

# Development of Operator’s Administrative Procedure for IAEA Unannounced Inspection

GyungSik Min, Il Jin Park, Kwang Ok Ko, Jung Soo Kim, Dong Han Yu  
 National Nuclear Management and Control Agency – Korea Institute of Nuclear Safety  
 PO Box 114, Yuseong Daejeon 305-600

## 1. Introduction

The use of unannounced inspection (UI) in the IAEA verification activities is appeared in INFCIRC/153, but due to difficulties in practical application UI has been used to a limited extent. Under the Integrated Safeguards, however, IAEA will take advantage of UI more widely in maintaining the probability of detection capability on the diversion of the nuclear materials while reducing inspection frequency.

The UI is a supplementary measure for the Agency to carry out without advance notification. Unpredictability is the key point in the UI. There are various types of unpredictability; timing and interval of inspections, inspection activities, and frequency of inspections.

## 2. Unannounced inspection of the transfer of the spent fuel into dry storage containers at OLRs

During the transfer of the spent fuel into dry storage containers at OLRs, continuity of knowledge (CoK) should be maintained. The UI will be able to be used for maintaining CoK in conjunction with the mailbox system and fingerprinting.

## 3. Field trials for unannounced inspection

### 3.1 Preconditions

During the field trial, unpredictability in inspection activities was not considered since it is not possible to identify what kind of inspection measures can be applied during the UI by the IAEA inspectors. However, other types of unpredictability were maintained during the field trial. Three times of unannounced inspections were accomplished; UI for spent fuel bay area(A), UI for the dry storage facility area(B) and UI for the transfer route(C). Figure 1 shows the layout of the nuclear power plant.

The check points during the field trials are as follows;

- Access Time

- From the gate to the locations where IAEA inspectors want to access(A, B, and C)

- ◆ Whether it is reasonable when considering the procedures of the facility at a max. allowable limit of 2 hours

- ◆ Whether it is appropriate to identify any “fake” by the operator

### - Procedures

- Whether the guard contacts right person to notify UI.

- ◆ If there is a redundant security check

- ◆ If there is an unnecessary delay in

- replacing IDs.
- WBC/urine analysis
- issuing working permit
- escorting

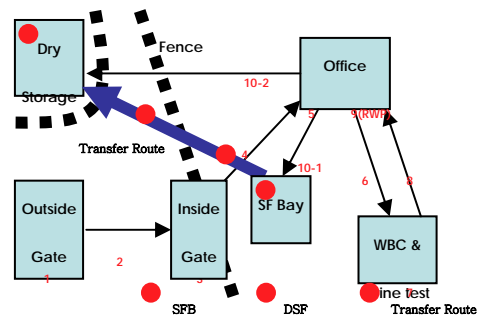


Figure 1. Layout of nuclear power plant site. Red numbers in the figure describes the step of access during the unannounced inspection.

Red numbers in Figure 1 describes a segment or a step to check the duration of the stay in the UI. The activities at each step is as follows;  
 STEP 1 : exchange of badge (UI notification)  
 STEP 2 : move  
 STEP 3 : exchange of badge  
 STEP 4 : move  
 STEP 5 : paper works

- STEP 6 : move
- STEP 7 : whole body counting/urine sampling
- STEP 8 : move
- STEP 9 : wait until RWP is issued
- STEP 10 : move (inspection activity)

### 3.2 Result of Field Trials

Field trials were accomplished on April 29 and 30, 2005 at Wolsong. Figure 2 shows the result of field trials. Small numbers in the figure describes the amount of time consumed at each step. The time to consumed to access to the strategic points of each trial is 94(4 persons) and 75 minutes(1 person) for point A, 103 minutes(4 persons) for point B, and 26 and 22 minutes for point C respectively. Most of the time consuming processes are step 7(WBC and urine sampling) and step 9(issuance of RWP) when 4 persons were tried the UI(Trial 1 and 2). However, time for step 7 was reduced to 6 minute when one person tried the UI(Trial 3). It is noteworthy it takes around 35 to 40 minutes to issue the RWP. It includes the process of collection of urine samples.

The result shows that all of the field trials were finished within two hours, which is the general criteria for an IAEA unannounced inspection.

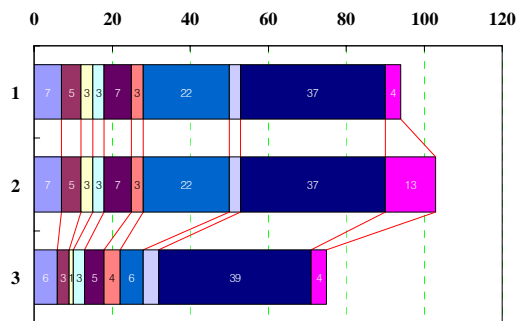


Figure 2. Results of field trial. X-axis describes the time of consumed for the access in minute and y-axis describes each trial. General criteria for an IAEA unannounced inspection is within two hours(120 minutes).

### 3.3 Observation

Follows are what were identified during the field trial of announced inspections.

- The guard in the gate notified UI to the right person immediately.
- UI notification form and photo ID were what was required to pass the gate.

- No escort was provided before an inspector arrived at the office.
- In case of UI, an inspector does not have to wait until the urine analysis is finished.
- In issuing working permit, prior admission was possible if any one of the administrative line is out of place.
- Closing working permit, it takes some time.
- As an overall, Wolsong is fairly well prepared to accept UI.

### 4. Remaining Issues

First of all, since Wolsong site(4 units) is divided into two plants(1 & 2) administratively and physically, it is necessary to inform the right phone number to the guard in the gate. If the phone number is wrong, it may be possible to consume precious time in the gate.

Secondly, no escort was provided by the operator before an inspector arrives at the office. It is necessary for the facility side that it is allowable in a security sense if an inspector needs UI on the transfer route outside restricted area.

Thirdly, no escort was provided by the government authorized person either in this field trial. Before applying this approach to the Transfer Campaign in the Integrated Safeguards, it should be considered how Korean SSAC would deal with the requirement of the Atomic Energy Act, which requires the escort as a mandate.

Finally, time delay in closing working permit may affect to the CA in two hours from one plant to another within a site.

### REFERENCES

- [1] INFCIRC/153(corrected), The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-proliferation of Nuclear Weapons, IAEA, 1972.
- [2] INFCIRC/540(corrected), Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards, IAEA, 1997.
- [3] CSSP Task Report SF001(draft), Report of the Field Trial in Canada of an Integrated Safeguards Approach for Transfers to Dry Storage at Multi-unit CANDU Stations in Canada, Canadian Nuclear Safety Commission, 2005.