

cracks pointing to the interaction point. This was the major innovation in the  $\mu\mu$ II phase of E288.

Many other aspects of the upgrade to  $\mu\mu$ II were worked on by other collaborators: Bruce Brown proposed a “remeasuring” iron magnet to confirm the momentum and provide rejection against backgrounds; Dan Kaplan worked on the on-line system; Walt Innes worked on the track reconstruction; Koji Ueno on the Monte Carlo; Chuck Brown on monitoring and alignment; Bob Kephart and Hans Sens on the Directional Drift Chamber; Steve on gas system and survey; Hans Jöstlein on measuring the iron-magnet field, etc...

The installation of the target box and rigging of the detector and shielding piles were undertaken in early 1977, led by Steve Herb and Karen Kephart, allowing us to take a short test run in April 1977. The 9.5 GeV resonance was alive and well, though not yet definitive.

## VII THE DISCOVERY

$\mu\mu$ II data-taking commenced at 13:00 on May 13, 1977. I took the three or so data tapes generated each day to the Hi-Rise and submitted a batch job doing the data reduction and subsequent first-pass analysis. Thus, preliminary results were available within two days of the data-taking.

However, the gods were not through toying with us yet. On May 20 just before 11 pm, barely 7 days after data-taking started, there was a magnet shunt that failed disastrously (rather than fail-safe!). It melted and started a fire in the cables in the adjacent cable tray. Chlorine- and fluorine-laden smoke filled the experiment pit and deposited acidic residue on the amplifier cards mounted on the wire chambers. This residue could possibly eat into the printed-circuit traces and electronic components, and thus increase the failure rate to an unacceptable level — we could be down every few hours replacing electronics!!! The problem was obvious — a finger rubbed gently on a circuit board picked up a sour-tasting coating. Data-taking was stopped for a week while we figured out how to recover.

Leon remembered a similar fire incident at CERN, and, more importantly, was able to find by 3 am (barely 4 hours after the fire) the phone number of a Dutch fire-salvage expert, and convince him to come immediately to Fermilab, bringing his “magic” liquids. However, his visa was a problem — it might take days to obtain. Leon got lucky again — he found a high official at the local embassy who was a Columbia alumnus. Being a Columbia professor, Leon was able to convince him to provide a visa speedily. The expert arrived the next day, and was busy telling us what to do. We (physicists, technicians, girl friends, *et al.*) worked ’round the clock to remove the electronic cards, dip them in the magic liquid, brush them, and dry them. It worked marvelously — and the failure rate of the electronics was in fact lower than before!!!