

Kenneth L. Carper's Commentary on "Dissent About Nuclear Safety"

Commentary On
Dissent About Nuclear Safety

Alison Turner is experiencing a moral crisis partly because of an unhealthy group leadership situation. In order for group problem solving to be successful, a style of discussion leadership must be developed to maximize the group's assets and minimize its liabilities (Ritchie and Thompson 1980).

The Plant Nuclear Safety Review Committee includes more than one individual because a group has access to more knowledge and experience than an individual has. Also, a group can generate more alternatives to solving a problem, and can explore a problem from a greater number of perspectives than an individual can. Such assets are particularly valuable when the group is charged with safety oversight responsibilities for critical facilities. These aspects of group problem solving can only be realized, however, when the group leader understands and facilitates effective group dynamics. Each individual must be encouraged to voice concerns, including contingencies that have not been considered by other group members. Each individual must feel valued by the group. This is the goal of leadership ethics (Maier 1980).

Rich Robinson, chair of the committee, is not exercising effective leadership. He is dominating the discussion, and with the help of two other strong personalities, Brad Louks and Joe Carpello, he is quickly leading the group toward a preconceived decision. Alison Turner, along with others, is hesitant to accept this decision, but no one speaks. Alison is especially uncomfortable because she is the least senior member present at the meeting.

Group decisions, especially unanimous group decisions, are generally given more weight than decisions made by individuals. However, this case illustrates that group decisions may, in fact, represent the viewpoint of a single member of the group or the judgment of a minority of dominant individuals.

Unless all individuals in the group are comfortable in contributing to a consensus, the value of the group is questionable. The decisions may as well be made by an individual, or by a computer using expert systems technology. People, not computers, have been trusted with the oversight assignment in this case, and the reason is that experience-based judgments are needed.

The experience brought to a problem by senior members of a group is valuable. However, sometimes seniority works to disadvantage. The less-senior members may feel uncomfortable challenging their superiors. But the less-senior members are often able to bring fresh insights and new experiences to the problem. Senior members may be inclined toward misguided loyalties and may become complacent and defensive. These attributes can be seen in some of the comments by Brad Louks and Joe Carpello: "...we've always been leaders in safety," and, "Our track record is excellent..." When contingencies are being ignored, these attitudes need to be challenged. The less-senior members of the group can be very effective in energizing a complacent group if the leadership is healthy.

This committee has a precedence of always arriving at a unanimous decision. The account given here causes one to question the wisdom of honoring such a tradition. If a unanimous decision represents a consensus agreed to willingly by all members of the group, then the unanimity may be an indication of the quality of the decision. However, in this case, it appears that a unanimous decision may be the result of social pressure. Social pressure within a group can stifle disagreement. Uncomfortable parties remain silent and conform to the wishes of dominant individuals (Maier 1980).

Alison and at least one other member, Mark Reynolds, are not comfortable with the direction the group is taking. Public welfare may be at stake, and one hopes that these individuals will decide to place the public interest above their own personal comfort. This is the hallmark of professionalism. Sometimes things do go wrong in spite of low probability, and concern for this contingency is what separates the true professional from the "uninvolved" technician. The engineering Code of Ethics requires members of the profession to "...hold paramount the health, safety and welfare of the public" (Pletta 1987, Rubin and Banick 1987).

Since Alison still has reservations, she should not vote to approve the Justification for Continued Operation. The committee will be forced to either address her concerns, or to depart from the precedence of unanimity. It should be noted that there is some

merit to abandoning the practice of forced unanimity. Dissenting viewpoints based on rational arguments are useful, especially when something goes wrong. The dissenting comments assist in the re-evaluation of decision processes. Even the Supreme Court does not insist on unanimous decisions; a lack of complete consensus is a valid reflection of the uncertainties present in judgment decisions.

The safety of the Nuclear Power industry relies on the diligence of many professionals who worry about contingencies. Redundancy of critical components and systems is a key factor in ensuring public safety. The "Single Failure Criteria" that Alison is exploring is fundamental to the concept of Redundancy. She is not "...getting (unnecessarily) carried away with possibilities," as Joe Carpello suggests. She is exercising her professional responsibilities as a trusted member of an oversight group. She is merely concerned that all reasonably foreseeable contingencies be investigated.

When things go wrong, there is always a technical explanation for the failure. But there is also inevitably a procedural problem, involving human deficiencies (Carper 1989). Often the procedural problem relates to a flawed decision process and complacency regarding contingency plans. Mark Reynold's suggestion that the concerns expressed by Alison be referred back to the Mechanical Engineering group makes a lot of sense. This act would not entail a great time delay. It will impress the Mechanical Engineering group with the need to investigate all contingencies when future problems arise. And, even if the problem turns out to be less critical than it now appears to Alison, the committee decision will truly be a willing consensus. The more comprehensive review will be viewed favorably by the Nuclear Regulatory Commission, and the NRC will likely place more credibility in future recommendations from the committee.

One final concern deserves comment. The current report implies that the cooling system is operating at or below the limit of acceptable standards. The problem appears to be sand blockage involving all four heat exchangers. If nothing is done to remedy the situation, is it not likely to deteriorate further? Yet, the dominant individuals in this group are committed to getting on with business as usual. Robinson says, "If we don't approve this, we may be facing a multi-million dollar proposition."

Obviously, the time will come when a sizable expenditure will be required, unless further compromises to public safety are entertained. If Alison retains her

commitment to professionalism, and we hope she does, it will be even more difficult to speak up next time. In the future, she may find it necessary to take her concerns outside the company. At present, however, the best option is to insist on voicing her convictions within the organization (Martin and Schinzinger 1989). There may be others, like Mark Reynolds, who will follow her example and improve the quality of interaction in this committee.

Suggested Readings:

1. Carper, Kenneth L., ed. 1989. *Forensic Engineering*, Elsevier Science Publishers, New York, NY, pp. 14-31.
2. Martin, Mike W. and R. Schinzinger 1989. *Ethics in Engineering* (2nd edition), McGraw-Hill, Inc., New York, NY, pp. 213-224.
3. Maier, Norman R. F. 1980. "Assets and Liabilities in Group Problem Solving: The Need for an Integrative Function," in *Organization and People*, by J. B. Ritchie and P. Thompson, West Publishing Company, St. Paul, Minnesota, pp. 170-180.
4. Pletta, Dan H. 1987. "'Uninvolved' Professionals and Technical Disasters," *Journal of Professional Issues in Engineering*, American Society of Civil Engineers, New York, NY, Vol. 113, No. 1, January, pp. 23-31.
5. Ritchie, J. B. and P. Thompson 1980. *Organization and People* (2nd edition), West Publishing Company, St. Paul, Minnesota, pp. 155-244.
6. Rubin, Robert A. and Lisa A. Banick 1987. "The Hyatt Regency Decision: One View," *Journal of Performance of Constructed Facilities*, American Society of Civil Engineers, New York, NY, Vol. 1, No. 3, August, pp. 161-167.