
VII.5 H2 Incident Reporting and Best Practices Database

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Start Date: October, 2005
Projected End Date: September, 2008
(Monitoring and collection of new incidents and best practices is an ongoing activity.)

Objectives

- Establish a web-based system for open sharing of lessons learned from hydrogen incidents and near misses, and provide a confidential tool for reporting any occurrence of them.
- Provide a hydrogen safety best practices document to enable widespread benefit from the wealth of knowledge and experience already attained in industry, aerospace and elsewhere.

Technical Barriers

This project addresses the following technical barriers from the Safety section (3.7.4.2) of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- (A) Limited Historical Database
- (B) Proprietary Data

Technical Targets

This activity does not directly address technical targets from the R&D program. Rather, it is intended to enable preparation of a receptive environment for hydrogen and hydrogen technologies. Safe use of these technologies will be an essential component of a successful transition, as will public perception that they can be safely used. Sharing of the circumstances surrounding any incident that has occurred and related lessons learned/best practices is one of the surest ways to prevent recurrence of similar events in other locations.

Accomplishments

- Initial H2Incidents Database is up and running at www.H2Incidents.org.
 - Also available through the Hydrogen Program website at www.hydrogen.energy.gov
- Have identified a number of potential sources of additional incident information.
- Best practices information collection and website has begun and is expected for first public appearance in early FY 2007.

Introduction

Hydrogen has been safely used for decades in the industrial and aerospace environments. As with all systems having a lengthy history of use, however, a myriad collection of incidents, near-misses, and other safety-related events has accumulated over time that offers significant lessons, experiences and wisdom to those able to access this information. A key to improvement in all endeavors (energy or otherwise) is sharing such experience and knowledge with others so that they may also benefit from it.

Approach

Much information and data pertaining to experiences with hydrogen exist but reside in disparate locations. These are frequently not easily accessible to researchers and implementers of hydrogen technologies without special access privileges (e.g., such as being members of a particular organization that collects such information). A major emphasis of the project activity to date has focused on identifying potential sources of hydrogen incident information, including both historical sources and other ongoing collection efforts. Numerous sources have been identified. Information from only a few of these has been further pursued to date, however, as constrained by the available budget.

A website (H2Incidents.org) was constructed to provide a central location for historical incident information, and for reporting incidents and related information. Much effort has gone into making this website user friendly and intuitive. To encourage the free sharing of new incident and related information, a confidential submission system was built into the website to eliminate any concerns over negative publicity or liability or other reservations that an organization might have using it.

The collection of best practices information has been initiated using DOE Hydrogen Safety Review Panel site visit reports and safety plan reviews, and the input of various subject matter experts. In addition, the literature contains numerous references to hydrogen safety best practices. These are being compiled and will be organized and assembled into the H2Safety Best Practices website, which, like H2Incidents.org, is to be a publicly available source of hydrogen safety information. These two websites will be closely linked wherever relevant ties exist between incidents, lessons learned, and resulting or related best practices.

Results

One database of safety events that was accessed in the course of this effort returned a set of nearly 1,000 “hits” containing the word hydrogen. A number of records from other locations were also obtained. All of these were reviewed and winnowed down to only those that have lessons learned or other important aspects that could pertain to ongoing hydrogen research and use. Approximately 100 records remained after this process and are currently undergoing entry into the online website.

The H2Incidents.org website has been well received in its initial debut. The site is easy to navigate and to obtain useful information relatively quickly. Figure 1 shows the home page; Figures 2 and 3 show sample records. The record shown in Figure 3 also displays an attached file containing further information that is available for download.

At least two major external (i.e., not funded by DOE) participants in current international hydrogen activities have expressed interest in providing information for use in the website system. Discussions with these organizations are ensuing. In addition, discussions with other organizations collecting similar kinds of information, e.g., HySafe in the European

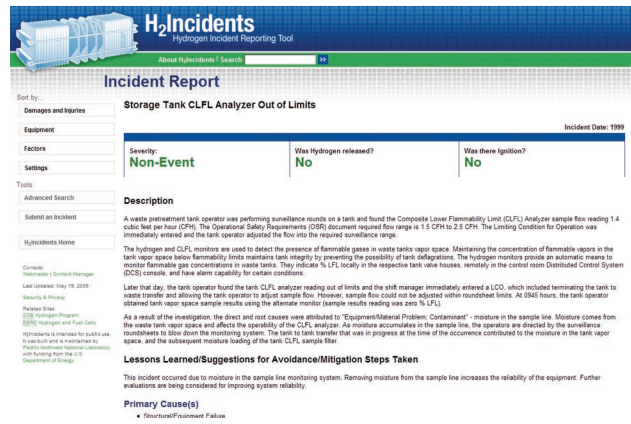


FIGURE 2. Sample Incident Report



FIGURE 3. Sample Incident Report with File Attachment

Union and the California Fuel Cell Partnership, have taken place regarding sharing information from participants in those efforts with H2Incidents.

Conclusions and Future Directions

The interest generated to date clearly shows a need for shared experiences and information from hydrogen-related safety events. The high value associated with sharing this information is also acknowledged from those on the provider side. Open sharing of safety related information not only helps prevent event recurrence but also conveys a collaborative and progressive image to the public eye.

Both the H2Incidents and best practices websites and their associated databases will continue to be developed and refined over the next couple of years. A number of other identified sources of potential incident information will also be pursued to add to that already available.

Future enhancements to the H2Incidents.org website will include graphical trend tools for displaying

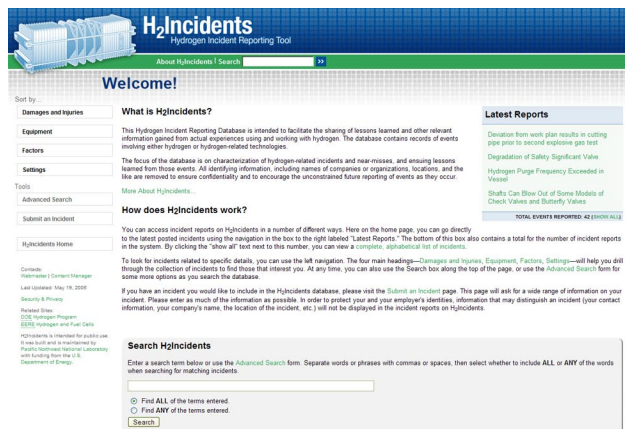


FIGURE 1. H2Incidents.org Home Page

information about the records in the database, e.g., pie charts displaying contributing factors or other graphics showing correlations between common elements in incidents reported.

The H2Safety Best Practices website is expected to make its initial public debut early next fiscal year. The listing of best practices is anticipated to be only partially complete at that time, but as any best practices already compiled may prove useful to the hydrogen community there is no reason to wait until a comprehensive compilation is reached. An HFCIT milestone exists for

this product in FY 2008; at that time the listing should be relatively comprehensive although new best practices may continue to be “discovered” and added at any time.

FY 2006 Publications/Presentations

1. H2 Incident Reporting and Best Practices Database. 2006 Department of Energy Merit Review, May 19, 2006.
2. H2 Incident Reporting and Best Practices Database. Presentation to DOE Hydrogen Safety Review Panel semi-annual meeting. June 27, 2006.