Giving Transparency Concepts A Face-lift: Bridging The Gap Between Old and New

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Transparency **is a confidence building approach among political entities to ensure civilian nuclear facilities are not being used for the development of nuclear weapons**

A system is transparent when all parties feel that the proliferation risk is at an acceptable level. For this to occur, proliferation risk should be monitored in a continuous fashion.

Why should transparency be re-defined?

The rapidly increasing need for power generation and the increased automation in fuel handling capabilities at nuclear facilities open the door for new methods for building confidence in peaceful use.

- Automation capabilities have increased in new, innovative fuel cycles.
- Automation provides a wealth of facility process data available in real-time.
- Real-time process data allows for effective and immediate assessment of proliferation risk.
- Transparency systems can be constructed that restrict access to sensitive information to only authorized regulatory parties.

NEW
Increasingly automated fuel handling activities
Use of process data
Real-time quantitative analysis

OLD
Monitoring fuel handling activities by inspection
Slow and subjective

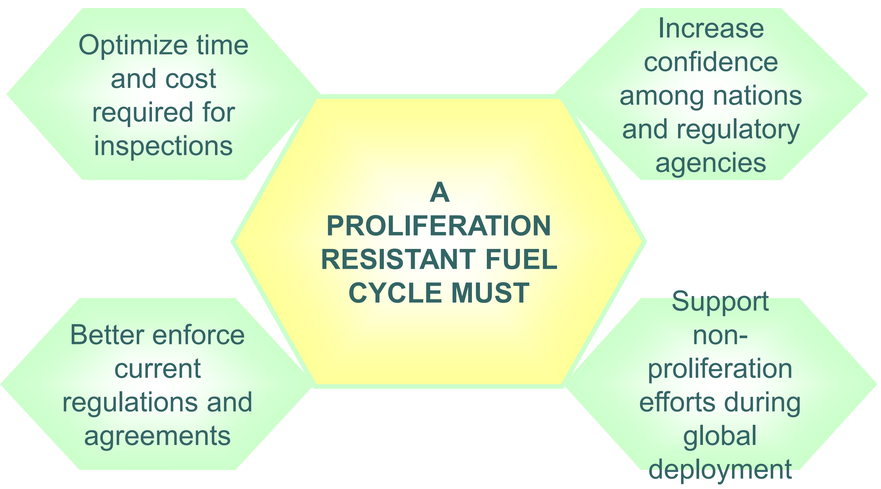
REDEFINING TRANSPARENCY

An Advanced Transparency Systems MUST:
Operate in real-time
Utilize plant process and design data
Utilize declared plant processes
Conduct real-time, quantitative analysis of proliferation-risk
Securely provide analysis to the facility and authorized parties

A traditional transparency system involves:
Use of external devices such as video cameras to record fuel handling activities
Comparison of recorded and declared activities can take months to assess proliferation potential
Provide no feedback to facilities or other involved parties.

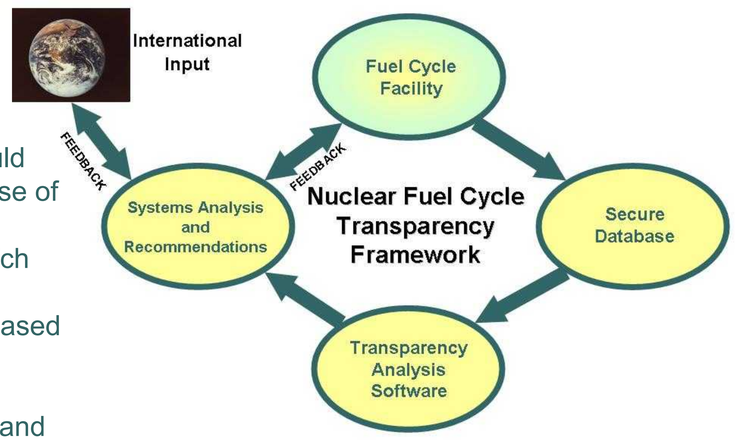
Benefits of Advanced Transparency

- Allow rapid assessment of proliferation risk by comparing expectations with real-time process data.
- Reduce the time required to assess proliferation risk by producing a numeric value of proliferation risk continuously that can be monitored remotely.
- Decrease the overall cost associated with determining proliferation risk by reducing manpower needs.



Conclusions

- Augmentation of the current transparency ideology should support the IAEA mission to ensure safe and peaceful use of nuclear technology.
- A real-time analysis is important due to the speed at which proliferation can occur.
- New ideas for fuel cycle transparency can result in increased confidence and optimized resources.
- A new paradigm can be utilized to transfer nuclear technology to developing nations, optimize inspections, and enforce agreements.
- This advanced transparency framework is intended to be deployed as part of new, automated facilities. It is not intended to retrofit currently existing systems.



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