JANSI's activities for reflecting lessons learned from Fukushima Daiichi Accident

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Abstract. In the wake of the Fukushima Accident, Japanese nuclear industry established the Japan Nuclear Safety Institute (JANSI), a self-regulating organization that provides strict guidance for the industry's pursuit of the world's highest level of nuclear safety. JANSI demands that all levels of nuclear operator, from a senior management to a field manager, maintain a strong commitment to nuclear safety. JANSI is also striving to create opportunities for nuclear operators to feel peer pressure in order to increase their awareness of the unique risks inherent to nuclear power. Leadership development training is one of these opportunities. JANSI is in the process of developing a training program that aims to foster the prowess needed to take suitable action in case of severe accidents as well as the creativity that is also needed at such times. This paper introduces the trial training program that have been made for CEOs who are responsible for the risk management regarding nuclear safety, the trial training program that have been made for plant directors who must take full responsibility for the actions taken in the field during an emergency and the trial training program that have been made for shift managers who will be under extreme stress at that time.

1. Introduction

Although three years have passed since the Fukushima Daiichi accident, more than 100,000 people have still not been able to return home due to radioactive land contamination and have been living the uncertain life. In addition, Japanese society has a serious economic impact on the public lives because the electricity charge is increasing significantly. To prevent such serious accident, many reports on the Fukushima Daiichi accident state that the fundamental concept of defense in depth remains effective, however, there should be no room for complacency in implementation of nuclear safety practices and concepts [1].As stated in INSAG-22 and the relative documents, leadership in nuclear safety must start at the highest managerial levels of the nuclear operators and be infused throughout the entire management and workforce [2][3][4].To reduce the risks inherent to nuclear power, we should focus on the human performance aspects of decision-making[5]. In other words, the leader of nuclear power industry must always be aware of the unique risks of nuclear power and engage in risk management as a top priority. Therefore, Japan Nuclear Safety Institute (JANSI), which has established in 2012 as a self-regulating organization within the Japanese nuclear industry, has begun attempts to cultivate leadership for nuclear safety at each level, from a senior management to a field manager. The JANSI's leadership program for trial will be described in

the second chapter, the insight through the trials in the third chapter, and the conclusion in the final chapter.

2. JANSI's Leadership Program Development

According to the fundamental safety principle of IAEA, senior management must show their leadership in regards to safety and each level of the organization must manage safety based on the roles and responsibility. Human performance such as decision making especially proved very consequential. As radioactive materials release caused by nuclear fuel meltdown at the Fukushima Daiichi site affected the life of local people seriously, this phenomenon forced nuclear operators to become aware that their decision could have a direct impact on the society. That is why JANSI has made a list of competency to manage the risk unique to nuclear power from the standpoint of being responsible to the society. These competencies are mission, objective awareness, strategy/tactics, crisis management, organizational management, situation assessment, and knowledge/skills. The training roles have been shares with operators focusing on cultivating the knowledge and skills unique to power plants, and JANSI focusing on mentality. It was deemed suitable to have JANSI provide training program related to mentality rather than operators. Because the mental skills are developed as the result of mutual effect gained from group discussion and role-playing which can be easily organized by JANSI. At the severe accident, it should be necessary for nuclear operators to cope with external parties such as fire departments and others. Therefore, nuclear operators must have the ability to show leadership for this coordination. The opinions of those external experts who are familiar with the crisis management should be incorporated in JANSI's leadership programs.

2.1. Top Management Seminar

Firstly, a seminar was held for CEOs of nuclear operators so as to share the idea of "We are in the same boat." The three days seminar was divided into two panel discussions and a breakout discussion. The Nuclear Safety Reform Plan announced by TEPCO was used as a basis for discussion at this seminar [6]. A panel discussion on the "direct causes of the Fukushima Daiichi accident" took place in the first meeting and a panel discussion on "the organizational culture at TEPCO" took place in the second meeting. Each CEO considered their own company's countermeasures for the extracted issues, and these were brought together in the third meeting for a breakout discussion. According to a questionnaire result after the seminar, more than 90% of CEOs gave positive comments. JANSI will continuously have such seminars with suitable topics related to nuclear safety for sharing the idea mentioned above.

2.2. Plant Director Seminar

In the event of a severe accident, a plant director must take command of the field and make final decisions based on a grave responsibility. He must also communicate closely with upper management and encourage subordinates who are working on the field under extreme stress. The curriculum for the two days seminar was designed to allow participants to have simulated experience of the Fukushima accident for themselves and reconfirm situational judgments made in a life-or-death situation, organizational management, crisis management, and sense of

mission, as well as the resolution of leaders. In detail, the experiences of the shift manager and plant director of Fukushima Daini NPP at the time of accident were shared, issues for leaders were identified by looking back at how the accident unfolded and how it was responded to, and these issues were discussed by the entire group as well as smaller groups. Furthermore, in order to become aware of the views of external agencies whose cooperation is necessary during emergency, experts in crisis management and emergency response, one is regulatory agency official who used to serve on the staff of the governments accident response headquarters and one is a former fire station chief, were invited to the debate. Also, at the end of training program, each participant was asked to write a letter to his company's CEO about his resolution, which was directly handed in by JANSI. This was a mechanism to drive home the importance of this training with participants as well as to shorten the psychological distance with a senior management. Participants gave the training program extremely high marks for expectation satisfaction level and training objective satisfaction level. They will report the implementation result at the field based on their awareness at the international workshop held by JANSI regularly. This is done so as to eliminate the transitory nature of training and continually maintain it by creating opportunities to incorporate training results in the PDCA cycle.

2.3. Shift Manager Seminar

Experiences during the Fukushima Daiichi accident revealed that shift managers are subject to enormous amounts of stress while they are doing their all to maintain plant function in the control room during a severe accident. This is why JANSI has put together a training curriculum that focuses on communication skills with the head office and subordinates as well as stress management. In detail, in three days, participants listen to stories about what happened in the field directly from the shift manager who was present at the time of accident in order to experience for themselves what it was like to go through the Fukushima Daiichi accident. Participants also listen to a lecture by a former Japan Maritime Self-Defense Force cadre on the daily resolve that is needed to prepare for life-or-death situations. Participants also engage in role-playing sessions with professional actors to learn about how to deal with subordinates that fall into panic. After the session participants commented that they were glad that this was only a training session thereby indicating the high degree of reality that the role-playing session on stress control provided.

3. Insight

The challenges of these three training sessions were "how to make training on an extremely rare event, such as a severe accident, which must never be allowed to happen again, as real as possible" and "how to enable participants to understand the difficulties involved in communicating with surrounding parties in a calm manner while fighting the stresses involved with being put in a life-and-death situation, and achieving your mission". In order to overcome these challenges it is necessary to interact with people in other professions that deal with life and death situations on a daily basis, research human factors, and provide psychological support. JANSI thinks that leadership can be cultivated through the cycle of awareness, education, training, and exercise shown in Figure 1.

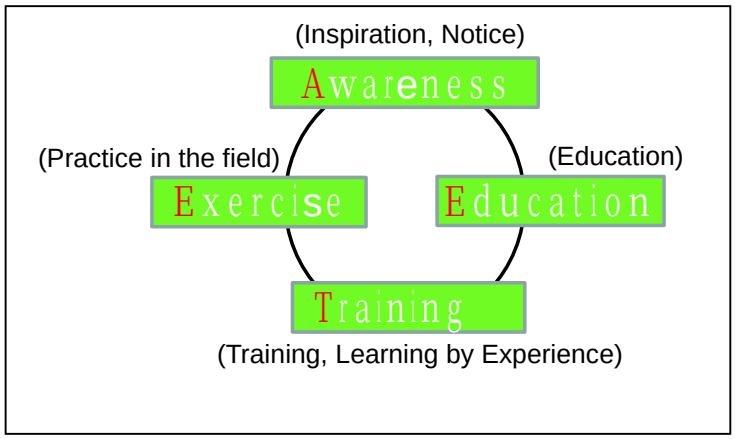

Fig.1 Leadership Cultivating Cycle

4. Conclusion

Leadership at each level in an organization is crucial to prevent a severe accident such as the one that occurred at Fukushima Daiichi. Leaders must be able to instigate organizational reform, flexibly adjust to unplanned changes, and be resilient. JANSI hopes that, through the leadership training, nuclear operators will first become aware of the responsibility for the society and then enhance the leadership for nuclear safety by education, master it through training, and then practice it in the field, to execute the cycle and build the ability. JANSI will continue to provide an "opportunity for awareness" for operators to keep improving their leadership skills.

Appendix:

[1] OECD/NEA, “The Fukushima Daiichi Nuclear Power Plant Accident OECD/NEA Nuclear Safety Response and Lessons Learnt” OECD/NEA No. 7161, (2013), p54.

[2] ASME, The ASME Presidential Task Force on Response to Japan Nuclear Power Plant Events, “Forging a New Nuclear Safety Construct” (2012), p46.

[3] IAEA, Fundamental Safety Principles, IAEA Safety Standards Series No. SF-1, (2006) pp.8-9.

[4] IAEA, “Nuclear Safety Infrastructure for a National Nuclear Power Programme Supported by the IAEA Fundamental Safety Principles” INSAG-22, A Report by the International Nuclear Safety Advisory Group, (2008).

[5] IAEA, Leadership and Management for Safety” Draft General Safety Requirements, GSR Part-2 DS456, (2013)

[6] TEPCO, “Summary of the Fukushima Nuclear Accident and Nuclear Safety Reform Plan” (2013) (in Japanese)

http://www.tepco.co.jp/cc/press/betu13_j/images/130329j0401.pdf