



## U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

<b>Report:</b>	<b>BP America Refinery Explosion</b>
<b>Recommendation Numbers:</b>	<b>2005-4-I-TX-7a</b>
<b>Date Issued:</b>	<b>March 20, 2007</b>
<b>Recipient:</b>	<b>American Petroleum Institute</b>
<b>New Status:</b>	<b>Open-Unacceptable Response</b>
<b>Date of Status Change:</b>	<b>May 12, 2015</b>

### **Recommendation No. 2005-4-I-TX-7**

*Work together to develop two new consensus American National Standards Institute (ANSI) standards. In the second standard, develop fatigue prevention guidelines for the refining and petrochemical industries that, at a minimum, limit hours and days of work and address shift work. In the development of each standard, ensure that the committees a. are accredited and conform to ANSI principles of openness, balance, due process, and consensus; b. include representation of diverse sectors such as industry, labor, government, public interest and environmental organizations and experts from relevant scientific organizations and disciplines.*

#### **A. Rational for the Recommendation:**

On March 23, 2005, the BP Texas City refinery experienced explosions and fires that resulted in 15 deaths, 180 injuries and significant economic losses. A CSB investigation found that the incident was caused by multiple technical, system and organizational deficiencies, and issued recommendations to various parties. Among its most important findings, the CSB investigation concluded that the ISOM operators were likely fatigued from working 12-hour shifts, some working 29 or more consecutive days during the turnaround of the ISOM unit prior to startup, and that the operators' judgment and problem-solving skills were likely degraded, hindering their ability to determine that the tower was overflowing. The CSB found that OSHA has no regulations and that the American Petroleum Institute (API) and the National Petrochemical and Refiners Association (NPRA) have developed no industry safety guidelines or voluntary standards to manage and prevent fatigue as a risk factor. There were also numerous other equipment failures as well as other factors that contributed to the liquid overflow, but these were not addressed in the evaluation of the response to this recommendation. Information about them can be found in the investigation report.

The CSB recommended that the API lead the development of an ANSI consensus standard with guidelines for fatigue prevention along with members of other industries, government, public interest, environmental organizations, and labor groups, as well as with input from experts from relevant scientific organizations and disciplines.

## B. Response to the Recommendation:

API initially accepted the recommendation, however, in August of 2009, a key labor group, the United Steelworkers of America (USW) withdrew from the committee in protest for the imbalance in voting members (management vs. union and other representatives). The API proceeded with the committee's work and issued an ANSI-approved Recommended Practice (RP 755) in April 2010.

The draft staff evaluation of this response to the recommendation acknowledges that RP 755 makes a contribution to chemical safety by explicitly stating that "workplace fatigue is a risk to safe operations" and also by suggesting various measures to manage fatigue risks; however, it falls far short of what a fatigue standard should require of employers, and does not meet the intent of the CSB recommendation of "...at a minimum, limit hours and days of work and address shift work."

The CSB requested public comment on the draft staff evaluation in a Federal Register notice posted March 8, 2013, and comments were accepted up to and beyond the April 12, 2013, submission deadline. Interested parties in the public and private sector were invited to comment publicly on: any aspect of the draft CSB analysis summarized in the draft evaluation; whether RP 755 is consistent with the CSB recommendation that triggered it; and, any other relevant aspects related to RP 755 and the management of fatigue risk in the refinery and petrochemical industries. The Federal Register notice requesting comments on CSB's draft evaluation is available at: <https://www.federalregister.gov/articles/2013/03/13/2013-05854/sunshine-act-meeting-request-for-comments-on-draft-evaluation-of-recommended-practice-on-fatigue>.

All comments received, including any personal information provided, are available to the public without modifications or deletions. Comments received by the CSB are posted online in the Open Government section of the CSB web site: [http://www.csb.gov/assets/1/7/public\\_comments\\_III.pdf](http://www.csb.gov/assets/1/7/public_comments_III.pdf).

## C. Board Analysis and Decision:

The Board finds that Recommended Practice 755 is inconsistent with the intent of the CSB recommendation in numerous important aspects, as follows:

- **The document fails to require with "shall" language the essential elements of an effective fatigue prevention system**, yet the basic premise of the RP and its supporting Technical Guidance document<sup>1</sup> is that effective fatigue management can only occur in the presence of an effective Fatigue Risk Management System (FRMS), integrated into the facility's overall safety management system. However, many of the basic elements of an effective FRMS, even as they are defined by the RP, are only suggestions ("shoulds"), and they are often vaguely

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<sup>1</sup> API Technical Report 755-1, *Fatigue Risk Management Systems for Personnel in the Refining and Petrochemical Industries—Scientific & Technical Guide to RP 755*.

and sometimes contradictorily described. In what is already a voluntary standard, “should” statements have little force. This “should” approach is directly in contradiction to the existing ANSI Standard for Occupational Health and Safety Management Systems (ANSI/AIHA Z10, 2005),<sup>2</sup> as well as other existing management system standards, which routinely define clear obligations (“shalls”) for employers. This key ANSI standard is also not listed as a normative reference in the RP.

- **The document places undue emphasis on “soft” or “personal” components of fatigue control, such as self-evaluation by employees and training and education, without supporting scientific evidence of their efficacy.** The RP and the accompanying Technical Guidance document spend considerable effort and discussion on the importance of self-evaluation by employees and evaluation by supervisors, on training and education on fatigue and effective rest and sleep techniques. While these components can undoubtedly be valuable in a comprehensive program to reduce fatigue risk, the basic elements must still be the establishment of preventive limits on hours and days of work and related measures, sufficient staffing, and clear management responsibility for the implementation of these and other measures for fatigue prevention. The CSB recommendation was focused on such limits as the backbone element of fatigue risk prevention.
- **Although the RP requires hour and days of work limits, they are generally more permissive than those suggested by current scientific knowledge.** This contradictory approach is based on the unproven assumption, as acknowledged by the accompanying Technical Guidance for the RP, that implementation of a particular FRMS system will “compensate” for this risk. While numerous aspects of the proposed FRMS may have merit and could serve as important complements to mandatory limits, it is highly questionable to allow hours or days of service limits to be near or beyond the scientifically, on the expectation that the implementation of a postulated FRMS relying primarily on “should” statements would be enough to mitigate the risks.
- **The document was not the result of an effective consensus process, and therefore does not constitute a tool that multiple stakeholders in the industry can “own.”** One of the two major stakeholders, labor, withdrew in protest and did not support the RP. The committee also did not have meaningful participation of other important stakeholders (e.g., civic leaders, environmental organizations, government agencies), and it did not benefit sufficiently from the input of experts in other sectors with extensive experience in fatigue prevention and regulation (e.g. multiple transportation sectors, the nuclear sector, or European experiences). In the view of CSB staff, the concern that the voting composition of the committee was unbalanced is correct. These shortcomings are not theoretical; they are reflected in the weaknesses of the RP itself.

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<sup>2</sup> This standard was revised in 2012, but it was not changed in any way that would materially affect this evaluation.

In light of these shortcomings, the Board has voted to designate CSB Recommendation No. **2005-4-I-TX-R7a** as: “**Open – Unacceptable Response.**”