FOREWORD

This has been a productive and exciting year for the NIST Center for Neutron Research (NCNR), with many achievements in operation, instrumentation, and science. The reactor operated well through September, when an unscheduled shutdown was required to investigate a small leak in the vicinity of the thermal column. As a result of an excellent effort by the Reactor Operations and Engineering staff, this shutdown lasted no more than one complete cycle (14% of availability). The reactor is now once again operating on our normal seven week schedule. We apologize to all those who were inconvenienced, and will work to make up as much of the time as possible. The next long scheduled shutdown, for replacement of shim control arms, is scheduled to begin in February, 2000 and will last 3-6 months.

During this year, commissioning of the high intensity back scattering spectrometer was begun, with very favorable results (see section later in this report), and the instrument should be available for user scheduling at the next program proposal period. Great progress was also made on the Spin Echo and Disc Chopper Spectrometers, with commissioning expected in the coming year. The reliability of operating instruments continues to be better than 95%, with the average over all instruments being 98%. The final engineering design of the second generation liquid hydrogen cold source is nearing completion, and fabrication and testing will begin in 1999. This source is calculated to provide approximately a factor of two gain over the present source.

This year we have changed the format of our report, and are featuring science highlights, chosen from the experiments done during the year. Thus, I will refrain from discussing science accomplishments here, except to say that productivity and quality remain exceptionally high. One of the great parts of my job is to be able to walk around the facility talking to experimenters, and I continue to be impressed by the breadth of the research and the enthusiasm of the researchers.

Finally, we continue to make good progress on preparing a request for a license renewal for the reactor for 20 years beyond 2004. Many different activities are underway towards this end, and we are fully confident that we will be successful. Neutron science as a whole is in a very exciting period, with the funding of the Spallation Neutron Source at Oak Ridge National Laboratory, and plans for new sources in several parts of the world. The NIST Center for Neutron Research is and will remain at the center of a renewed U.S. neutron research effort, working to provide the neutron measurement capabilities that are becoming ever more important.

Mike Rowe