

Quality Management for Steam Generator Lancing & FOSAR

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1. Introduction

Sludge Lancing and FOSAR(Foreign object Search and Ratrieval) such as removal of deposit inside the secondary side of the steam generator are being performed to improve the thermal efficiency and to prevent the thermal stress of the steam generator tube in NPP. Sludge Lancing & FOSAR process creates a “Quality Plan (QP)” based on the work performance plan and maintenance procedure during the plant outage. In the QP, systematic Quality Management (QM) is performed by determining the Witness Point (WP) and Hold Point (HP). QM activities can achieve the effects such as quality improvement, cost reduction, improvement of production (yield), atmosphere of workplace, improvement of corporate credit, enhancement of organizational competitiveness and improvement of organizational structure.

In this study, we would analyze the contents of quality management in Lancing & FOSAR process, and suggest a more efficient and systematic work execution plan.

2. QM for S/G Lancing & FOSAR

2.1 Concept and definition of QM

According to Armand Vallin Feigenbaum, quality is a holistic feature of production, technology and marketing that meets the diverse needs and expectations of customers for a product or service. QM has the meaning of establishing management and quality policies and plans, creating and implementing the organization, and taking necessary control over the process. QM always refers to the control of certain behaviors while setting standards and limitations. In the past, the main activity area was to reduce manufacturing quality defects, so it was close to quality control. However, recent quality

concept is called “Quality Management” rather than “Quality Control” because of the importance of the design.

2.2 Principles of QM

When applying the principle of QM to be Lancing & FOSAR, it can be classified into 5 kinds in total. The main contents are as follows;

- Principles of prevention
When performing the Lancing & FOSAR, it means preventing the cause before the problem occurs. QM focuses on prevention activities.
- Principles of staff advice
In order to effectively manage QM, the staff department with the expertise in management technology and the performance department appropriately share the necessary work for good quality and utilize the advantages of the organization.
- Principles of all the workers
All workers should cooperate with each other in terms of quality, execution cost and performance time.
- Principles of scientific management
The QM activities are based on scientific basis, it consists of five steps as follows;
 - Problem recognition
 - Materialize facts about the problem
 - Plan for problem solving
 - Execution according to plan
 - Investigate plan and performance
- Principle of Comprehensive adjustment
In QM, emphasizing part of the quality of the consultation and ignoring the cost and performance time, the process required by the client cannot be performed at economically appropriate time. Therefore, it is possible to realize satisfaction of the client by coordinating the three elements of quality,

execution cost, and execution time in a well-balanced and should cooperate with relevant department.

2.3 QP of Lancing & FOSAR

By executing and reviewing the QP of Lancing & FOSAR systematically, the reliability of Lancing & FOSAR performance will be further improved. The main contents of the Lancing & FOSAR maintenance / plan checklist are as follows;

- Determine the adequacy of qualification for worker.
- Identification of equipment and apparatus.
- Mock-up training
- Check site preparation and procedural compliance
- Confirmation of maintenance / inspection checklist

2.4 WP of Lancing & FOSAR

The setting of WP is the checkpoint designated by the quality inspector for testing during Lancing& FOSAR process. WP is a checkpoint which can proceed to the next step without the prior consent of the quality inspector if the quality inspector does not join the inspection point. The WP at Lancing & FOSAR process includes “Check mock-up training”, “Check work procedures in on-site and check procedures”, “Check equipment before and after inspection” and “preventing foreign object inflow management”. The work that the quality inspector has set up for WP is an important task. Most of them are carried out continuously or the quality inspectors are made to participate.

2.5 HP of Lancing & FOSAR

The HP setting in QM is a checkpoint that the quality inspector cannot proceed to the next step without inspection or prior written approval of the quality inspector unlike the WP. HP is “Lancing & FOSAR qualification certificate confirmation”, “S/G ECT result of foreign object evaluation signal” and so on. HP is QM that is critical to ensuring safety and reliability.

2.6 Lancing & FOSAR maintenance / inspection checklist

The Lancing & FOSAR maintenance inspection checklist is a format that records the contents of the

QP in detail and records smooth measure to be taken and problem to be solved when problems are found. The main contents are divided into “initial conditions of execution”, “precaution to perform”, “equipment installation and removal” and “equipment operation”, and the details of the Lancing & FOSAR procedure and reflect the content.

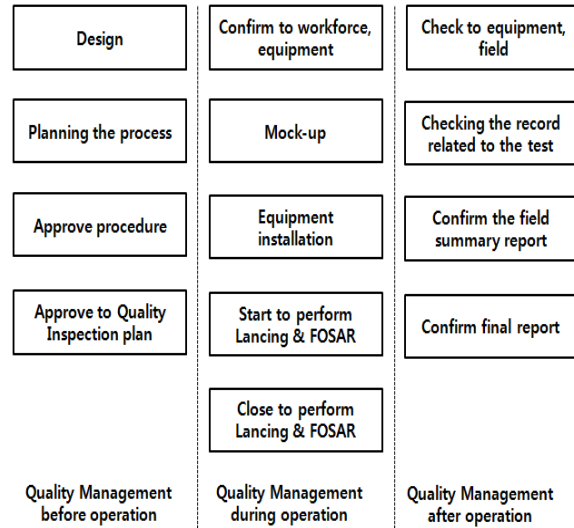


Fig. 1. Schematic diagram of QM.

3. Conclusion

During the Lancing & FOSAR process of steam generator, checking and managing the main provision according to the principle of QM before, during and after the operation. The systematic management of the planned process, the quality improvement of the process performance, and the measure to be taken at the time of finding the problem, would enable efficient operation of the steam generator Lancing & FOSAR in NPP.

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