

February 28, 2010

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Chief, Rulemaking and Directives Branch (RDB)
Division of Administrative Services
Office of Administration
Mail Stop: TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Docket ID NRC-2009-0485

Dear Mr. Lesar:

I would like to submit the following comments on the Commission's Draft Safety Culture Policy Statement.

Is there such a thing as "Safety Culture"?

In its draft policy statement the Commission has adopted, with slight variation, the definition of "safety culture" proposed by the International Nuclear Safety Advisory Group (INSAG) published in its 1991 report on the subject. In that report, the definition was explicitly introduced from the outset as a *proposition* because INSAG had discovered that no consensus existed about what the term means.¹ A cursory review of the literature on organizational behavior reveals that there is still no consensus among researchers as to the validity or utility of this construct and no agreed upon methods for measuring it.^{2,3,4} How can the Commission establish a policy regarding the need for its

¹ "In embarking on a report on Safety Culture, INSAG was faced with the fact that the concept has not been fully charted in previous studies, and there is no consensus on the meaning of Safety Culture." (SAFETY CULTURE; A report by the International Nuclear Safety Advisory Group, Safety Series No. 75-INSAG-4, International Atomic Energy Agency Vienna, 1991, p1.)

² "...while the importance of the concept of safety climate or culture is stressed by most authors, very few have attempted to support their claim by reporting an indication of its construct validity or predictive validity. Most efforts have not progressed beyond the stage of face validity." (Guldenmund, F.W. The nature of safety culture: a review of theory and research. Safety Science, 34, 2000. p216.)

³ The earliest located paper on safety climate is Keenan et al. (1951). This study was based on introspective ratings from primary individuals in an automotive plant. Subsequently, theory and research paradigms have improved but not to the extent that a comprehensive theory on safety culture exists, nor that a measurement approach has been developed that has unanimous preference. (Ibid., p.227)

⁴ "Organisational culture and climate are complex concepts. Guion declares, '[t]he concept of organizational climate is undoubtedly important, but it also seems to be one of the fuzziest concepts to come along in some time'. Glick actually talks about a 'conceptual morass' and states that '[organisational] climate is a generic term referring to a class of dimensions that many have argued is so broad and diverse as to make the concept useless'. Douglas writes: 'Culture is a blank space, a highly respected, empty pigeonhole'. Schein states in the preface of his 1992 book: 'The concept [of organisational culture] is hard to define, hard to analyze and measure, and hard to manage'." (Ibid., p.225. Internal citations omitted.)

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licensees to adopt — possess — have — (it is unclear what the appropriate verb is) a “strong safety culture” when the construct is so ill defined?

Engineers doing psychology?

It should come as no surprise that the Commission seems to be floundering here. The agency consists of engineers, chemists and physicists, whose expertise lies in the fields of nuclear engineering and health physics — not the social and behavioral sciences. As such, the agency cannot be expected to possess the theoretical wherewithal to navigate the conceptual morass that comprises the field of organizational behavior. To compound the problem, the Commission has chosen as guide in this undertaking a group with no more expertise on the subject than it has, namely INSAG. Inspection of this group’s membership reveals nuclear engineers and physicists but no behavioral scientists. INSAG has no more business venturing into organizational behavior than the Commission. The conclusion that this is a case of the blind leading the blind is inescapable.

Regulation by metaphor?

"Culture" is a theoretical construct taken from the field of anthropology. It has been applied to the study of organizational behavior by social psychologists who quined the term “organizational culture” as a means of attempting to explain differences between the ways members of different organizations interact, analogous to the way anthropologists explain differences between societies.⁵ Within anthropology, the term “culture” has no single agreed upon definition.⁶ However, since the turn of the previous century cultural relativism has been a central tenet of all active schools of anthropological research. Practicing anthropologists are in near universal agreement that there is no such thing as a

⁵ Ibid., p.220.
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Topical:	Culture consists of everything on a list of topics, or categories, such as social organization, religion, or economy
Historical:	Culture is social heritage, or tradition, that is passed on to future generations
Behavioral:	Culture is shared, learned human behavior, a way of life
Normative:	Culture is ideals, values, or rules for living
Functional:	Culture is the way humans solve problems of adapting to the environment or living together
Mental:	Culture is a complex of ideas, or learned habits, that inhibit impulses and distinguish people from animals
Structural:	Culture consists of patterned and interrelated ideas, symbols, or behaviors
Symbolic:	Culture is based on arbitrarily assigned meanings that are shared by a society

Table adapted from Bodley, John H. Cultural Anthropology: Tribes, States, and the Global System. 3rd ed. Mountain View, CA: Mayfield Publishing Company, 2000.

“good” or “bad” — a “strong” or “weak” — culture. Yet the Commission’s draft policy assumes that not only are there such things as “strong” and “weak” safety cultures, but that they can be identified and measured. The Commission certainly knows many things that anthropologists do not, but probably not on the subject of culture.

Do corporations, regulatory agencies, and other artificial societies have cultures? Metaphorically perhaps, but not in the sense that the Andaman Islanders and Hopi Indians have cultures. Every theory has a focus and range of convenience within which its constructs can be usefully applied. It is often tempting to take a construct that has proven successful in one area and transplant it to another, but this should only be attempted with great circumspection. As can be seen from the references from the literature on organizational behavior already cited, social psychologists’ attempts to graft “culture” into their own field of study have not yet been successful. At this stage in the development of organizational behavior theory, “organizational culture” and “safety culture” remain merely metaphors that cannot support the weight of the Commission’s policy.

Circular reasoning.

The Commission’s reasoning, as shown by the following quotation, is perfectly circular:

[W]eaknesses in the safety culture of licensees and certificate holders have contributed to unscheduled events or incidents that the Commission has determined to be significant from the standpoint of public health and safety. Examples linked to... weak safety cultures include inadequate procedures; procedures not being followed; inadequate supervision; decisionmaking that does not ensure that safety and security are maintained; and ineffective problem identification, evaluation, and resolution. They have included medical misadministrations ... and overexposures arising from the loss of control of radiography or well logging sources. (74 FR 57526)

The Commission blandly asserts here that the negative health and safety events listed, are the result of weak safety cultures. However, the only evidence that the Commission has for its licensees’ weak safety cultures consists of the same list of negative events. This is a case of what Rosness refers to as re-labeling,⁷ whereby a problem is given a new name, but the underlying causes are no better understood than before. This type circular

⁷ During the eighties, "inappropriate attitudes" were frequently identified as the cause of "human error" and "risky behaviour". During recent years, "inappropriate safety culture" seems to have taken over as the most common diagnosis. It is not at all clear that this change in labelling represents a change in the ways we think about the problem. The medicine seems to be roughly the same in both cases: Various brands of campaigns to change the inappropriate attitudes or the inappropriate culture. Neither is it clear that these terms explain anything at all. "Poor attitudes" and "poor safety culture" seems to be inferred from the "human errors" and "risky behaviours" that they are supposed to explain. This is re-labelling, not identification of causal mechanisms. (Rosness, R. Safety culture: Yet another buzzword to hide our confusion?, SINTEF Industrial Management, tillgängligt, 2003 . p.1-2)

reasoning has plagued the field of psychology for decades.⁸ It is not surprising that in venturing outside of its own area of expertise and into social psychology, the Commission has itself fallen victim.

Regulators are well aware of the fact that the failure to follow procedures, or the lack of adequate procedures in the first place, can lead to misadministrations and overexposures. That is why they spend enormous amounts of their time reviewing procedures and observing licensees' operations. By identifying weaknesses in the way licensees operate their programs, regulators hope to fix problems before they lead to a radiation incident. The process however, never ends — and there is no guarantee that even the strongest radiation safety program will avoid all mishaps.

The Commission apparently wants to find an underlying cause for all radiation accidents, and believes it has found it by latching on to the notion of “safety culture”. The Commission seems to think that if it can just ensure that every licensee has a strong safety culture (whatever that means), the incidence of misadministrations, overexposures and the like will become diminishingly small. This is just plain nonsense. There is no magic bullet for radiation safety. Regulators will have to continue to review procedures and inspect operations, and licensees will have to be continually reminded about the importance of safety. And no matter what we do, accidents will continue to occur.

Thank you for this opportunity to comment.

Sincerely,

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⁸ This problem of empty explanations has hampered psychology — and in particular common-sense psychology — during most of the previous century (see, e.g., Krasner and Ullman, 1973, for a discussion). Aggressive behaviour has been explained by an aggressive personality, social behaviour by a social instinct, self-realising behaviour by a self-realisation motive and so on. (Ibid., p.2)