Experience with short notice (SNRI) and unannounced (UI) inspections in Sweden

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Introduction

Integrated Safeguards, IS, has been implemented in Sweden since 15 January, 2009. This presentation will describe some of the preparations that were done to facilitate the change to new safeguards.

For Sweden, the IAEA draw the necessary conclusions late 2008 to start IS- implementation. There is a mixture of short notice random inspections and unannounced inspections. During 2008 discussions with the IAEA, the Commission, the State authority and operators were performed to pave the road towards IS. The most difficult task was the LEU fuel fabrication plant but also for the state authority to arrange so that it’s inspectors can, with very short notice, get to the facilities.

This presentation will describe how we in Sweden have come to organise the implementation of IS on all levels including the communication ways with the IAEA and the European Commission. The experience gained from the SNRIs and UIs that have been conducted in Sweden will be presented.

The Swedish Radiation Safety Authority

As of July 1st, 2008 the Swedish Nuclear Power Inspectorate, SKI, and the Swedish Radiation Protection Authority, SSI, were marched into the new Swedish Radiation Safety Authority, SSM. SSM has today 270 employees and is headed by a director general appointed by the government.

SSM is divided into three departments: Nuclear Power Plant Safety, Radioactive Materials and Radiation Protection. Within the Department of Radioactive Materials the Section of Nuclear Non-proliferation is responsible for Safeguards. There are 9 persons in that section which also is handling export control and illicit trafficking. The Swedish Support Programme to IAEA safeguards as well as safeguards research is also dealt with in the section.

Field trials in Sweden under 93+2

Sweden became engaged in testing four elements to strengthen safeguards: a so called expanded declaration, increased and more timely information flow, unannounced inspections
and environmental sampling. I will give a short description on two of these four elements that
has relevance for this presentation.

Sweden volunteered to test a timelier and also increased information flow. As the Swedish
SSAC requires the operators to roughly daily report inventory changes to the Swedish
authority the authority always have up to date information on the nuclear material in the State.
The agreement with the Agency for the field trial was to electronically submit ICRs on a
weekly basis. In addition it was agreed, concerning the fuel fabrication plant; to every Friday
submit information on the next week’s planned production, which was the status of each
project that was active in the facility. This information together with the ICR information was
then used by the Agency to plan unannounced inspections.

An unannounced inspection scheme was also tested involving the power reactors, the fuel
fabrication plant and the research facility. The agreement was that the Agency inspectors
would show up at the gate of the facility showing their identity and an inspection assignment
to the guard. The operator should then immediately inform the authority who would send an
inspector to the facility. The IAEA would have access to the facility within 2 hours and if the
state inspector still had not arrived the operator would represent the state until the inspector
arrived. In total there were 5 or 6 unannounced inspections performed during a one year trial.
During this trial the Swedish authority did not have a plan for how to ensure that there would
be an inspector available at the time for an unannounced inspection. The trial was run on a
voluntary basis for the Swedish inspectors.

Entry into force of the AP and the route to Integrated Safeguards

Sweden ratified the AP in May 2000 but the entry into force was on not until April 30, 2004,
when all the EU states and the European Commission had ratified the AP. There were only 8
sites that became candidates for the declaration. For those that were not included, an
attachment to the declaration gave motivations for the exclusion from a site declaration.
Examples were small installations for which exemptions were asked, old closed down
facilities without DIQ/BTC. Some sites were declared with a smaller site area then was
discussed earlier and for those we described the buildings not included in the site in an
attachment to the declaration.

The first Complementary Access was with 2 hours notice and took place at the Studsvik
research facility on March 16, 2005 in conjunction with the yearly PIV. This CA was then
followed by another four during 2005, one of them with 24 hour notice to the closed down
Barsebäck site.

For Sweden the overall agreement on the implementation of IS was finalized late fall but we
still had to agree on the approach for the fuel fabrication plant. A joint meeting with the
operator, IAEA, Commission and the new Swedish authority responsible for safeguards, the
Swedish Radiation Safety Authority, SSM, was held in the beginning of November where the
discussions on the IS approach for the fuel fabrication plant started from the generic PA-IS
document for LEU fuel fabrication plants that had been approved by the HLLC. After a full
day with very constructive discussions from all sides we managed to come to an agreed PA-IS
for the Västerås facility. The only remaining issue was to have a functioning mailbox system
which had to wait until the facility had finalized its ongoing upgrading of its safeguards accountancy system.

As we had the impression that the IAEA wanted to finalize the process of introducing IS in Sweden during 2008, the SSM made visits to Studsvik research facility and Clab, the intermediate storage for spent fuel, because these two facilities would be subject to unannounced inspections. During these visits procedures for granting access for the IAEA and for the contacts with SSM was discussed with both the safeguards and security staff.

Finally there was a short meeting between representatives from the IAEA and SSM in Vienna in conjunction with another meeting early December to confirm that all preparations for beginning IS were done from both sides. The letter confirming that IS would start in Sweden January 15th, 2009 was then sent on December 19th to the Commission with a copy to SSM.

**The integrated safeguards approach for Sweden**

For Sweden the approach eventually turned out to be as follows:

For the 10 operating reactors there is a SNRI regime with 48 hours notice and at least 3 inspections in total for all 10 reactors. The 48 hour notice was later changed to 24 hours to harmonize with the other EU-states. In conjunction with the PITs there are two inspections, a pre-PIV and a post-PIV with surveillance during the period when the core is open.

For the fuel fabrication plant there is a SNRI regime with 24 hours notice and 48 hours retention time for the feed and produced products. There is also a mailbox system with daily information on the production and inventory. The Commission plans to have maximum four interim inspections with 24 hour notice and the IAEA might appear unannounced to the operator and state during these inspections. A week long PIV is planned as earlier.

For the Studsvik research facility and Clab there is an unannounced inspection regime with at least one inspection each. The inspectors shall be granted access within two hours. PIVs are performed as before.

For the LOF:s, CAM:s and other small installations there is planned one inspection in total for all installations with a frequency of 4 to 6 years

The closed down Barsebäck reactors as well as Ranstad uranium recovery facility will have one PIV/DIV each as before.

Complementary accesses will be performed whenever the IAEA finds it necessary.

A consequence of introduction of UI to Clab and 48 hours SNRI for the reactors was that Sweden proposed to split the site containing both Clab and Oskarshamn reactors into two sites. The reason was that there is a right for the IAEA to ask for a 2 hour CA during an inspection and that would mean that the reactors could be subject to CA when Clab is inspected. This split was accepted since 2009 there are 9 sites in Sweden.
Administrative procedures at SSM for integrated safeguards

As soon as the letter from the IAEA confirming the instruction of IS in Sweden was received, the SSM started to launch procedures to be able to participate during the inspections. The receipt procedures of the inspection notifications were changed. A dedicated phone line was selected where all notifications, not only UI, SNRI and CA, is received to a server that distributes the message to two mobile phones, to a dedicated email address and a fax. This phone number was then communicated to the IAEA, the Commission and safeguards staff at Studsvik, Clab and Västerås.

After Sweden joined the European Union 1995, it has not been a legal obligation for the state to participate in the international inspections and this fact became obvious to the Swedish government when IS now was introduced in Sweden and it was clear that the Commission would not be able to participate in all inspections. So the Government decided that Sweden should be represented by SSM at all IAEA inspections.

From the lessons learned during the 93+2 trial, SSM made an arrangement to secure that there would always be a state inspector available for SNRIs, UIs, and CAs. A rolling scheme was set up involving all 8 safeguards staff in the non-proliferation section so one inspector has one week at a time starting at noon on Fridays. This inspector has to be prepared to go for inspection immediately when an advance inspection notice is received. One of the staff has the role to coordinate the activities when a notice is received, that is to arrange for a rental car if needed, communicate with the operator and fax or email necessary information for inspector who has already left. Studsvik and Västerås are possible to reach within the two hour limit but for Clab it will take about five hours. So for Clab the agreement with the facility is to let the IAEA inspector in to the facility and, if needed let the IAEA-inspectors be present to watch any process that has to finish and then freeze the situation until the SSM inspector arrives. IAEA can start with paper work as soon as that is available.

The administrative procedures of SSM was tested almost immediately as a 24 hour CA notice was received already 10 days after IS had begun in Sweden. That was for the Oskarshamn site with the three reactors and Clab. The first UI took place in May at Clab. The IAEA inspectors got access to the facility within 30 minutes and at that time the SSM inspector was already on the road and arrived at 13.30. During that period the IAEA inspectors had got information on activities at the facility and decided to “freeze” the situation by applying seals the fuel handling machine so the physical verification activities could take place when the SSM inspector arrived. Also the accountancy was made available to the inspectors.

Experiences from SNRIs, UIs and CAs

Since the AP entered into force in Sweden there has been 34 short notice inspections and complementary accesses. During the first CAs it was obvious that all parties were not well prepared. As CA often involves buildings, activities and people who not are used to be inspected for safeguards reasons there were sometimes problem to get access. The Agency had often planned to visit more places than was feasible during a working day. Another obvious example of problem was that there was no agreement on the use of cameras and how pictures would be treated. It was also clear that preparations from the IAEA side sometimes was not sufficient, examples are - inspectors not having all papers in order and lack of knowledge of the site and DI, inspection triggered on national holiday. Also the state did not
have an organisation that was ready for short notice inspections which had to be performed in
an ad hoc basis.

When IS entered into force it was very obvious that the Agency and the European commission
had not ensured that their inspectors were jointly trained to implement IS resulting in
discussions during inspections and causing confused facility operators.

We see that inspections have decreased in number, at least for facilities other then the
reactors. Thin can cause problems for these facilities to keep up a high quality of safeguards
and also keep enough resources. Particular this applies to the small facilities that rarely get
inspected. There the state has an important role to make sure that they don’t lose their
competence in safeguards. They must always be prepared to handle a 24 hour complementary
access.

Conclusions

Coming to integrated safeguards has been a long process and sometimes difficult as there are
so many different parameters to take into account. But it has also been very interesting and
challenging for us who have been involved. The co-operation between the different actors has
improved a lot during the process a paved the way for a smooth implementation of IS. For
Sweden it also gave us the chance to document the nuclear history, more actors have been
introduced to safeguards through involvement in different projects when looking for other
tools to be used in safeguards like use of open source information, satellite imagery etc.
Another challenge has been to introduce those who previously not were subject to safeguards
requirements like producers of nuclear related equipment and research organisations. But we
have just started and we still have a long way to go until we have a solid safeguards system in
place. After three years experience of integrated safeguards we have learned a lot and it seems
like the implementation of IS now have reached a state where all parties involved act in a
cooperative and smooth way. There are still states that need to adhere to the additional
protocol but we who now have the system in place can be the good examples and give support
to those who still are in the decision or preparation phase.