



INTERNATIONAL CONFERENCE

**“Novel Vision of Scientific & Technical Support for
Regulation of Nuclear energy safety:
Competence, Transparency, Responsibility”**

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**“Objectives and challenges of scientific and technical
support to nuclear regulators”**

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INTRODUCTION

Managing (or undertaking) a nuclear power program is a major commitment and requires compliance with nuclear Safety, Security and Safeguards (3Ss) requirements as prerequisites for a high level of nuclear safety.

High levels of nuclear and radiation safety need to be implemented, maintained, evaluated and further improved in the time.

For this objective competences, resources and cooperation are necessary.

The **Scientific and Technical Support** to Nuclear Regulators provided by TSO organizations **is relevant part of this capacity**.

FUNCTIONS & NEEDS OF REGULATORS

The **main functions and responsibilities of the NRA** (Nuclear Regulatory Authority), established by law, include:

- define safety objectives, principles and requirements
- issue regulations and guidelines;
- manage the licensing process, performing safety evaluation for: siting, design, construction, commissioning, operation, and decommissioning of nuclear facilities,
- conduct inspection during all lifetime of a nuclear facility,
- establish conditions for continuous improvement.
- ensure transparency and public communication,
- cooperate with international organizations and research programs,

FUNCTIONS & NEEDS OF REGULATORS

Regarding **licensing activity**, the NRA shall have capability to:

- ▶ establish an effective licensing review process,
- ▶ manage the licensing process and dialog with applicant,
- ▶ plan the regulatory safety review establishing objectives and priorities,
- ▶ coordinate the internal and external working interfaces,
- ▶ manage the external technical support,
- ▶ evaluate the review results,
- ▶ use them in the decision process.

Knowledge, expertise, capacity are needed.

TSO SUPPORT TO REGULATORS

The **need for technical and scientific support** to Regulators (NRA) from external organization **existed always** since initial development of nuclear energy.

This support referred mainly to regulatory and licensing activities and the NRAs have commissioned support and research activities to Institutes, Laboratories, Universities,...

In the last years the need for **TSO support is increasing** due to various reasons among them the limitation in human and technical resources in regulatory organizations, the wide range of needed technical competences and the need to perform independent regulatory safety assessment.

TSO SUPPORT TO REGULATORS

Two different approaches exist providing support for regulatory and licensing activity.

Case A : existence of **dedicated TSO** organizations supporting regulatory authority on a comprehensive and systematic basis. In this case the support is quite institutional.

Case B : support identified on a **case by case basis** (depending on the specific needs of the NRA) and provided by external organizations (in some cases foreign organizations) under specific contractual agreement or framework contracts.

TSO SUPPORT TO REGULATORS

In both Cases A and B the Nuclear Regulatory Authority shall have capability:

- to manage the external technical support
- to define the objectives of the external review support
- to follow the review activity
- to understand the results
- to use them in the regulatory decision process

This is a key point: the NRA shall have capacity to address, manage and use the TSO support in order to fully discharge its own responsibility.

ROLE & RESPONSIBILITIES

- Whatever is the extension and scope of technical support provided to Nuclear Regulators in regulatory and licensing activity **the responsibility of using** it in the regulatory decision **belongs all to the "regulator"**.
- The responsibility of the NRA **can not be delegated**
- The responsibility of the TSO is a technical one related to the evaluation and analysis performed and **does not replace the responsibility of the NRA.**
- The TSO remains in its technical and scientific support function recognizing and respecting the institutional role and responsibility of the NRA.

ROLE & RESPONSIBILITIES

In new countries embarking on nuclear programs the lack of previous experience in the Nuclear Regulator and the process to build their capacity in nuclear safety generate the crucial situation where **more supporting needs could exist:**

- provide technical support to develop a regulatory framework
- provide technical support for licensing review
- provide managerial support for the licensing process

The fulfillment of these needs gives to the supporting TSO significant power which shall **not be used to "influence" biased NRA decision.** The TSO shall remain within the limits of supporting function and respect the "independence" of the NRA in its decision making process.

REQUIREMENTS FOR EFFECTIVE TSO

The capability of a TSO to provide effective technical support relies on:

- ▶ independence
- ▶ experience,
- ▶ senior competent experts,
- ▶ knowledge of regulatory requirements,
- ▶ knowledge of national and international approaches,
- ▶ knowledge of roles and responsibilities of regulator and operator,
- ▶ capacity to provide support with "regulatory" view and approach,
- ▶ reliability and confidentiality.

Effectiveness of TSO support **depends also on the capacity of the NRA** to address, manage and monitor the TSO activity during its elaboration.

The **independence of TSO from supporting activity to the "licensee"** shall be ensured as much as possible as it can easily **generate complacency.**

INTERNATIONAL INITIATIVES

The acronym TSO was first introduced at the beginning of years "nineties" with the intent to identify a specific "organization" having the objective to provide technical support to Nuclear Regulators .

This "**move**" was mainly based on the French and German institutions: IRSN and GRS

Today the TSO concept is well established and relevant international initiatives are carried out to promote the TSO function:

- **IAEA international conferences** on TSO challenges since 2007
- **ETSON** ... founded in 2006
- **TSO Forum** created after Tokyo IAEA TSO conference in 2010
- **IAEA GSG4** "Use of External Experts by the Regulatory Body" 2013
- **IAEA TEC DOC** "Technical and Scientific Support Organizations (TSOs) and their Services provided in Support to Regulatory Functions" draft 2016

CHALLENGES

- The *modus operandi* and requisites of the TSO support should ensure compliance with requirements of being: independent, competent and timely available.

This objective deserves due attention and consideration.

- In general the requirement of independence of expert organizations, national or foreign, from potential conflict of interest is a pre-requisite that shall be proved.
- The existence of potential conflict of interest in supporting both Licensee and NRA is a sensitive issue which can challenge the capacity of the NRA to ensure conditions for continuous improvement.

CHALLENGES

- The NRA should have available instruments and procedures allowing prompt activation and management of the needed technical support avoiding uncertainties and delays that can challenge the NRA activity plan.
- The effectiveness of the technical support needs to make reference to clear safety requirements, clear understanding of roles and responsibilities of the involved parties and effective quality system.
- The experience shows that the effectiveness of the TSO support is better ensured when the technical support is elaborated following a "regulatory view", it means understanding of regulatory function & responsibility.
- The TSO organizations shall develop and maintain updated knowledge and competence through studies and research. For that cooperation and networking is needed among TSOs at national and international level.

