (24/7).

ii) If the exhaust fan is working, any flammable vapours in the gas shack should dissipate in a few minutes. Monitor %LEL reading until it falls below 20% LEL.

iii) Contact Robert Openshaw or Marielle Goyette.

Robert Openshaw 604-432-1303
Marielle Goyette 604-434-5805

Detector 3

Flammable Gas Warning at DRAGON Ion Chamber

A flammable gas monitor has been placed under the Ion Chamber/Parallel Grid Avalanche Chamber (IC/PGAC) detector at the tail end of DRAGON. It is connected to a control panel/annunciator located on the east wall of the ISAC exprimental hall. If the DRAGON isobutane alarm goes off, ISAC or cyclotron Operators should attempt to contact a DRAGON experimenter at 7514 (counting room) or on the experimental floor around DRAGON. If none can be contacted, follow the instructions (below) for DRAGON experimenters.

DRAGON experimenters:

Go to the control unit, by the LN2 fill station at the east wall. Note the status indicator lights and % LEL reading for Detector 3. The reading must be over 20% LEL for an alarm to be generated. The alarm is non-latching and will only clear after the reading falls below 20%.

Note the time and above status info in the DRAGON logbook and in the "Faults" items on the whiteboard in the H.E. counting room.

Inform Operations that this has been done. If the alarm persists:

a. Turn off the IC/PGAC high voltages, slowly to protect the pre-amps. The HV's are 5 channels of the 3 Bertan units in rack 27B.

b. Shut off the isobutane Supply valve mounted to the right of rack 27B overhead on the cable tray. Isobutane in the IC/PGAC should slowly pump away.

c. Inform ISAC Operations. Stop delivery of beam to DRAGON.

d. Call an IC/PGAC expert. Note the incident in the DRAGON logbook and on the Faults list on the H.E. counting room whiteboard. IC/PGAC experts are:
Shawn Bishop 725-0115
Alan Chen 222-8898

D.Hutcheon
8 Jan 2002

Typical inventory of flammable gas in ISAC Gas Shack:

Isobutane ~ 40,000 liters STP (2 cylinders)
Methane ~ 15,000 liters STP (2 cylinders)
Hydrogen ~ 11,000 liters STP (2 cylinders)

Internal Volume of ISAC Gas Shack ~ 50,000 liters

Exhaust fan flow rate ~ 28,000 liters/min

Gas Shack fresh air replacement time ~ 2 minutes