

Activities of the US-Japan Safety Monitor Joint Working Group

Richard L. Savercool¹, Lee C. Cadwallader²

¹*General Atomics, San Diego, CA, savercool@fusion.gat.com*

²*Idaho National Engineering and Environmental Laboratory, Idaho Falls, ID, lcc@inel.gov*

This paper documents the activities of the US-Japan exchange in the area of personnel safety at magnetic and laser fusion experiments. This exchange is part of the US-Japan Bilateral Agreement on Fusion Research. The US and Japan have hosted visiting researchers at each of the large tokamaks, major experiments and fusion research centers for decades. Most of these exchanges have been performed without any safety incidents in either country. Unfortunately, in early 1992, there was a near-miss event of high safety concern in the US.

The near-miss industrial accident with a visiting Japanese scientist to the US was the impetus for forming the Joint Working Group (JWG) on Fusion Safety under the Bilateral Agreement. This Fusion Safety exchange has been under way for over ten years and has been successful in providing many safety insights for both US and Japanese facility personnel at national institutes and universities. The US members of the JWG are funded under the auspices of the US Department of Energy, Office of Fusion Energy Science. The background, reasons and activities of the JWG are described in this paper, including a list of the participants from both countries, a list of the facilities that have been visited for safety walkthroughs, and the main safety issues examined during the brief JWG walkthrough visits. Major facilities in both countries have been visited, including the DIII-D tokamak and the Tokamak Fusion Test Reactor in the US; and the JT-60U tokamak, the Large Helical Device stellarator, the GAMMA-10 mirror machine, and the GEKKO-XII laser fusion experiment in Japan. Smaller scale university experiments have also been visited in both countries.

Based on these visits and the operating experiences of experiments at the JWG members' home institutions, the JWG members have compiled some best practices and formulated several ideas to enhance safety at fusion experiments. These operational safety practices and ideas are briefly discussed in the paper. These practices and ideas include supplementing the written safety signs with internationally recognized pictogram signs, using daily safety checklists before commencing experiment operation, performing a visual search and sweep before commencing operation, appointing a key person of the day to track safety and operations issues, holding brief pre-operation meetings, and instituting once-a-month cleanup days. All of these practices and ideas help to promote safe operation of any fusion experiment, large or small, either magnetic or inertial.

The near-term future plans of the Safety Monitor JWG are also discussed. The JWG plans to continue with safety walkthroughs at the present frequency of one walkthrough team visiting the other country every second year to keep safety a prominent part of the operation of fusion experiments. The US JWG members completed a safety walkthrough of Japanese fusion experiments in February 2004. The next scheduled visit is for Japanese JWG safety personnel to visit US facilities in late 2005 or early 2006.

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