

Analysis of the Survey Results for the Safety Culture Attitude of HANARO Center

Jong-Sup Wu, In-Cheol Lim, Kee-Hong Lee
HANARO Safety Management Lab. Korea Atomic Energy Research Institute
jswu@kaeri.re.kr

1. Introduction

During 10 years since its first criticality, the safety culture activities for HANARO have been implemented and the importance of safety management in nuclear activities has been also emphasized. At the end of last year, a reorganization of HANARO Center was carried out to enforce the safety functions for the reactor applications and research fields. In May 1996, a survey was conducted to investigate the overall attitudes of the safety culture in HANARO. The result of the survey shows that the general attitude of the safety culture in HANARO is not so bad. The trend of the safety culture has been gradually improved during the last 10 years.

2. Safety Culture of HANARO

The safety culture of HANARO has been developed to enhance the safe operation of the reactor systems based on field experiences, improvement of the systems and procedures during the last 10 years of a power operation. For an implementation of the safety culture, a systematic approach was taken in 1998 when HANARO participated in a Safety Culture Workshop of the FNCA (Forum for Nuclear Cooperation in Asia) [1]. Some practical safety culture activities and performances are as follows;

- Conducting the surveys of a safety culture to understand the consciousness of HANARO employees.
- Checking the progress on a safety culture activity by using the SCI(Safety Culture Indicators) recommended by FNCA.
- Conducting a peer review on HANARO by FNCA member countries [2].
- Holding seminars and lectures for safety on "Nuclear Safety Check Day" every month.
- Preparing the procedures related to safety.

Majority of HANARO staff are very familiar with the HANARO systems. It provides the opportunity to improve the safety culture based on their experiences.

3. Survey for the Safety Culture Attitude

Using the same questionnaire prepared in 1998, a general survey on the safety culture was conducted in 2006 for all HANARO employees including reactor utilization and research groups. The survey consisted of 40 questions composed of 36 objective questions and 4 subjective questions. 5 point scale was applied for the grade of the answers. In the case of "strongly agree" for the safety culture 5 points was assigned, while 1 point

was allotted to the case of "strongly disagree." The survey includes basic questions like place of duty, age, position, working place and experience.

HANARO Center has 175 employees of 92 regular staff and 54 irregular employee, outsourcing workers and students. 146 out of the 175 replied on this survey (93.4%).

4. Survey Results

From this survey the average age and experience data could be summarized. The total average age of the HANARO Center is 37.73. Age of the regular staff is 42.32 and 29.93 for the irregular employee. Most of the regular staff are over 40 year old, on the other hand irregular employees are less than 30. The experience data indicates that the average in nuclear field is 9.62 years and that after the reactor star-up was 4.96 years.

According to the survey result, the average score of the safety culture for all the HANARO employees was 3.65(out of 5.0) which is better than the score in 1998(3.36) and 2002(3.63)[3][4]. There are some differences in the score depending on the position, age, experience and working group as shown in Figure 1. The safety level of the managers is higher than that of the staff and the regular staff has a higher safety consciousness than the irregular employees.

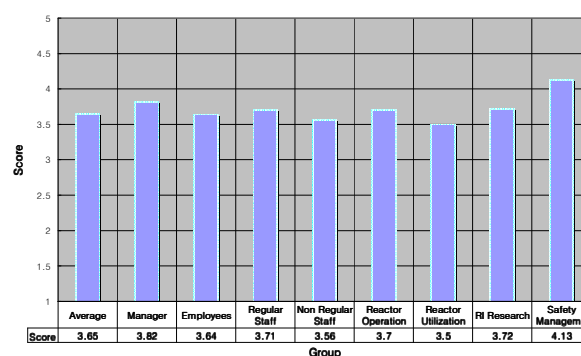


Figure 1. Score of safety culture in each group

The safety level of a younger person from 30 to 39 is lower than the other age groups as shown in Figure 2. The reason is that the junior employees are more concerned about their job than safety.

Experienced persons recognize the importance of a safety during their work and put higher priority on a safety as shown in Figure 3.

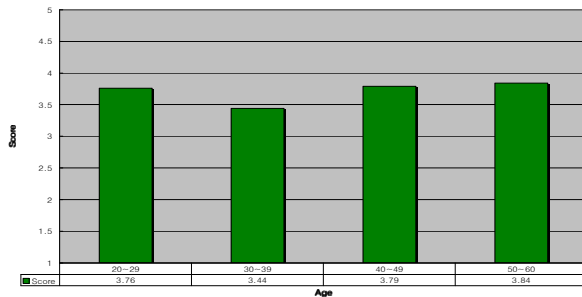


Figure 2 Score of safety culture depends on age

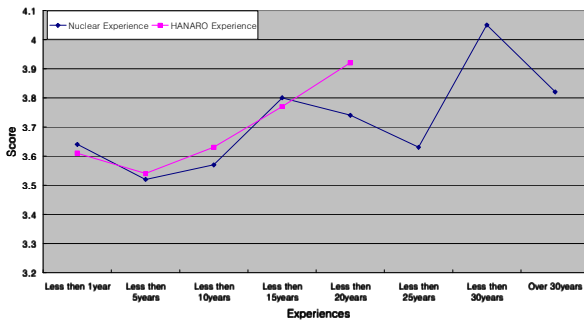


Figure 3. Score according to the experiences

From the answers, 3 best attitudes and 3 worst attitudes of the safety culture can be derived as follow.

	3 Best attitudes	3 Worst attitudes
1	Question 23(score4.13) Management in my workplace is as concerned with people's safety as it is with production	Question 28(score 3.03) If I worried about safety all the time I would not get my job done
2	Question 17(score4.11) What happens to this organization is really important to me	Question 27(score 3.07) Safety works until we are busy, then other things take priority
3	Question 2(score 4.06) In general, there's a good safety attitude in my department.	Question 3(score 3.19) Our safety procedures are too strict

The best attitudes indicate that the management are concern with safety and most employees have a good safety conscious mind. Meanwhile the worst attitudes means there is a conflict between safety and the job.

According to the IAEA safety culture structure, it has two major components; the framework determined by an organizational policy and by a managerial action, and the response of individuals. It means that a success of a safety culture depends on the commitment and competence provided both in the policy and managerial context and by the individuals themselves. These components are dealt with separately under the headings of requirements at a policy level and the requirements on managers and the response of individuals [5]. 36 questionnaires from the survey can be grouped into

3 components; policy level commitment, manager's commitment and individual's commitment based on the above classification.

Figure 4 indicates that the average scores of 3 commitments are between 3.5 and 3.7. Safety level of the manager's commitment is a little higher than the one of the individual's commitment.

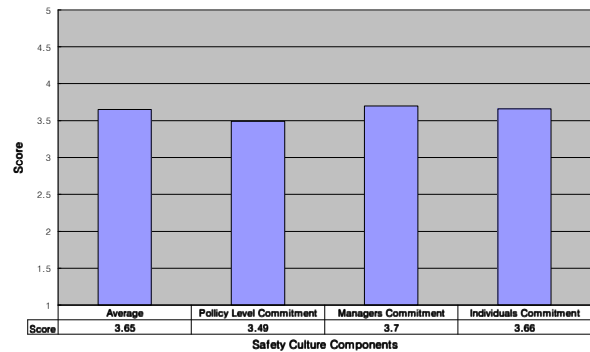


Figure 4. Score based on safety culture components

5. Conclusion and Future Plan

The survey for the HANARO safety culture was conducted to investigate the attitude of the safety culture in HANARO, a compliance with safety procedures, and the practice of safety actions. According to the survey result, the overall safety consciousness in the HANARO center is not so bad. And the attitude of the safety culture in HANARO has been gradually improved during the last 10 years.

The general trend of the safety culture is that managers, regular staff and senior employees who have a wide experience have a higher safety conscious mind than the others. An effort is needed to improve the safety attitude for all the employees to enhance the plant's safety. The major concern is how to harmonize the two axes, work achievement and safety. The specific safety culture indicators for HANARO are under development. Next year the questionnaire will be modified to cope with the new safety culture indicators. A new survey by using a modified questionnaire will be conducted in 2008. Periodic survey would be very useful to understand the trend of the attitude of the safety culture of the organization and to improve the safety of HANARO.

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