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STUDY OF pp INTERACTIONS IN THE ANL 30-INCH HYDROGEN
BUBBLE CHAMBER AT NAL

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PAC BC Subcommittee
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DO

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Proposed by

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We propose to analyze all interactions in the first 50,000 pictures of the 30-inch chamber taken with the highest energy proton beam available at chamber startup time at NAL.

The pictures will be used to check out the readiness of the reassembled bubble chamber system and make sure that the precision of the chamber has been realized. Our familiarity with the operating characteristics and film analysis techniques with this particular chamber will allow us to explore rapidly the particle physics contained in this initial experiment.

All the film analysis will be done at ANL. The whole effort of the ANL film analysis facility will be utilized for the short period of this

experiment, so that there will be an immediate feedback of information on unexpected events such as new short-lived particles. We have five scanning tables, six conventional measuring machines and POLLY II capable of handling this film. The present effort of the scanning group is equivalent to about 15 full-time people.

Preliminary results from scanning statistics, from measurements of unusual events and from analysis of samples of multi-body interactions will be available within one month after the run is made; the final results will be available within three months. We expect to do most of the measuring on the operator-assisted POLLY system, which is currently being used to finish up previous experiments with this bubble chamber at the ZGS. The conventional measuring machines are available for use on particularly difficult events.

The three university-affiliated physicists listed will be in residence at ANL for the period of this experiment. In addition to participating in the physics analysis of this experiment, they will ensure that the best information is fed back to the wide gap chamber facility.