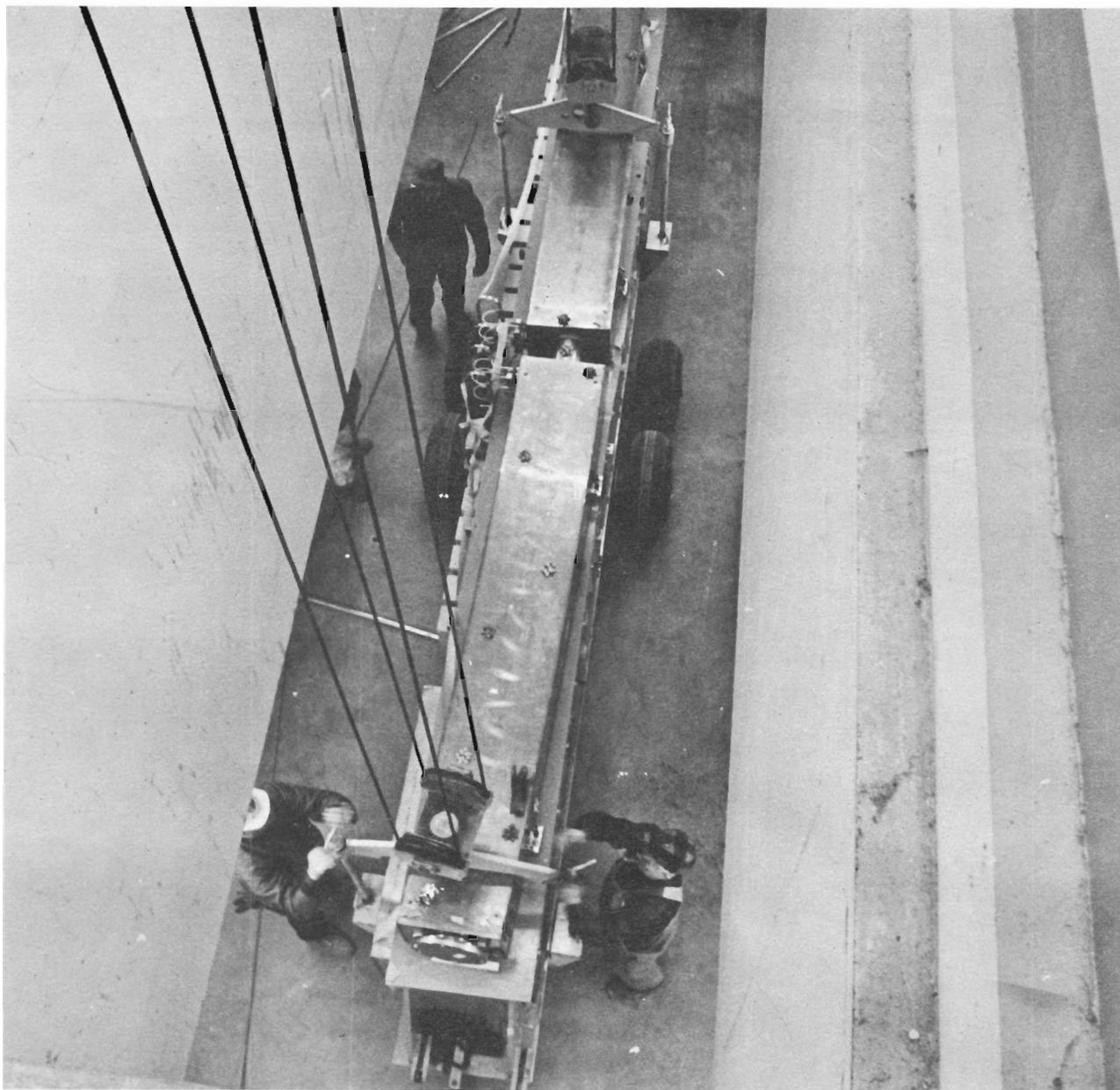




MONTHLY REPORT OF ACTIVITIES

December 31, 1970



THE LAST BOOSTER MAGNET GOES IN



FORTHCOMING MEETING AT THE LABORATORY

Program Advisory Committee. . . Feb. 27, 28

THE COVER: Down the hatch! The last booster magnet module being lowered through the Cross Gallery hatch on December 14.

MONTHLY REPORT OF ACTIVITIES

F. T. Cole

December 31, 1970

Abstract: This report summarizes the activities of the National Accelerator Laboratory in December, 1970.

Booster

An important milestone was reached on December 14 when the last booster magnet module was moved from the Village and placed in the ring. The cover and Fig. 1 show this event in progress.



Fig. 1. Roy Billinge of the Booster Section watching installation of the last booster magnet. John Clark is behind him. The rest of the men are from the rigging company, Belding Engineering.

Experimental Facilities

1. Meson Laboratory. The Meson Laboratory Building, which will comprise the third phase of the Meson Laboratory construction, will be located at the end of the secondary-beam transport area, as shown in the drawing of Fig. 2. The building is a concrete arch, covering approximately 150 feet in the beam direction and 300 feet perpendicular to the beam. It is shown in Fig. 3. The building will contain a 40-ton crane and a mezzanine under which the utilities will be located.
2. Neutrino Laboratory. The target-box design has been modified for simplicity in fabrication. It is now a 6-foot diameter tube. Construction is now in progress on it and on the meson decay pipe.
3. Bubble Chamber. Notice to proceed was issued on the 1000-ton reinforced-concrete reaction mass for the bubble chamber. Figure 4 shows the excavation work. In addition, contracts are being let on the chamber vessel and piston.
4. Proposals. A list of new proposals received at the Laboratory is appended to this report.

Construction

The weather was generally good and not too cold through December, which helped to keep up the pace of construction.

1. Electrical Substation. The second and third large transformers have arrived and are being installed. Figure 5 shows one of the transformers in place. Acceptance tests on the entire substation are in progress. The contract as a whole is 95% complete.

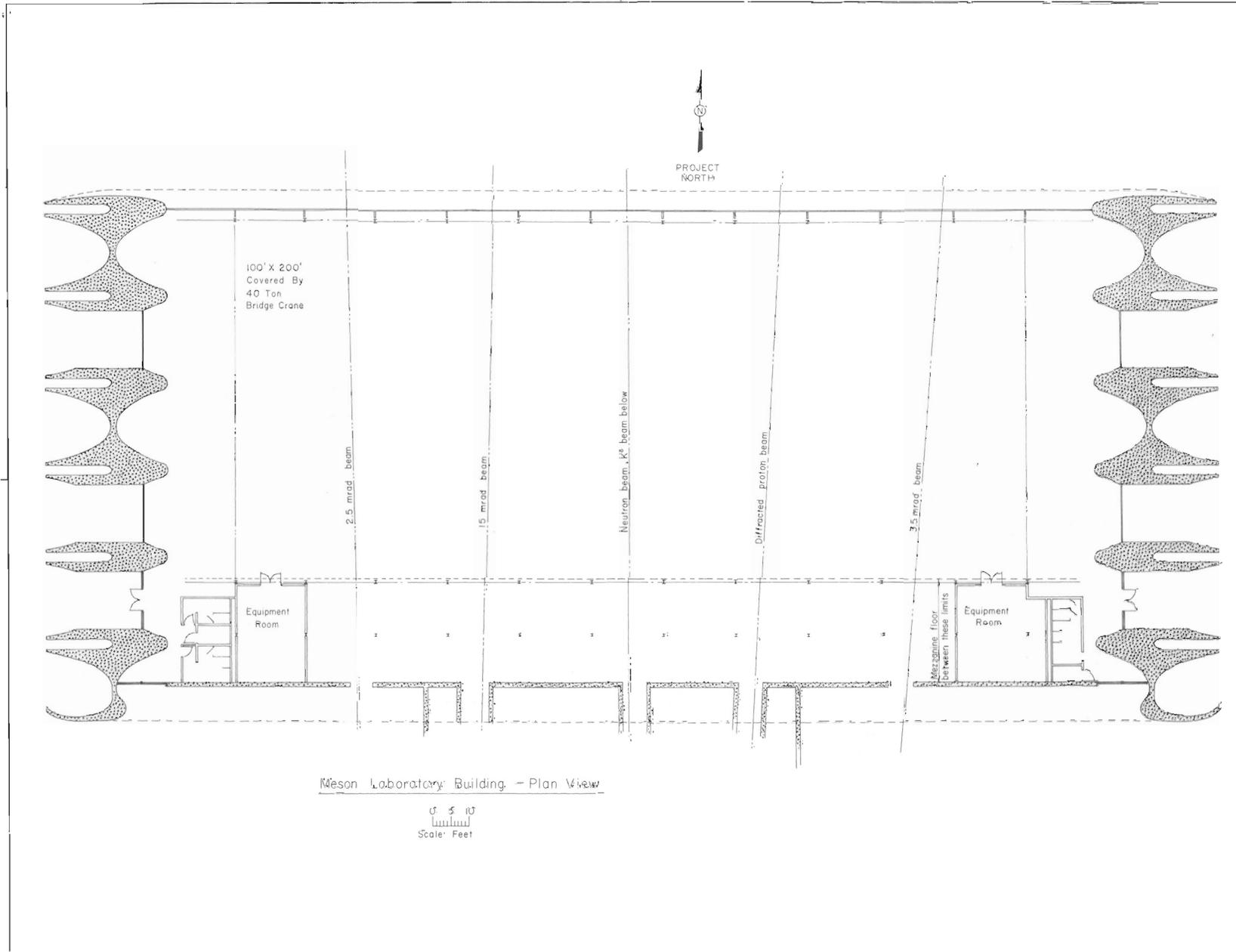


Fig. 2. Plan view of the Meson Laboratory Building.

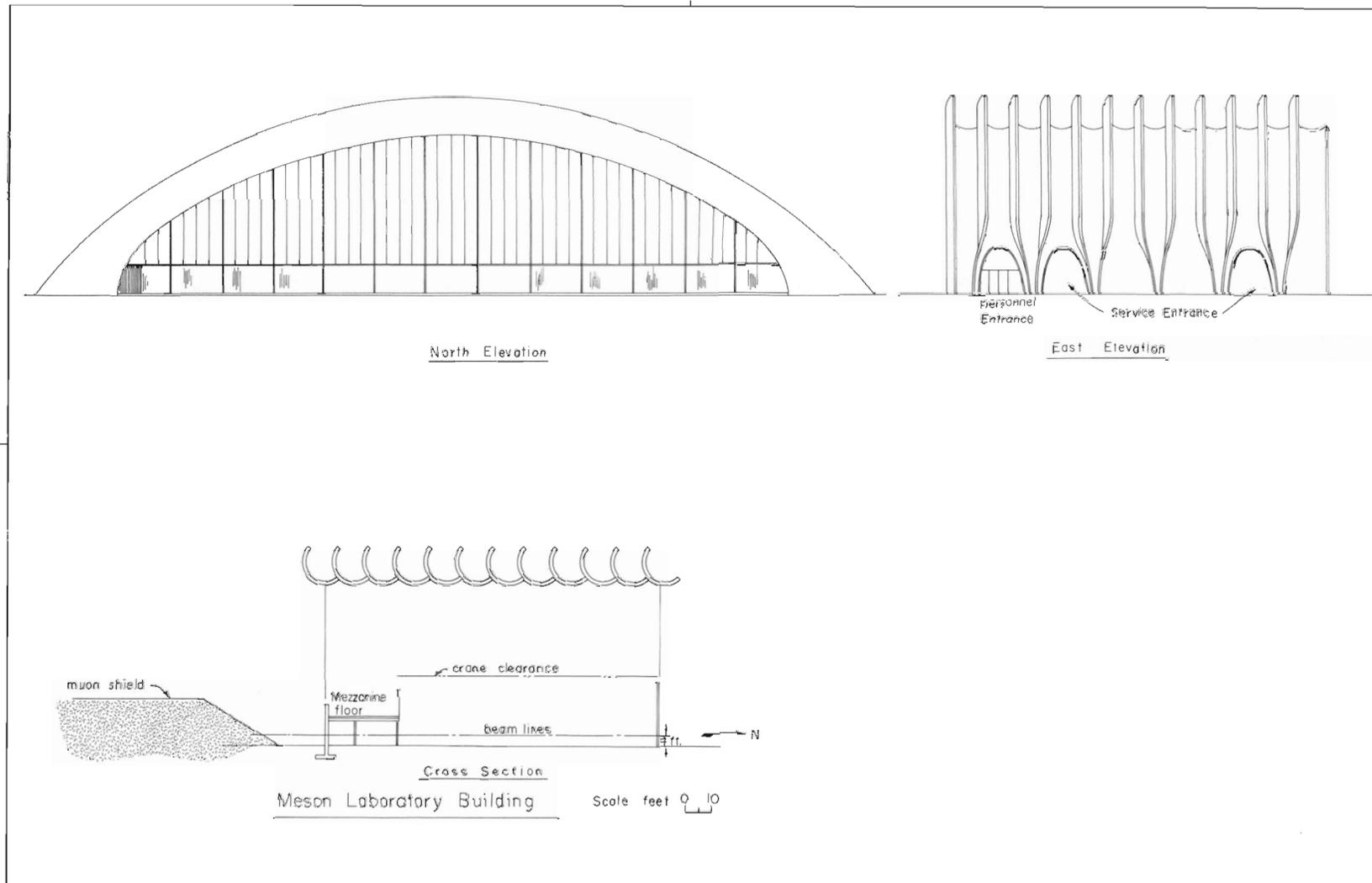


Fig. 3. Elevation views of the Meson Laboratory Building.



Fig. 4. Excavation for the bubble chamber. The photograph was taken looking northeast along the power line.

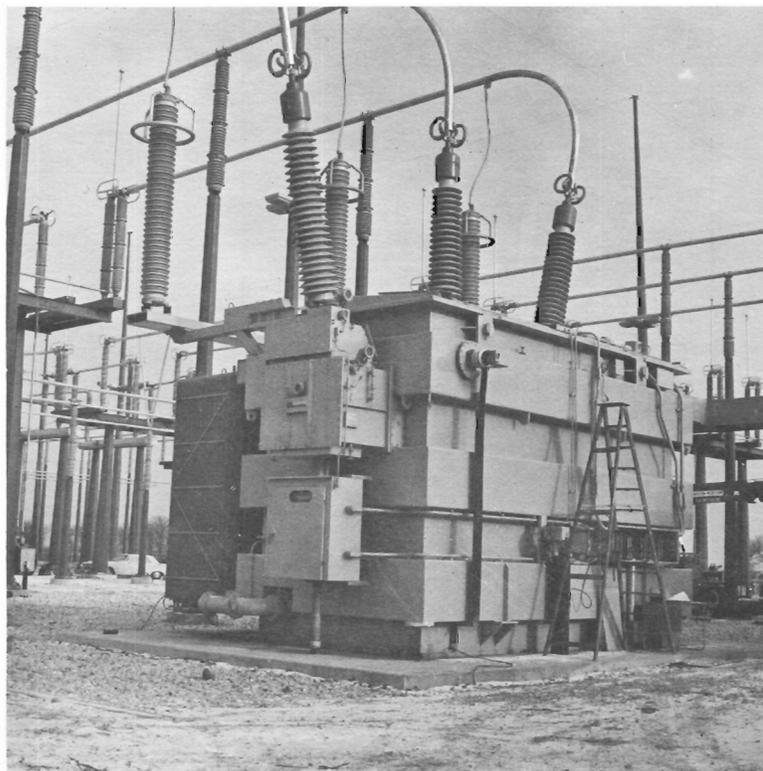


Fig. 5. One of the three 345-kV transformers during installation.

The related power-line work has been finished. The power line was energized to the substation just before Christmas. The power-line contract is 100% complete.

Work on power distribution from the substation is also proceeding and it is expected that permanent power will be available at the beginning of February.

2. Main Accelerator. The second phase, five-sixths of the ring, is 91% complete. (The tunnel was of course completed at the end of November.) Work is going on to finish the service buildings and to complete the shielding.

3. Central Utility Plant. Only finishing work remains on this contract, which is 98% complete.

4. Proton-Beam Enclosure. Tunnel construction is still proceeding, as can be seen in Fig. 6. The beam line under the junctions of Roads A and B (by the substation) is almost finished. The contract is 54% complete.



Fig. 6. Work on the Proton Beam Enclosure. We are looking in the beam direction. The tunnel at the left will contain the proton beam to the Meson and Neutrino Laboratories. The tunnel at right curves off toward future experimental areas.

5. Meson Laboratory. Excavation and forming work is in progress on the first phase, the target area. This phase is 17% complete (See "New Contracts" below for the second phase and the "Experimental Facilities" part of this report for the third phase).

6. Central Laboratory. The first phase is 38% complete. The caisson work is completed and the basement forming work is well along. Figure 7 shows this work. Structural work and backfilling on the utility tunnel to the Cross Gallery are finished.



Fig. 7. Basement of the Central Laboratory, viewed from the Linac Building. The Transfer Gallery is in the background.

7. New Contracts. A contract has been awarded to the Miller-Davis Company of Chicago for the second phase of the Meson Laboratory. This phase includes the secondary beam lines up to the Laboratory Building. The value of the contract is \$1.467 million and its scheduled completion date is August 19, 1971.

Laboratory Staff

On December 31, the Laboratory staff includes 831 people, of whom 156 are engineers and scientists. This total employment includes 100 temporary employees, most of whom work on coil fabrication.

APPENDIX. ADDITIONAL PROPOSALS RECEIVED

90. Cracow Nuclear Emulsion Exposures
J. Gierula
91. Madansky Emulsion Exposure
L. Madansky
92. A Neutrino Experiment in the NAL 30 m³ Bubble Chamber Using "Mono-energetic" Neutrinos
B. Barish, F. Sciulli, and A. Maschke
93. Small-Angle Charge Exchange Reactions $\pi^- + p \rightarrow \pi^0 + n$ and $\pi^- + p \rightarrow \eta + n$ from 50 to 200 GeV/c
M. Wahlig, A. Skuja, M. Pripstein, J. Nelson, I. Linscott, R. Kenny, O. Dahl, and R. Chaffee
94. 100-GeV Pion Interactions in Photographic Emulsion (A Parasitic Experiment)
E. R. Goza
95. Proposal for Examination of Wide Angle Gamma Rays at NAL
C. -Y. Chien, B. Cox, D. Denegri, L. Ettlenger, L. Madansky, A. Pevsner, R. Zdanis, R. Carrigan, and T. Toohig
96. Focusing Spectrometer Facility
D. Ayers, R. Diebold, A. Greene, A. Wicklund, L. Guerriero, R. Lanou, G. Cocconi, J. Litt, B. Gittelman, E. Loh, J. Friedman, H. Kendall, L. Rosenson, A. E. Brenner, A. L. Read, R. Weinstein, R. L. Anderson, K. L. Brown, D. Gustavson, D. M. Ritson, and B. H. Wiik
97. Elastic Scattering of the Hyperons
M. Atac, C. Dolnick, P. Gollon, J. Lach, J. MacLachlan, A. Roberts, R. Stefanski, D. Theriot, H. Kraybill, J. Marx, P. Nemethy, J. Sandweiss, and W. Willis
98. Muon-Proton Inelastic Scattering Experiment at the National Accelerator Laboratory
H. L. Anderson, N. E. Booth, L. W. Mo, L. C. Teng, S. C. Wright, T. Kirk, F. M. Pipkin, J. Sanderson, L. Verhey, and Richard Wilson

99. A Study of $\pi^+ p \rightarrow K^+ \Sigma^+$ and $\pi^+ p \rightarrow K^+ Y^{*+}$ Using the Focusing Spectrometer Facility
D. Ayres, R. Diebold, A. Greene, A. Wicklund, G. Gittelman, and E. Loh
100. A Proposal to Study Particle Production at High Transverse Momenta
J. W. Cronin and P. A. Piroue
101. Elastic $\pi^+ e^-$ Scattering
B. Gittelman, E. Loh, D. Ayres, R. Diebold, A. Greene, and A. Wicklund
102. Proposal for an Experiment to Study the Reaction $K^- p \rightarrow \bar{K}^0 n$ at NAL Energies
W. R. Frisken, T. L. Jenkins, W. M. Smith, A. G. Strelzoff, C. R. Sullivan, W. S. Brockett, G. T. Corlew, A. R. Kirby, and E. T. Clark, III
103. Intra-Nuclear Cascade Produced by 200-GeV Protons
D. T. King, W. M. Bugg, G. T. Condo, E. L. Hart, and R. W. Childers