

## Davis Besse Assignment

The purpose of this assignment was to have you gain some insights into the relationship between NRC, the utility, and oversight organizations in the safety of nuclear power stations. By researching the regulatory history, utility responses and those of INPO, one can gain some appreciation of the challenges of safe operation. Some of you may become senior officials in nuclear organizations whether at utilities or national laboratories. The lessons learned in Davis Besse apply equally to all which I hope you do not forget.

The papers generally well summarized the events but I would like to share some additional thoughts that you might find useful:

1. No one appreciated the possibility of the type of corrosion that actually occurred - wet corrosion and perhaps erosion due to the magnitude of the leak. Had they considered this possibility (and they should have), the reactor would have been shutdown immediately even with the bad safety culture at Davis Besse. This suggests that common knowledge or past experience may not be a sufficient basis for action.
2. The NRC site inspector did not act properly, in my opinion, to press the evidence with his superiors and the utility to act upon the symptoms in evidence showing a major unmonitored leak.
3. The utility management was not safety focused since the kind of observable evidence was not acted upon even if one accepts Point # 1.
4. While INPO performs in-depth evaluations of utility performance, their evaluations should have identified the lack of a proper safety culture in their management. The rating of DB as an INPO 1 plant shows that INPO does not have an effective evaluation program given the deep seated safety culture, management and process problems which the vessel head problem revealed.
5. The key point in the economics part of the question is that it is far cheaper to address a problem early rather than having to deal with the consequences later. While no accident occurred, the cost to the utility ranged from \$ 600 million to over \$ 1 billion not to mention the loss of trust by the public and the regulator which is far more costly. Even if the utility favored economics over safety in their day to day decisions, they need to factor this cost in their daily decision making processes.
6. While not highlighted in most reports, the role of external safety oversight boards is a important part of the safety system. These boards should consist of people who not company employees. They are typically experienced managers (some retired from utilities or NRC) who are asked to provide independent oversight of overall nuclear operations and safety. Had this board been given the evidence (or sought it out) during this period, they could have provided senior management sufficient incentive in the form of pressure to investigate the problem much more thoroughly. This apparently was not done. It appears that the FENOC oversight board were internal people not external.

7. Clearly, complacency is a problem especially for “good” performing plants. However, it is the management of the utility (maybe you) that is ultimately responsible for the safety of the plant and it is their job to make sure that they know enough about the plant to make the right technical decisions. One can not blame NRC, INPO or anybody else for safety problems at plants that you work at.
8. A “questioning attitude” is essential for a good safety culture with people willing to answer the questions in a timely way.

Prof. Andrew Kadak  
November 18, 2006