FERMINEWS

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FERMINEWS ARTICLES WILL DESCRIBE MESON AREA RECONSTRUCTION

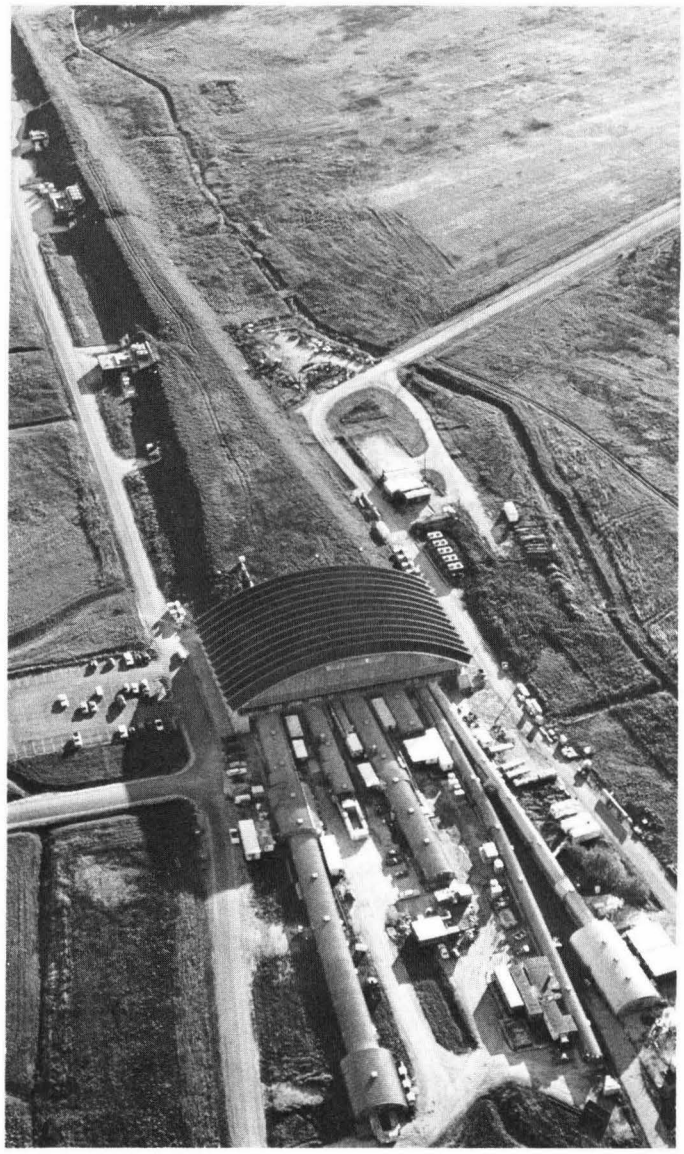
This issue of FERMINEWS, on pages 2 and 3, contains the second in a series of articles on reconstruction of the Meson Area during the meson pause.

The first article appeared in the March 1, 1979 issue, and told the story about the laying of 421 feet of concrete pipe between the F-3 manhole, just north of the master substation, to the meson target hall. It was a dramatic accomplishment for the many teams of people who together overcame the bitter cold of this area's worst winter in history to do it.

Now this issue of FERMINEWS records the construction and installation of the meson target train. Articles in future issues will look at the meson two-way split, research areas and the cooperation between members of the Meson Department and the Accelerator Division that accounted for much of the successful upgrading of the Meson Area.

The meson pause began in October 1978 with the complete shutdown of the Meson Area for an anticipated six to nine months. During that time, the area was thoroughly---and still is being---overhauled from one end to the other. The principal priorities were to harden it to accept higher energy beams, primarily the 1 TeV proton beam when it comes on line, and to give experimenters higher energy secondary beams so they can conduct more sophisticated experiments.

Ernest Malamud, head of the Meson Department, described the pause as a "unique opportunity..that has led to significant improvement projects." He also said, "Although the improvement and upgrade program was an enormous, exciting and rewarding enterprise, we look forward even more to the physics research program which will follow and make full use of the improved tools."



...Remember? That's what the Meson Area with its lengthy berm and numerous research areas looked like before the meson pause. Now the area is in its finishing stages of reconstruction. The view is from the arch-roofed detector building toward the southwest...

MESON TARGET TRAIN FASCINATING ARRAY OF INGENIOUS TECHNOLOGY

It's a masterpiece of technology: the new meson target train, nine months in the making.

One of the major accomplishments in the overall upgrading of the Meson Area, the new target train can now handle two primary proton beams--meson center and meson west--and is designed to accept a third primary beam--meson east. The train will allow scientists to conduct more sophisticated and demanding experiments than the old train would, and, in addition, is a crucial step in preparing the Meson Area for receiving the projected 1 TeV proton beam.

Calling it a train is a good way of describing the array of equipment. Four 20-foot-long bed plates, which are moved about on transporters that resemble train cars, contain all of the equipment. The first upstream bed plate carries five-foot-long dipole steering magnets that are used to set the angles at which the primary beams strike the beryllium targets. These targets can be positioned by remote control. Beam profile monitors, the last magnets and the targets are on the upstream end of the second car.

Just downstream from the beryllium targets, on cars two, three and four, are huge water cooled assemblies of aluminum and steel--the nine beam dumps and collimators. They define the six secondary beams that extend from the collimators into the meson experimental areas. There are six holes of different sizes and shapes meticulously drilled through these massive blocks of aluminum and steel, weighing tons. For example, the hole that channels a secondary beam to the M-2 experimental area is an almost square aperture, one eighth inch along an edge at the upstream side of the collimator. It grows continuously in the downstream direction to a dimension of one half inch along an edge at fifty feet from the target.

The bed plates also contain supporting equipment, such as an elaborate collimator and magnet water cooling system and instrumentation to determine where the beams are as they make their way through the train. The transporter cars that carry the bed plates on hydraulic lift jacks are coupled like railroad cars and are interconnected with multiple hydraulic lines controlling various positioning jacks. There is even

...Pride of accomplishment shows on the faces of some members of the team that successfully constructed the target train. Front to rear on the left side of the target train are Tom Golaszewski, Calvin Grayson, Bill Noe Jr., Jerry Sasek, Bud Koecher and Mike Langston. Front to rear on the right side are Herman Stredde, Ernie Villegas, Dick Wegforth and Les Bradstreet...

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a small locomotive-like vehicle for pushing the target train into and pulling it out of the meson target box, which is just downstream from the meson target hall.

Ernest Malamud, head of the Meson Department, explained that by having the target train movable, certain types of maintenance and service become considerably easier simply by pulling the train out of the target box and into the target hall, where there is more room to work around the train. A disadvantage, he noted, is realigning the train precisely after it has been returned to the target box.

This was one of the most critical steps: surveying and aligning the target train so that its final position in the target box was within a tolerance of 0.015 inch. Even air currents can upset readings when surveying, Malamud said.

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COOPERATION MEANS SUCCESS FOR NEW MESON TARGET TRAIN

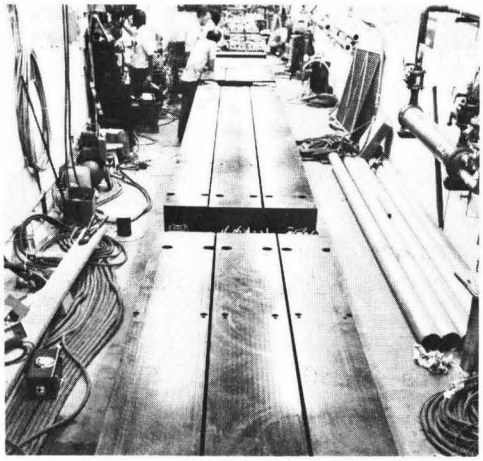
The new meson target train is an impressive testimony to cooperation, a mode of fellowship that solved enormously difficult technical problems.

Ernest Malamud, head of the Meson Department, has considerable praise for all of the people from his own department and from other Fermilab departments and sections who together are bringing the Meson Area into the 1 TeV era.

It begins with Dave Eartly the physicist in charge who also designed the five-foot-long dipole steering magnets. Then there's Bud Koecher, operations specialist, who "put it all together," said Malamud. Working closely with Koecher was Cal Grayson, senior technician, who was responsible for building the lift that moves the bed plates up and down. Tom Golaszewski, an electronics technician, put together much of the electronics. Also working on the train was John Stoffel, an electrical engineer. All of the men are with the Meson Department.

In addition to Eartly, Herm Stredde, a mechanical engineer, and Ernest M. Villegas, designer, both with the Neutrino Department, made major contributions to the design of the train. Lester Bradstreet and Richard Wegforth, draftsmen from Technical Services Department, also worked on the train's design and produced many of the drawings.

Others in the Neutrino Department who helped with the train were Mike Langston and Jerry Sasek, technicians, who worked with Koecher and were primarily responsible for installing the water cooling systems on the collimators and magnets. Robert C. Oudt assembled the target manipulators. Bill Noe, Jr., Proton Department, helped with the bus work assembly on the train.



...Target train in target hall...

...Meson area construction...

Jack M. Jagger of the Magnet Facility headed the group responsible for producing the dipole steering magnets. Meson Department Head Malamud also praised the survey team-especially, Thomas E. Nurczyk and Michael J. Roman from Research Services-for the delicate job its members did in helping the meson staff align the target train. He also lauded Randy Lenz, John Robb and Russ Lauer, all of Fabrication and Procurement, for their supurb efforts in getting the bed plates, many collimator assemblies and magnet parts fabricated on a rush schedule consistent with the train's assembly.

David L. Billingsley and James J. Schmidt of the Central Machine Shop put forth a great effort in machining the first two collimator assemblies, said Malamud. This allowed the assembly crew the time to develop collimator assembly techniques. "Special thanks is to be given to all the Technical Services machine shop personnel for making so many needed 'yesterday' parts and to Carolyn V. Gifford of Purchasing for her enduring effort in supplying critical path parts for the assembly," said Malamud.

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STANFIELD NEW HEAD OF PROTON DEPARTMENT

Kenneth C. Stanfield has been named head of the Proton Department. He succeeds C. Thornton Murphy, who will work on experiments and remain a member of the Proton Department.

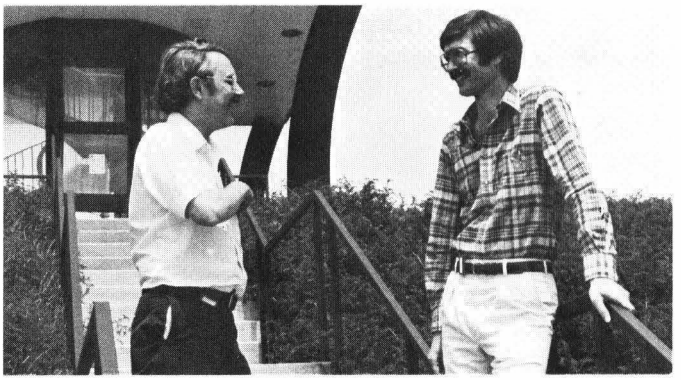
Peter H. Garbincius will serve as assistant department head.

Stanfield, who joined Fermilab in March 1977, was promoted from associate head, a position he has held since August 1977. Among the more important of his many priorities is to bring the Proton Area up to the level where it can accept 1 TeV primary beam as soon as it is available in the Main Ring. Another is to get experiments on line and have the beam lines run efficiently. He also intends to continue the development program for low current superconducting dipole magnets and to upgrade the high intensity line to a superconducting beam line on the same time scale as the development of the Tevatron. Another goal is the addition of one major new beam line to the Proton Area as part of the Tevatron upgrade.

"I am particularly impressed with the Proton Department's fine history," Stanfield said. "It has been the site of many important high energy physics results including the discovery of the upsilon particle. I hope that our current experiments will continue that tradition."

In October 1969, Harvard University awarded Stanfield his doctorate in physics. He had conducted experimental research in electromagnetic interactions at the Cambridge Electron Accelerator. His dissertation was on "Quasi-Elastic Electron Scattering and Pion Electroproduction off C^{12} from 1.0 to 5.5 BeV." He had earned his master's degree two years earlier at Harvard.

During the time he has been with Fermilab, Stanfield served as liaison physicist for broad band beam experiments and for high intensity area experiments. He coordinated proton site group activities and served as liaison person to the proton instrumentation group. He is one of the leaders in planning the Proton Department's upgrade to 1 TeV operation.



...Stanfield (right) and Murphy...

Peter Garbincius has been with Fermilab for three years, but was an experimenter here two years before that time. He was awarded his doctorate in high energy physics in 1974 by Cornell University, following completion of his studies on charged particle multiplicity in deep inelastic electron-proton scattering.

Garbincius

While with the Proton Department, he served as a project physicist for the development of dipole and quadrupole low current superconducting magnets.

As a post-doctoral researcher at the Massachusetts Institute of Technology and a staff member at Fermilab, he was involved in scattering experiments using the single arm spectrometer located in the Meson Area.

FERMILAB INTERNATIONAL FILM SOCIETY PRESENTS

"I Love You, Alice B. Toklas"

Friday, June 22, 8 p.m. Central Laboratory Auditorium

In this deftly evolved film, directed by Hy Averback and featuring Peter Sellers, viewers are taken back and forth between the hippie and straight cultures by way of brownies laced with marijuana--that Sellers, a mild-mannered Los Angeles attorney, has eaten.

PG 93 Minutes Color Adults $1.50 Children 50¢

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