U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

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Mr. Bob Chipkevich
Director
Office of Railroad, Pipeline, and
Hazardous Materials Investigations
National Transportation Safety Board
490 L'Enfant Plaza East, SW
Washington, DC 20594

Dear Mr. Chipkevich: Bob

In response to your telephone call, we are providing an update on activities we are conducting in response to National Transportation Safety Board (NTSB) Recommendations P-98-30 and P-99-12, which address pipeline controller fatigue and hours-of-service.

Several years ago, the Research and Special Programs Administration's (RSPA) Office of Pipeline Safety (OPS) tasked the Volpe National Transportation Systems Center to develop information about work-rest cycles, fatigue measurement, and fatigue management for pipeline controllers. This project determined that there was very little information available to assess the extent of fatigue issues in pipeline transportation or to provide industry and labor with tools and techniques to manage any problems.

We considered examining the actual scope of the fatigue problem and applying the new Organizational Fatigue Management technologies and procedures developed by the Department's Human Factors Coordinating Committee. Since then, a review of our accident records has not, to date, indicated that controller fatigue is a contributor to pipeline accidents. Therefore, we decided to broaden our focus to include not just fatigue issues, but operator human factors issues in general.

On June 5, 2002, and on December 30, 2002, RSPA/OPS issued a fourth Broad Agency Announcement (BAA#4) in an effort to solicit research projects on a number of critical pipeline safety issues including developmental needs related to improved human factors, including fatigue issues. Neither solicitation resulted with a viable project that would address the specific fatigue issues addressed in the NTSB recommendations. On January 7, 2004, another effort was undertaken to comply with the NTSB recommendations by listing a human factors topic in BAA#4. The topic area, "Enhanced Pipeline Operations, Controls and Monitoring," invited white papers and proposals to address needed research and development on pipeline operator fatigue and control room human factors.

As a result of white papers and proposals submitted in response to BAA#4, we have instituted a broader investigation of human factors and pipeline control rooms. We believe the results of this investigation will help address the NTSB fatigue recommendations. Battelle Memorial Institute (Battelle) is the research contractor for a project on human factors titled, "*Human Factors Analysis of Pipeline Monitoring and Control Operations*." Battelle plans to contact NTSB to understand the overall reasoning and issues undergirding the NTSB fatigue recommendations to ensure that the issues are effectively addressed in this project. More detailed information on this and other research and development projects is accessible over the Internet at *http://primis.rspa.dot.gov/*.

This nearly one million dollar project is co-funded by RSPA/OPS and the pipeline industry. It commenced on October 1, 2004, with an expected completion date of September 30, 2006. The project will systematically apply human factors research and development techniques in meeting two objectives: (1) to establish an understanding of the human factors that adversely affect the safety, reliability, and efficiency of pipeline monitoring and control operations, and (2) to develop guidelines that can be used by industry to identify human factors problem areas in their operations and develop continuous improvement strategies to improve the effectiveness of pipeline monitoring and control operations.

Battelle researchers will work with the Pipeline Research Council International and industry partners to systematically apply human factors research and development techniques in meeting the objectives.

The overall approach to data collection and analysis will have human factors researchers analyze a sample of control room incidents described in company incident reports, interview controllers, and conduct a series of operational reviews of control rooms. This data will allow the researchers to identify the most problematic human factors issues in pipeline operations based on risk metrics developed with industry input. Then, cost-effective strategies for addressing various human factors issues will be developed. This project will produce three products intended for future industry implementation: (1) human factors operational review procedures for identifying problematic issues at individual operating sites; (2) continuous improvement strategies for addressing selected high-priority human factors issues; and (3) guidelines for developing additional cost-effective continuous improvement strategies.

Following the assessment of human fatigue in pipeline operations and the results of the research and standards efforts now underway, we will evaluate the need for further development and application of guidelines to reduce the threat of pipeline incidents attributable to operator fatigue. We believe these efforts will provide the necessary information for an assessment of the need for further regulatory action.

For further information on the human factors project, please contact Robert Smith, Research and Development Manager, at 202-366-3814 or by e-mail at: robert.smith@rspa.dot.gov.

Sincerely,

Stacey L. Gerard
Associate Administrator
for Pipeline Safety

cc: Rod Dyck, NTSB