

**Fire protection
at nuclear installations**

Topic of Interest:

Use of Experience Feedback

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Operating experience

Internal

External

Non nuclear
industry

**Operating experience feedback from installations
and activities — and, where relevant, from
elsewhere — is
a key means of enhancing safety**

IAEA Safety Standards
for protecting people and the environment

Fundamental Safety Principles

Jointly sponsored by
Eurasian FAO IAEA ILO IMO OECD/NEA PAHO UNEP WHO

Safety Fundamentals
No. SF-1

IAEA
International Atomic Energy Agency

IAEA Safety Standards
for protecting people and the environment

Operating Experience Feedback for Nuclear Installations

Specific Safety Guide
No. SSG-50

IAEA
International Atomic Energy Agency

Aspects to be discussed



1. Fire events and failures of fire protection means



2. Developments in fire protection (Active / Passive) resulting from operating experience feedback



3. Information sharing on feedback from fire events and events with failures/deteriorations of fire protection features

Expected outcome of discussion

- Overview of approaches regarding fire and fire protection related events' categorisation and use of experience feedback for improvements
- Better insights from national approaches to share experience and identify national good experiences and areas for improvements as well as potential good practices and/or challenges

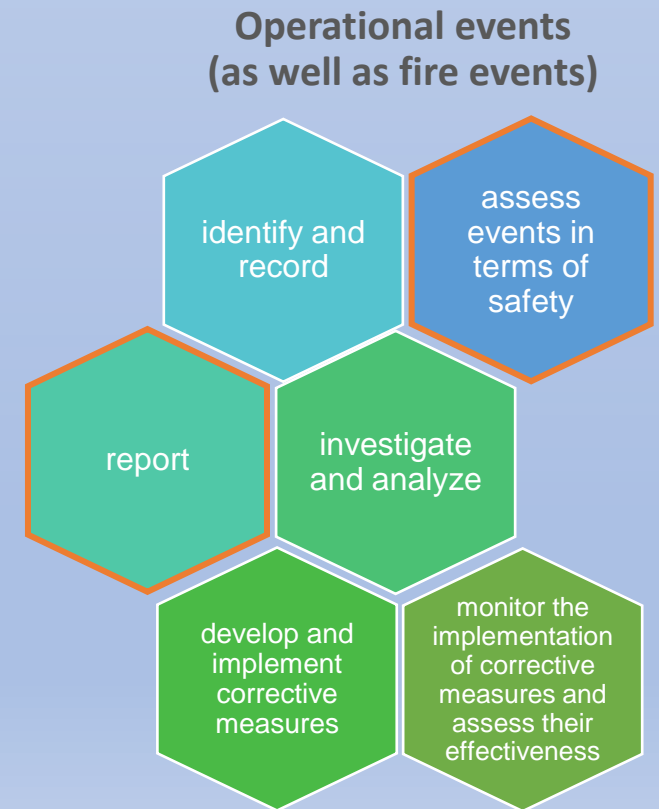
Lunch

Use of Experience Feedback

1. Fire events and their reporting

Fire events (as other events relevant for nuclear and radiation safety) at nuclear installations needs to be identified, recorded, categorized and reported in due time. Two main aspects to be discussed:

- Fire events' **categorisation**
- Fire events' **reporting**
 - **Reporting to whom ?** nuclear regulatory authorities, fire safety authorities, other authorities, event databases, industry groups...
 - **Reporting what ?** fires, smouldering fires, failures or deterioration of fire protection features...
 - **Reporting deadlines?**



Use of Experience Feedback

1. Fire events and failures of fire protection means (fire safety related events)

Fire events (as other events relevant for nuclear and radiation safety) at nuclear installations needs to be identified, recorded, categorized and reported in due time.

Approaches reported in NARs:

Categorisation:

- ✓ *national approaches based on risk, fire types, effecting on safety systems, severity threats (BE, FR, UK, CH, DE)*
- ✓ *OECD FIRE Database Coding Guidelines (SE, UK, DE)*
- ✓ *smouldering events*

Reporting to:

- ✓ *nuclear regulatory authorities (all members)*
- ✓ *fire safety authorities (CZ)*
- ✓ *Fire industry groups*
- ✓ *OECD NEA FIRE Database” (NPPs in 14 members)*

Reported fire safety related events:

- ✓ *all fire events*
- ✓ *nuclear and radiation safety related fire events*
- ✓ *smouldering events*
- ✓ *failures or deterioration of fire protection means*



How are fire safety related events categorized in your country?

Which categories of fire safety related events are reported to the regulatory authorities ?

2. Developments in fire protection resulting from operating experience feedback

- Feedback from fire events on fire safety analyses (FHA, Fire PSA) and from events with failures/deteriorations of fire protection features (particularly for Fire PSA) improving fire protection means
- Application of international operating experience feedback on developments in fire protection

Improvements of fire safety
based on operating experience



2. Developments in fire protection resulting from operating experience feedback

- Feedback from fire events on fire safety analyses (FHA, Fire PSA) and from events with failures/deteriorations of fire protection features (particularly for Fire PSA) **improving fire protection means**

Approaches reported in NARs:

- ✓ *“fire events caused by old components”*
- ✓ *“wrong valves alignments”*
- ✓ *“incorrect positioning of components”*
- ✓ *“location of combustible inventories”*
- ✓ *“not following properly hot works instructions procedures”*



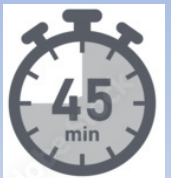
How do you consider operating experience from fire safety related events?

2. Developments in fire protection resulting from operating experience feedback

- Application of external operating experience feedback on developments in fire protection

Approaches reported in NARs:

- ✓ *The operating experience from several fires in NPPs reported to the OECD/NEA FIRE Database **has been applied** in several NPPs of the 10 European FIRE member countries (BE, CH, CZ, DE, FI, FR, NL, SE, SP, UK) in fire safety analyses*
- ✓ *International experience → the **installation of flange guards** in high pressure oil systems and to the removal of certain temporary electrical devices from vital areas (NPP, Spain)*
- ✓ *The fire/explosion in 1997 at Tokai Mura → highlight the fire risk in relation with the exothermic reaction between salts and bitumen → instruction by the French regulator **to verify the existence of appropriate prevention and protection means** (e.g. temperature monitoring) (RR, France)*
- ✓ *A fire event occurred in a low activity glove box at Rokkasho Safeguards Center in Japan → FINAS database → **development of a specific procedure** on the storage and handling of chemical agents (safety protocols in chemical hoods) (Fuel fabrication site, Romania)*



Could you give concrete examples of fire safety improvements in your country resulting from lessons learned from an event that occurred in another installation?
What are the lessons learned from non-nuclear industries?

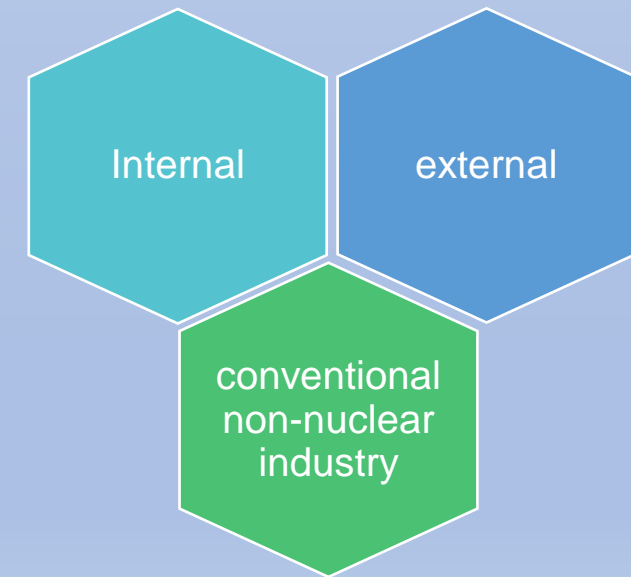
Use of Experience Feedback

3. Information sharing on feedback from fire and fire safety related events

Generally, information on fire and fire safety related events is shared and/or discussed at a national level in sufficient manner.

- Information sharing/approaches on a national level
- Sources of installation external operating experience available to licensees and regulators and the procedures to make such information available
- Exchanging information with non-nuclear industry

Operating experience feedback



Use of Experience Feedback

3. Information sharing on feedback from fire and fire safety related events

Generally, information on fire and fire safety related events is shared and/or discussed at a national level in sufficient manner.

Approaches reported in NARs:

Information sharing on a national level

- ✓ *“sharing information from “nuclear industry” only (operators, regulator, TSO’s, insurers)”*
- ✓ *“groups for the exchange of fire operating experience”*

Sources of external operating experience

- ✓ *IAEA's resources (IRS, INES, FINAS, News)*
- ✓ *OECD/NEA FIRE Database (NPPs in 14 members)*
- ✓ *WANO (SP), INPO*
- ✓ *Bilateral basis (DE/FR)*
- ✓ *Reactor Owners Groups, etc.*

Exchanging information with non-nuclear industry

- ✓ *Industry groups (energy, automotive, chemical (CZ))*
- ✓ *ARIA database (FR)*
- ✓ *consultation regional fire brigade three meetings per year (NL)*
- ✓ *discussed annually with other industrial plants (FI)*



What sources of international operating experience are used by your country? What are their main benefits and challenges from your perspective?
Does the industry or the regulator in your country have regular contacts with non-nuclear industrial organizations to discuss fire-related operating experience? What are the main lessons learnt?

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at nuclear installations**

Thank you for your participation and contributions!