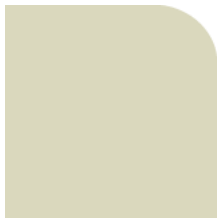


WORKSHOP REPORT

KEY CHALLENGES FOR NUCLEAR SAFETY DURING THE COVID-19 PANDEMIC

HELD ON 23 JUNE 2020
VIDEO CONFERENCE



CONTENTS

1 INTRODUCTION	3
1.1 Introduction	3
1.2 Workshop format	4
2 MAIN FINDINGS	5
2.1 General	5
2.2 Key staff	6
2.3 Telework	6
2.4 IT-Infrastructure	7
2.5 Responsibility of the employer	8
2.6 General organizational responses of nuclear operators	9
2.7 Outage management	10
2.8 Inspections and remote inspections	11
2.9 Risks	11
2.10 Long-term implications and considerations for future pandemics	13
3 CONCLUSION & OUTLOOK	15
3.1 Conclusion	15
3.2 Outlook	16
4 REFERENCES	17
APPENDICES	19
A Workshop Announcement & Agenda	19
B Presentations	25
C List of Participants	137
D Summary of the Workshop	139



INTRODUCTION & FORMAT

1.1 Introduction

The current COVID-19 pandemic has deeply impacted the operation of organisations around the world. Organisations dealing with nuclear safety such as operators of nuclear facilities, regulators and their Technical Safety Organisation (TSO) are no exceptions to that. However, these organisations need to continue their essential operations to ensure nuclear safety. They also need to maintain their ability to respond to nuclear incidents or emergencies and therefore need to manage proactively their resources and capabilities in consideration of lockdown conditions and strict COVID-19 constraints. Ensuring sufficient availability of operational staff, maintaining safety-related inspections or allowing telework during lockdown are prime examples of the issues to be tackled by respective organisations.

ETSON, the European Network of Technical Safety Organisations, has invited representatives of its member organisations to share their challenges, experiences and lessons learned related to COVID-19 during an online workshop on 23 June 2020. The workshop thus provided a good opportunity to reflect on the impact and effectiveness of COVID-19 related measures and their possible long-term implications.

The workshop was held a few weeks after the first wave of COVID-19 infections reached its maximum in Europe. Therefore, participants not only addressed the measures taken by their organisations but in many cases also commented on the measures' impact and effectiveness. In addition, participants discussed possible future challenges, in particular with regard to the second wave of infections.

Other multilateral organisations such as the IAEA, NEA/OECD and the World Nuclear Association have also gathered and disseminated information on measures and lessons learned from member states [1]. These efforts highlight the strong demand for exchanging information and experiences related to country-specific developments due to the COVID-19 pandemic. The ETSON workshop contributes to this effort by providing the perspective of TSOs in Europe.

1.2

Workshop format

The workshop was held as a 3-hour virtual conference and attracted 21 attendees from 9 TSOs (see list of participants in Annex B). Each participating TSO had been tasked to give a presentation of approximately 15 minutes in length. The presentations were to outline the country's specific situation, measures taken by relevant organisations and lessons learned in the process, focussing on those aspects which were deemed to be key challenges. After each presentation, time remained for questions by the other participants.



MAIN FINDINGS

2.1 General

In general, a broad spectrum of challenges and measures was addressed by the participants as the pandemic has affected the organisations involved in many ways. The variety of issues also reflects that the reported challenges comprise many different aspects (specific and general, immediate and long-term, technical and organisational/social) and that the measures taken aim at different goals (health protection, business continuity, nuclear safety).

At first glance, many of the challenges and measures appeared to be very similar. However, important differences also became visible as more detailed information on these issues was provided in the presentations. These differences can partly be attributed to the fact that the extent of the pandemic and the restrictions imposed by governments differ from country to country.

The presentations focussed on the immediate challenges and measures related to ensuring protection of staff and operational continuity. However, it was pointed out that there may well be long-term implications and that it remains to be seen what actual impact some of the measures will have in the future. As an example, it was highlighted that the working mode of TSOs may change significantly depending on the experiences with telework and other societal changes due to the pandemic.

The summary given below focusses on key issues that can mostly be assigned to the following topics:

- Challenges and measures to protect employees from COVID-19
- Challenges and measures to ensure operational continuity
- Risks and long-term implications

The objective of the summary is not to reiterate every piece of information from the presentations, but to highlight common aspects among the countries as well as to give context to selected statements made by presenters. General hygiene measures such as social distancing, banning of face-to-face meetings, cleaning and disinfecting workplaces, travel restrictions, and their specific implementation in the relevant organisations are not being discussed.

2.2

Key staff

The pandemic has required organisations in the nuclear field to define once again their core functions and what staff is needed to ensure continuity of these functions. The objective is then to ensure that the required staff continues to be available and is provided with the necessary resources throughout the pandemic.

In the context of the COVID-19 pandemic, ensuring availability demands special attention to the protection of the essential staff from the coronavirus. There are instances where essential staff or teams that work closely together have therefore been split in two or more groups to ensure that in case of an infected individual, quarantine requirements will not lead to unavailability of the whole group.

Key staff may also refer to the top management. At least in one case there were considerations to define backup staff for the top management. Thus, decision-making at the top level would not be compromised if managers became unavailable due to an infection. Such a preventive measure is certainly facilitating transitions if needed as the selection process for the backup staff is finalised before the event and backup staff can prepare accordingly.

It was also stressed that key staff often includes experienced and therefore elderly persons. In that regard, COVID-19 poses a threat to key staff in a disproportionate way.

The concept of essential staff may not be entirely new and has already been used for activities that must not be suspended. However, during the COVID-19 crises it became necessary to apply the concept to numerous organisational processes.

Key staff is not limited to specifically trained and experienced experts, security personnel or management staff but also includes IT-experts and administrative staff. IT-experts can be relevant since the crisis has required organisations to develop and adapt their IT-systems at short notice (provision of secure telework and videoconferencing, providing secure remote access to data systems, etc.). Administrative staff is e.g. important for transfer of salaries.

Staff for emergency centres is considered essential and therefore needs to be included in considerations on special protection of staff and increased need for availability.

In one presentation, the concept of a worst-case scenario was applied in terms of unavailability of staff due to coronavirus infections.

2.3

Telework

Probably the most important measure to ensure continuity of operation while avoiding contacts between staff members is the use of telework or remote work. In fact, all TSOs reported using telework on a large scale, especially during periods with high numbers of daily new infections.

The reported share of staff working remotely varies among the organisations and in one case reached as much as 90 % during the peak of the first wave. However, in some organisations large portions of staff returned to the offices as the rate of new infections slowed down toward the summer months. Other TSOs remained largely in telework mode or used a hybrid mode despite low infection rates.

It was reported that working remotely is difficult with confidential information, for some staff with administrative functions (e.g. transfer of money), for laboratory staff and for staff with the authority to sign (e.g. contracts and other legally binding acts).

Also, telework is said to require adapted communication means since usual encounters and meetings in offices no longer take place and staff members may need to be informed and guided more actively by team leaders and superiors. "How to keep in touch?" is a frequent question asked by those who experience that communication with their staff in telework can be challenging. The need to improve communication with and among staff during telework was an important topic raised by several presenters.

Telework may also require organisational processes to be adapted since these processes are usually designed for staff interacting with each other in person.

Staff members are found to react differently to telework. While some appreciate working at home and avoiding commuting, others may not find the right work environment at home or tend to have too little interactions with colleagues.

Some participants pointed out that, overall, telework does work and a loss of motivation among the staff is not a major factor. In this context it was also mentioned that telework may even work in the long term and might well become a new standard. However, this view was not shared by all participants. A participant explained that, beside the already known problematic side effects (esp. how to ensure the secure handling of sensitive information), communication during telework was also error-prone and telework in the long term was not supported by many employees.

It seemed that organisations or staff members that had used telework before the pandemic found it much easier to adapt to the situation than those that had not allowed telework previously.

2.4 IT-Infrastructure

In some organisations the transition to large-scale telework proved to be challenging due to limited capabilities of the IT-infrastructure at the beginning of the pandemic. The general high demand for IT-specialists and IT-equipment in some cases posed additional challenges to establish the required infrastructure at short notice. In this context it may be relevant whether an organisation has outsourced the maintenance and development of its IT-infrastructure.

Large-scale telework also implicates that communication channels within the organisation and to external partners change. Tools for stable and secure videoconferencing need to be tested and distributed within the organisations and with external partners.

Access to data has to be ensured while working remotely. One presenter explained that in their organisation a Virtual Desktop Infrastructure (VDI) has been established for staff working remotely.

One presenter highlighted the need for online training or e-learning as it has become clear that telework may become a lasting work mode.

2.5

Responsibility of the employer

Some presentations stressed the responsibility of the employer to support the physical and mental wellbeing of their employees. Regardless of the extent to which this responsibility has been recognized before the crisis, it appeared that this aspect has gained increased attention due to the COVID-19 pandemic.

Employees not only face major changes in their work environment due to the pandemic but also frequently need to handle additional tasks and stress in their private life (e.g. parents facing closures of schools or playschools, quarantine requirements, infected family members, problematic use of public transport).

Managers are required to consider these difficult conditions of their employees while adapting the organisations to the specific challenges of the pandemic and ensuring business continuity.

It was also mentioned that there will be changing working patterns and that new ways are to be explored to support the staff during the pandemic.

Allowing employees more flexibility to accomplish their work is seen as major factor in this context. In this regard, the suspension of core hours has been mentioned. Prioritizing work tasks may also help to limit exceptional workloads.

Ensuring appropriate communication of the management, supervisors and team leaders with their staff is seen as an important factor during the pandemic. The sometimes fast-changing developments during a pandemic may be confusing to some. In general, the staff needs timely, clear and meaningful information on how the organisation responds to the pandemic. This helps the staff to stay productive and to prevent unnecessary anxiety or frustration.

One presenter explained that a regularly updated internal FAQ proved to be helpful to address effectively the most urgent questions of staff members. From the other presentations it could be learned that a variety of tools has been used to ensure that the staff is informed on new management decisions.

In one reported case, the management appointed a COVID-19 officer as contact person for employees and partners. The COVID-19 officer is charged to collect and disseminate information (esp. new requirements) on corona-relevant criteria and developments, and - in coordination with the management - issues internal corona protocols (e.g. for business trips).

Supervision of staff during telework is a very demanding task since one-on-one meetings, group meetings or occasional encounters in the corridors do not take place any longer. Therefore, supervisors and team leaders may need to adapt their supervision approach and possibly develop alternative or additional supervision concepts. It appeared that there is a need to explore ways to improve supervision during remote work conditions.

Initial job training of new staff during remote work conditions can be especially challenging. However, it was reported that an appropriate training and familiarization within the organisation can still be accomplished if supervisors prepare accordingly.

It was also mentioned that organisations that do have close links to each other or have similar characteristics may benefit from sharing their experiences with corona-related challenges in order to benchmark their approach with alternative organisational solutions (similarly to this workshop's objective).

2.6 General organisational responses of nuclear operators

While telework presents the main measure of TSOs and regulators to protect their staff from infections and, at the same time, maintain operational continuity, nuclear operators cannot apply telework to the same extent since large portions of their staff are not able to perform their work remotely.

Reported measures of the operators have therefore focussed on reducing the number of on-site staff. In that regard, essential work has been identified (e.g. control room staff, security and fire safety teams) and non-essential work (includes selected maintenance activities) has been suspended in many cases.

It was also reported that regulatory site-visits have been reduced and internal work schedules have been changed (introduction of rotating systems or changes in shift rotation) to limit shift turnovers and personal encounters. The reduction of shift sizes was reported as well.

In some cases, teams of key staff have been segregated to limit consequences if individual members test positive for the virus. Also, back-up plans have been considered to ensure immediate replacement in the event of key staff members becoming unavailable (e.g. quarantined reserve teams, transfer of staff between NPPs, relicensing of retired staff).

In one case, the essential staff of a NPP has been isolated on the NPP premises for a significant period to prevent infections among the staff. During that period, the personnel was supplied with all needed goods and services from outside.

These measures especially reflect the major concern that a whole shift (or even two shifts due an infected person taking part in a shift turnover) might be quarantined, which may cause additional pressure on the remaining shift personnel or even jeopardize the continuation of the operation of the facility.

In two presentations, formal requirements for minimum staff levels were mentioned. Overall, it appeared that operators have some basis for determining minimum staff levels.

In some cases, regular COVID-19 tests for personnel have been established and logbooks for personal contacts have been required to facilitate contact tracing in the event of an infection.

It was also reported that critical stocks of a nuclear facility have been verified and replenished to ensure lasting lockdown conditions will not cause any shortages. This effort clearly reflects the unpredictability of the crises and the preventive measures to which it may lead.

2.7 Outage management

Performing NPP outages during corona restrictions has probably been one of the most demanding tasks for operators since a significant number of external workers are needed for specific tasks and hygiene measures become difficult to implement with an increasing number of personnel on-site.

In addition, travel restrictions sometimes prohibited the movement of specialised external workers who in many cases could not easily be replaced. Also, there were instances where purchasing of goods was delayed due to various restrictions.

According to the presentations, operators used different outage strategies to overcome respective challenges. In some cases, the outage period was prolonged (e.g. doubled) to limit the number of personnel that is working in the facility at the same time. Other operators chose to postpone the outage and followed a fuel saving strategy. Also, a split outage strategy was used in which refuelling and overhaul activities were separated in two outages.

In the context of outage management, the question was raised what shutdown state for in-cycle outage is the safest. It was also mentioned that postponements of outages into wintertime could cause energy supply issues.

2.8

Inspections and remote inspections

Inspections within the regulatory oversight process have oftentimes not been performed as scheduled due to the objective to limit the number of on-site personnel and travel restrictions.

Some TSOs reported that inspections have been postponed or suspended. Others pointed out that they focussed on safety-related inspections, inspections with specific features or areas where activities were delayed due to the pandemic. In some cases, safety-related inspections have been performed as scheduled. Overall, the number of inspections that have not been performed as planned appeared to be significant.

It was noted that it would be difficult to correct non-compliances while inspectors have no access to the respective facility.

Considering the difficult conditions for regulatory on-site inspections, some presenters referred to the possibility to establish remote inspections or expand the use of remote inspections. Remote inspections may e.g. include video checking of the operator's documentation (e.g. shift records). The use of remote monitoring systems may also play an increasing role.

One presenter asked whether an increased use of remote inspections (replacing on-site inspections) would compromise the idea of an adequate independent oversight process. In that context, it was mentioned that trust between the licensee and the regulator may become more important. It may also require relying more on the licensees' internal assurance function to provide evidence remotely.

With respect to remote inspections, the possibility of off-site plant walkdowns was mentioned. It includes that plant information is acquired by means of video and audio equipment and transferred to the offsite analysis team.

A common view was that a greater use of remote inspections would result in a significant learning curve and that the effectiveness of remote inspections is a central aspect that is still to be determined. At the same time, there are already lessons learned from past remote oversight activities.

2.9

Risks

In the country presentations, a variety of concerns and risks were identified that result from changed practices and conditions due to the pandemic.

Key functions are oftentimes carried out by very experienced staff that is at higher risk of a severe course of a COVID-19 disease. This may add to considerations on the development or update of succession plans.

Contracted external personnel with specific expertise which is essential for continued operation (e.g. for safety-related maintenance work) but not available due to the pandemic (e.g. travel restrictions) may present an operational risk.

Employees that work remotely for significant periods may experience social isolation or withdraw themselves from interactions with their peers and supervisors. They may also identify less with their employer and subsequently feel less obligated to their work tasks.

These issues related to social isolation, motivation, organisational identification, and leadership from a distance are to be addressed by employers and supervisors by continuously monitoring the work culture of teams as well as individual employees and explore ways to improve leadership from a distance.

Work tasks that have been postponed due to the pandemic may lead to above-average workloads or even excessive workloads for specific work teams and specialists at a later stage.

In some presentations it was noted that preventing infections can conflict with other goals, especially nuclear safety and security. One example is that from a health perspective, doors and windows in a nuclear facility should be kept open to allow enough air circulation. That, however, conflicts with nuclear safety and security objectives, which aim at providing barriers to the outside. Another example is the performance of on-site inspections that requires the presence of external personnel and physical encounters, which is to be avoided from a health perspective.

The pandemic may also lead to instances in which either nuclear safety or energy supply is possibly compromised. One example is maintenance work that - as a result of the pandemic - needed to be postponed and thus requires an outage during periods in which power supply is already scarce.

Postponed outages may also lead to periods in which more NPPs than usual are offline. This in turn may put additional pressure on the power system and increase the likelihood of loss of offsite power.

There is not yet much experience with maintenance activities under the difficult circumstances of the pandemic. It remains to be seen if these activities are as reliable and effective as during normal conditions.

One participant noted that there tend to be fewer reportable events in NPPs during the pandemic. Although the reason for this is unclear, it cannot yet be ruled out that the pandemic affected the reporting of events.

The pandemic may have significant consequences for the financial situation of operators. This can affect the operators' decision-making and thereby the management of safety-related activities (e.g. investments in retrofitting).

Various presenters pointed out that ensuring an appropriate emergency response during the difficult conditions of the pandemic could be a challenge. Such an event would require the organisations to attain and process data, perform assessments, make decisions and communicate them to other relevant organisations at short notice despite telework, possibly unavailable personnel and other restrictions due to the pandemic.

One presenter pointed out that regulators - while influenced by the pandemic – may create undue burden on the industry at an unprecedented time which then can compromise the organisational capabilities of operators and contribute to a less effective and efficient oversight process in the long term.

It was also noted that as organisations find themselves in difficult situations due to the pandemic, cyber-attacks may increase.

Overall, cyber security may become more important since telework and the rapid development of IT-infrastructure for telework and data transfer can be very vulnerable.

2.10 Long-term implications and considerations for future pandemics

A common assessment among the presenters was that there will be long-term changes in working patterns. In this context the greater use of teleworking (with its consequences for supervision, communication, identification of employees with their organisation etc.) and more flexible working hours have been mentioned.

Long-term changes may also occur in the way organisations cooperate with partners nationally and internationally as an increasing number of conferences, working group meetings etc. may be held online in future. If that is the case, it may be useful to improve the effectiveness and efficiency of virtual meetings (e.g. by exploring new conferencing formats and tools).

The presentations also suggested that some of the changed practices and conditions due to the pandemic needed to be further analysed in hindsight. Amongst others, these include changed inspection schedules and practices, the industry's response to the pandemic, the economic situation of operators, (long-term) implications of suspended non-essential work tasks, reliability and effectiveness of maintenance activities under coronavirus restrictions, performance of reduced work teams, implications of telework (motivation, data security, communication, identification of employees with their organisation etc.), and the ability to respond to nuclear emergencies during lockdown conditions.

Presenters also referred to issues that need to be looked at in preparation for upcoming lockdown periods during the current pandemic or future pandemics. These include developing and updating of pandemic response plans, dependence on key personnel, procedures and guidance for teleworking, infrastructure for e-learning, general lessons learned from the first lockdown period, digitalization of documents, succession and backup plans for personnel, preparation for fast transition into telework, appropriate operation modes for nuclear facilities where e.g. the required staffing can no longer be ensured.



CONCLUSION & OUTLOOK

3.1 Conclusions

The participating TSOs reported a variety of immediate and long-term challenges as a result of the COVID-19 pandemic. As many countries (and TSOs respectively) face similar challenges, analysing the respective measures can help TSOs to improve their response to the pandemic.

Overall, organisations have implemented similar measures to ensure continued operation while protecting staff from the coronavirus. Amongst others, these include the protection of core functions, reduction of non-essential activities that require personal contacts, and allowing large-scale telework.

The challenges that are associated with these measures are just as similar. For instance, introducing and handling telework has been a demanding task from both the IT and communication perspective (how to keep in touch, leadership from a distance, handling of confidential information etc.). The participants also pointed out that telework may impact team culture, interactions among staff, the identification with the organisation, and can lead to isolation of staff members. However, some participants shared the view that telework works and may become a major part of a new or post-corona standard working mode.

With respect to operators, it could be learned that protection plans have been developed and implemented (e.g. reducing on-site staff, segregation of expert teams, reducing shift turnovers, back-up plans) while considering minimal staff levels and in some cases scenarios for the further development of the current pandemic.

Participants also largely agreed that there are risks linked to changed practices due to the pandemic. For instance, catching up with postponed activities may create excessive workloads at a later stage and outages shifted to wintertime can impact energy supply. Also, maintenance activities in nuclear facilities during corona conditions can turn out to be less effective than under normal conditions. Another aspect is whether the changed communication (online conferences and meetings, fewer face-to-face conversations) will impact expert networks and the way organisations interact with each other.

TSOs also noted that emergency response and the ability of TSOs to provide their support function during a nuclear incident (e.g. operation of emergency centres) must not be compromised during the pandemic. From that, it appears that a respective assessment based on the lessons learned so far might be useful. Such an assessment also relates to the common view that preparing for upcoming infection waves and possibly a new pandemic is an important task which needs to include lessons learned from all relevant organisations (updating of pandemic preparedness plans).

Several presenters pointed out that the pandemic highlighted the employer's responsibility to support the physical and mental wellbeing of their employees. A more flexible approach for accomplishing work tasks and thoughtful internal communications is considered helpful for employees, who in many cases experience stressful and depressing conditions.

Presenters also gave examples of instances in which health objectives during the pandemic may sometimes conflict with nuclear safety or security objectives. These examples highlight that managing priorities can be a challenging task. For the nuclear industry it would become even more difficult if it faced financial pressure due to the pandemic.

Different approaches became visible in the area of inspections and outage management. On-site inspection activities have been reduced or suspended altogether in several cases while in other countries these activities have been performed as planned. However, it was largely agreed that remote inspections may play a greater role in future. If so, it becomes necessary to investigate systematically how the use of remote inspections can be increased while maintaining effectiveness and an independent oversight process.

3.2 Outlook

Many of the reported challenges are believed to have long-term implications and TSOs are constantly gaining new experiences and lessons learned during the ongoing pandemic. In hindsight, the pandemic and resulting impacts on nuclear safety and TSOs could hardly be anticipated. Given that experience, ETSON is currently planning to perform another workshop that aims at exchanging views on whether TSO can anticipate and prepare for future challenges including disruptive events with major impacts on nuclear safety or the organisational capabilities of TSOs itself.

4

REFERENCES

4.1

Selection of COVID-19 related reports and webinars in the area of nuclear safety

■ IAEA:

“The operation, safety and security of nuclear and radiation facilities and activities during the COVID-19 Pandemic”, Report by the Director General, 4 June 2020

“Safeguards implementation during the COVID-19 Pandemic”, Report by the Director General, 4 June 2020

COVID-19 Webinars, e.g. “Maintaining Nuclear Safety of Research Reactors During a Pandemic” (18 November 2020), “Maintaining Nuclear Safety of Nuclear Fuel Cycle Facilities During a Pandemic” (21 October 2020)

■ NEA/OECD:

“Special workshop on the human aspects of nuclear safety: Challenges of the COVID-19 pandemic”, Workshop, 9 April 2020

“Tackling the Coronavirus: The NEA's contribution to a global effort”, Message from NEA Director-General William D. Magwood, 6 April 2020

“The role of nuclear energy during COVID-19 and beyond”, Webchat, 24 June 2020

■ U.S.NRC:

“Agency's Response to the COVID-19 Public Health Emergency”, Webinar, 15 September 2020

■ WNA:

“COVID-19 Coronavirus and Nuclear Energy”, Webpage

■ FANR:

“Impact of COVID-19 Pandemic on the Nuclear Energy Sector and the Need for Innovation”, Webinar, 20 May 2020



WORKSHOP ANNOUNCEMENT & AGENDA

WORKSHOP

KEY CHALLENGES
FOR NUCLEAR
SAFETY DURING THE
COVID-19 PANDEMIC

23 JUNE 2020,
13:00 CET
VIDEO CONFERENCE

The current COVID-19 pandemic has deeply impacted numerous countries around the world. Its effects are not only limited to obvious societal areas such as healthcare, freedom of movement or economics in general, but also relate to various aspects of nuclear safety. Ensuring sufficient availability of operational staff, maintaining safety-related inspections or enabling telework during lockdown are prime examples of the issues to be tackled by respective organisations. ETSON invites representatives of its member organisations and other stakeholders to share their experiences and lessons learned related to respective challenges.

Objectives of the workshop

The workshop has two aims. Firstly, participants shall gain a deeper understanding of how the pandemic affects the operation of NPP and other nuclear facilities in ETSON countries, what challenges are posed to utilities and the related industry, authorities and TSOs and which measures these organisations have been taking to ensure their operability and maintain a high level of nuclear safety.

Secondly, the workshop also offers the opportunity to identify key challenges relevant to several or all countries and to clarify whether ETSON should develop a joint position on selected issues with a view to raise awareness and promote good practises for the current and also any possible future pandemics.

The presentations and a summary of the workshop discussions will be made available in a respective ETSON report.

Format and content of presentations

Each ETSON member organisation taking part in the workshop provides **a presentation of approximately 15 minutes** in length. The presentations should outline the country's specific situation, measures taken by relevant organisations and lessons learned in the process, focussing on those aspects which are deemed to be key challenges. Ideally, the presentations should touch upon (among other aspects):

- organisational responses ensuring continuity of technical operations, in particular regarding staffing
- inspections and periodic testing
- outage management
- involvement of the regulator
- specific challenges of the TSO
- long-term strategy (return to normal) and considerations related to possible further COVID waves or other pandemics

After the country presentations (including short discussions of approx. 5 to 10 minutes), key issues relevant for several countries will be identified and potential ETSON positions on these issues and/or possible follow-up actions on these matters will be discussed (60 min).

The workshop will approximately end at 16:00, depending on the number of presentations.

Organisation

This workshop will be hosted by GRS. To facilitate the organisation, **please register via e-mail to the organisers (see below) by 11 June.** Unless the technical capacity of the web-based video conference system is exceeded, all ETSON members are free to nominate not only the person in charge of the presentation but also additional participants. A detailed schedule, including further information on the conference tool, will be provided approximately one week before the workshop.

To nominate participants or in case of any questions, please contact:

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ETSON Workshop on Key Challenges for Nuclear Safety during the Covid-19 Pandemic

Agenda

23 June 2020, Videoconference

Times in CET

Welcome

13:00 - 13:10 Welcome / Introduction

Country presentations - Part 1

13:10 - 13:25 ENEA (Italy)
13:25 - 13:40 Bel V (Belgium)
13:40 - 13:55 RATEN ICN (Romania)
13:55 - 14:10 Jacobs (UK)
14:10 - 14:25 IJS (Slovenia)

14:25 - 14:35 **Short Break**

Country presentations - Part 2

14:35 - 14:50 IRSN (France)
14:50 - 15:05 SEC NRS (Russia)
15:05 - 15:20 LEI (Lithuania)
15:20 - 15:35 GRS (Germany)

Group discussion

15:35 - 16:00 - Identification of common issues / good practices
 - Discussion on possible issues to be dealt with by ETSON



PRESENTATIONS



Italian National Agency for New Technologies,
Energy and Sustainable Economic Development

COVID-19 impacts on nuclear activities

ETSON Workshop on Covid-19 Challenges – 23th June 2020

Antonietta Rizzo, Barbara Ferrucci

**Fusion and Technology for Nuclear Safety and Security Department
Nuclear Safety Security and Sustainability Division**

LINE 8338 1380



THE RAISE OF EMERGENCY

- **30 January** OMS declared coronavirus **epidemy** as an international sanitary threat
- **31 January** ITALY declared **emergency state** – cancelled international flight to and from China
- **1 February** measures for maritime and aerial traffic for all vectors
- **21 Februray** – protocol for mandatory **quarantine and active monitoring** for suspected cases, being in the affected aerea within 14 days
- **23 Febraury** – Decree of Prime Minister – red zones flagged

PHASE 1 OF EMERGENCY

- **25 Febraury** – **closure of schools**, sports, touristic and cultural activities
- **8 March**- Decree of Prime Minister – North of Italy plus other small regions in the center are declared **red zones**- no mobility in/out
- **9 March**- Decree of Prime Minister - **All Italy is locked**, unique red zone declared – no mobility among cities
- **11 March** - Decree of Prime Minister - closure of all **tertiary services** activities except food and pharmaceutical products – **smart working** became the preferential tool for most activities
- **14 March**- agreement for safety procedures in working places
- **22 March** Decree of Prime Minister – **closure of all productive activities not essential**

PHASE 2 OF EMERGENCY

- 4 May – **Phase 2** – partial reopening of productive activities
- 18 May – travels allowed within municipalities of the same region
- 3 June – travels allowed on the entire territory and to and from Schengen

IMPACTS ON NUCLEAR SAFETY ACTIVITIES

WASTE MANAGEMENT

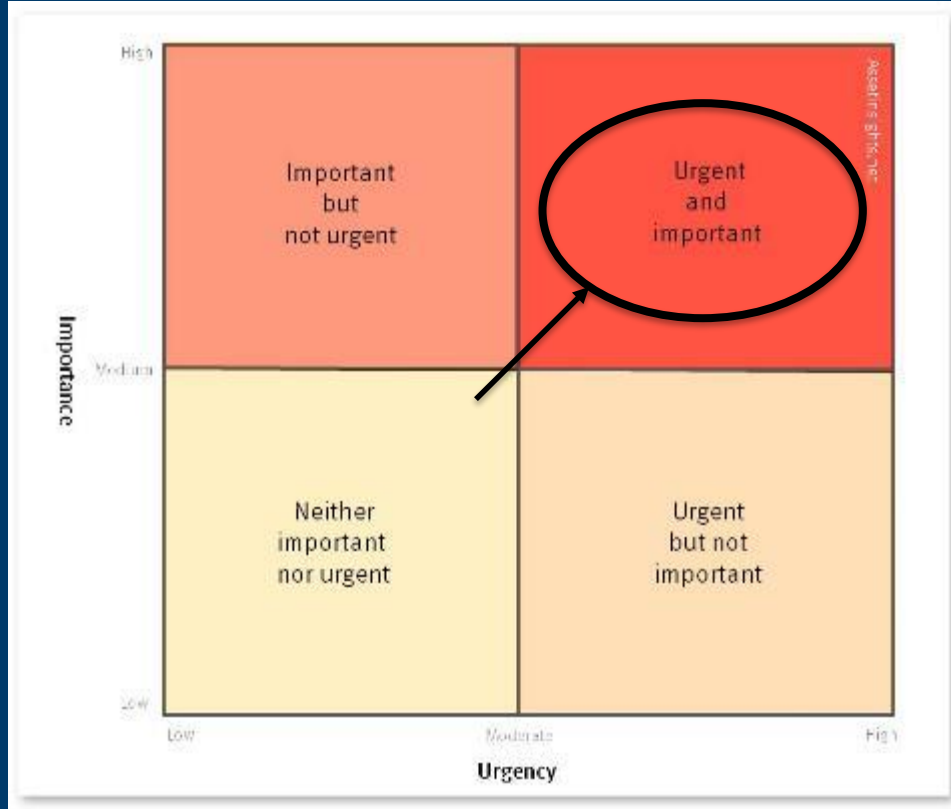
- On 24 February the Italian waste management organisation (**SOGIN**) cancelled every travel missions, meetings, training events and external visits to the facilities
- Starting from 18 March workers were asked to use **smart working** and the presence in the sites were decreased accordingly
- The prime Minister Decree of 22 March ensures that nuclear safety and security of decommissioning sites remain active as well as management of radioactive wastesbut we know that some activities were slowered because of the lockdown
- Option for **radioactive wastes to be temporary stored** within the production sites
- E-learning for staff members were increased

ENEA activities

- 6 March ENEA prohibited the **access** to the students and fellowships
- 9 March workers were asked to use smart working
- 13 March – **smart working** become the ordinary way of working
- 4 May start of Phase 2 – **only experimental activities** were authorised
- **E-learning** for staff members were increased
- **Monitoring** for emergency preparedness and for security made at home
- Discussion on nuclear security and safety issues through web based platform

IMPACT OF COVID-19 ON NUCLEAR SAFETY –

1. Priorities are changed
2. Perception of the nuclear (or chemical) risk is diminishing
3. Management of human resources may be difficult
4. Infrastructures and procedures for smart working are not set for the purpose
5. Conflicting procedures
6. Interface safety/security



PRIORITIES changed (health)

FOCUS on nuclear safety may diminish

At individual level

At collective/institutional level

IMPACT ON SAFETY



- Availability of PPE
- Donation of PPE
- Borders closure – shortage of materials



NEW RISKS

- Lack of personnel
- Disruption of procedures
- Shortgage of spares, consumables, ...

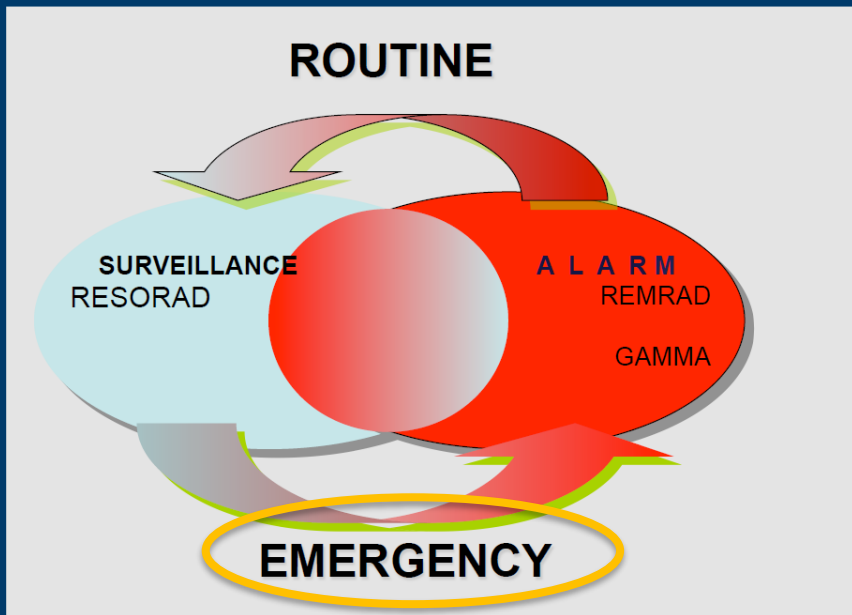


BUSINESS CONTINUITY



**Individual
perception
of risk has
to be
managed**

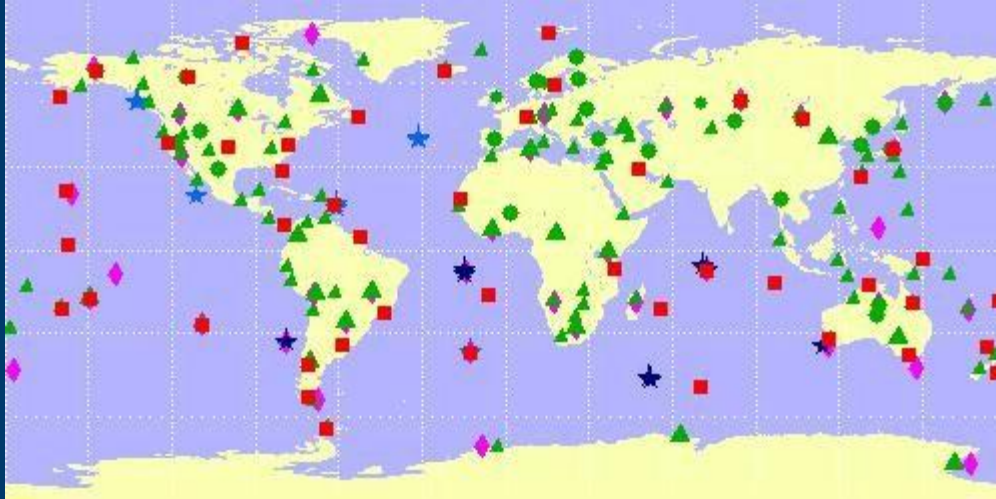
BUSINESS CONTINUITY



Remote monitoring became important in case of sanitary emergency in order to guarantee business continuity

National network for environmental radioactivity surveillance RESORAD

BUSINESS CONTINUITY



**Remote monitoring
implies secure data
connection,
cryptography, bandwidth**

**Risk of hacking
Cybersecurity
Secure storage**

BUSINESS CONTINUITY

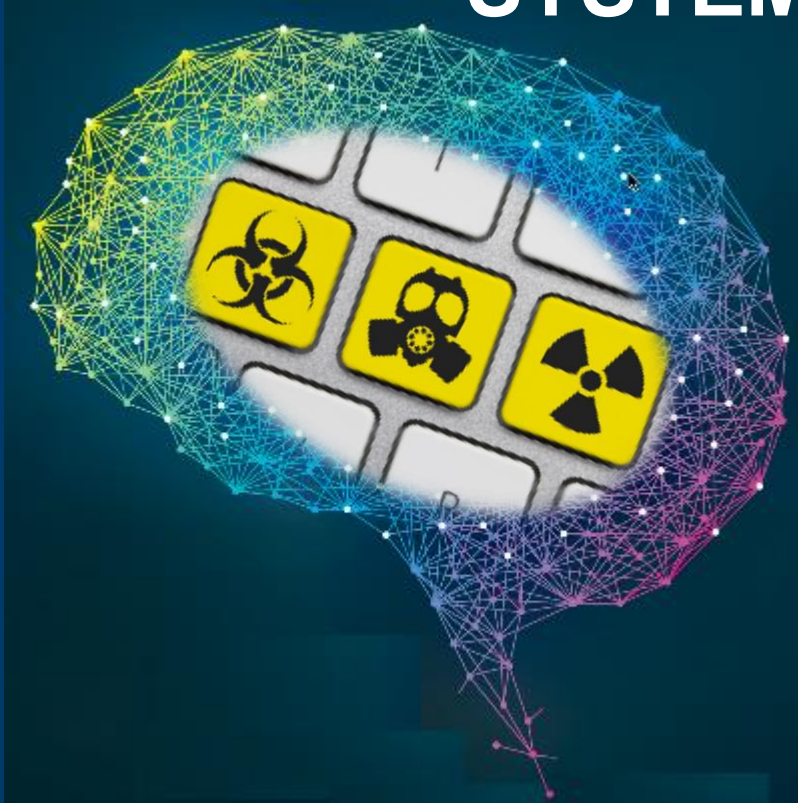


**We had to preserve elder population....
They had the most of experience in
working fields.**



**.....How to ensure FAST and RELIABLE
transfer of knowledge??**

SYSTEM RECOVERY



Take lesson from all the fields



Maintain an holistic view

INTERFACE SAFETY / SECURITY



Not only nuclear safety /nuclear security

But also

Biological safety / nuclear security,

Biological safety/ nuclear safety

Biological safety / cybersecurity,

Chemical safety / nuclear security...



«Should we take the doors closed or open?»

INTERFACE SAFETY / SECURITY



Some buildings at ENEA were built in order to face nuclear safety emergency, so with small inject of air from outside.....now these buildings are not accesible beacuse of the protocol fo COVID-19 that prescribes strong recharges of air in indoor working places

«Should we take the windows closed or open?»

LONG TERM STRATEGY

- ❑ **Develop more realistic scenarios for testing resilience**
- ❑ **Identify critical infrastructures and related procedures**
- ❑ **In deep analysis of SAFETY/SECURITY interfaces**
- ❑ **Have an holistic view of emergency (not sectorial)/ multidisciplinary teams**
- ❑ **Develop remote monitoring and acquisition data system**
- ❑ **Invest in transfer of knowledge, distance learning and Virtual/Augmented reality tools**

Antonietta Rizzo
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ETSON Workshop

23.06.2020

Key challenges for nuclear safety
during the COVID-19 pandemic

Organisational response of the Operator

- Identification and monitoring of the critical functions for continued safe operation
 - .control room staff
 - .security team
 - .fire safety team
- Teleworking for non-critical functions
- Health precautions on site

- Training courses postponed
- Non-urgent works discontinued
- Additional restrictions for access to the control room
- Verification and replenishment of critical stocks

Organisational response of the Operator

Concerns in relation to control room staff

- Loss of 2 shifts of control room staff at once due to shift turnover, when one member of staff would be contaminated
- Therefore clear access restrictions to the control room and the obligation to wear masks in the control room when social distancing could not be respected
- Special care was taken during shift turnover
- The Operator also feared that the official Covid-tracers could put 2 shifts in quarantine when a member of the control room staff would be contaminated.

Measures taken in relation to other critical staff

- Separation/segregation of key operations/maintenance teams
- Changes in shift rotation to limit shift turnovers and staff interactions

Organisational response of the Operator

Measures considered but not taken

- Provision of a backup reserve for critical staff (quarantined reserve teams on site, transfer of staff between NPPs, relicensing of retired staff)
- Designating a backup shift from existing licensed staff to stay in quarantine
- Complete isolation of the critical staff on site
- Changes in shift rotation (8 hrs -> 12 hrs shift) to limit shift turnovers and staff interactions

Inspections and periodic testing

- The normal periodic inspections/testing during the cycle continued on
- Special care was taken to segregate key maintenance staff and have minimal interactions between those groups
- The periodic inspections/testing during outage could also be respected, except for an outage that had to be rescheduled (see next slide)

Outage management

- Two LTO outages (T1, D12) were on-going
consequences: shifts in work planning because of the
limitation of persons allowed on site
start-up delayed
- Outage Doel 4 in May
due to the unavailability of contractors, travel restrictions and
difficulties to obtain materials/equipment:
outage split in 2 parts: part 1 (refueling) in June and part 2
(overhaul) in October.
implied 'derogations' for tests/inspections as required by the
OLCs, that had to be delayed.
- Other outages (D3, T2, T3) will go on as planned.

Involvement of the Regulator

- On 12.03.2020 FANC/Bel V requested information from the Operator on the specific measures taken/planned on the NPP sites concerning Covid-19
- On 16.03.2020 the Operator came with a plan for business continuity for the Belgian NPPs, mainly based on analysis of the critical functions and monitoring of the minimum staff needed to ensure these functions
- On 18.03.2020 Belgium went into complete confinement
- From then on, FANC/Bel V had/have a daily contact (via VC) with the Operator to follow up possible evolutions
- On 04.05.2020 Belgium started to roll back the confinement measures in a phased way

Involvement of the Regulator

- On 11.05.2020 the Operator took additional measures for a progressive deconfinement: obligation to wear masks (or helmet with visor) for all movements on site and wherever social distancing (1.5 m) could not be respected
- Until now, there were 3 confirmed Covid-19 cases in Doel en 0 in Tihange.

Specific challenges for Bel V (TSO)

- The Belgian authorities imposed homework in general during the confinement, but the Bel V employees were allowed to travel for their work within the Belgian territory.
- A virtual communication (VC) system was deployed within the Bel V staff to coordinate activities.
- Regulatory oversight was maintained by Bel V via systematic inspections (via VC or on site)
- (Process based) thematic inspections by Bel V were postponed and are currently being rescheduled
- Specific inspections (reactive, etc.) were carried out, when needed
- During the inspections, a special focus was on the impact of the corona-crisis on safety related activities (delayed activities, etc.)

Specific challenges for Bel V (TSO)

- Bel V adjusted the frequency of the control room inspections to protect the control room staff
- It is still the aim to completely carry out the annual inspection programme
- A weekly coordination meeting between Bel V inspectors was held via VC

Long-term strategy

Short-term

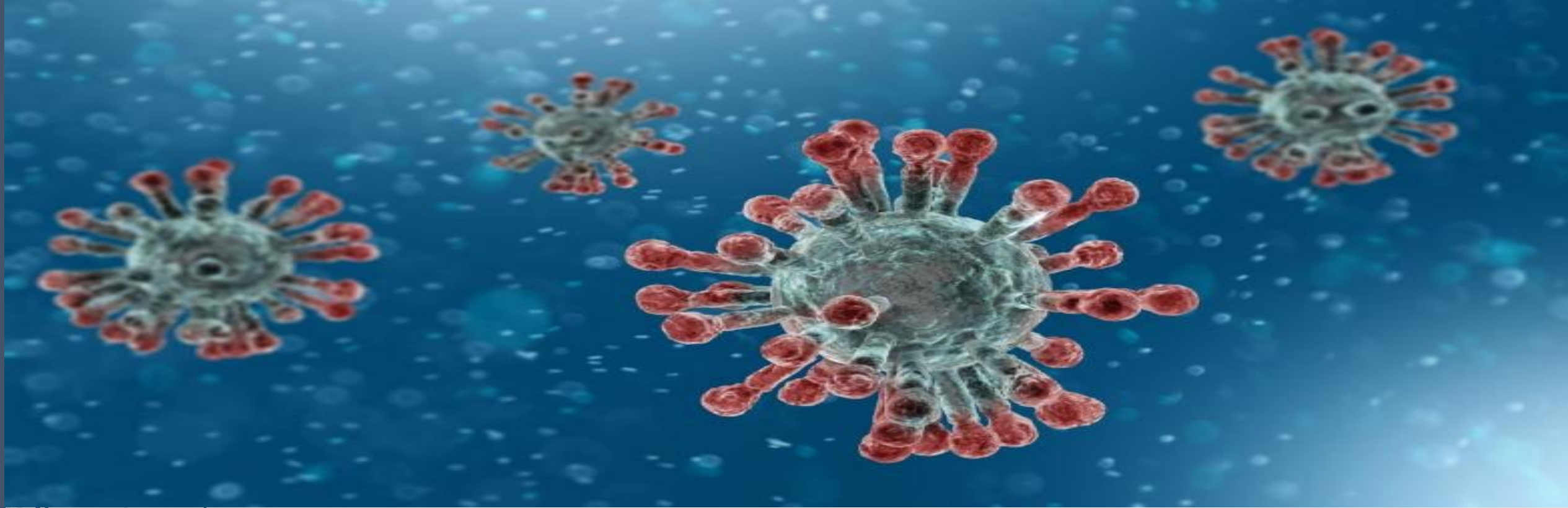
- To keep the health measures on site in place till there is a cure or vaccine: wearing a mask for all movements on site + regularly disinfection of the hands with alcoholgel.

Mid-term

- To restart the delayed/postponed activities: training courses, postponed modifications on installations

Long-term

- To develop a specific 'Pandemic response plan' at all levels (Operator / Safety authorities / Response/rescue organisations)



COVID-19 and ROMANIAN response

Mirela NITOI, Alexandru TOMA, Ilie TURCU

RATEN ICN, Romania

Nuclear installations in Romania

Cernavoda NPP - two units in operation, covering approx. 18% of Romania's total energy production.

Mioveni platform – **TRIGA research reactor**



	Reactor Type	Gross Capacity MW(e)	Construction Start	First Criticality	Operating Status
Cernavoda-1	CANDU-6	706.5	1980	16th of April 1996	in operation
Cemavoda-2	CANDU-6	706.5	1980	6th of May 2007	in operation
Cemavoda-3,4	CANDU-6	720	1980	-	under preservation, plans for resuming construction
Mioveni	TRIGA Steady State RR	14 MW	1975	1979	In operation
Mioveni	TRIGA Pulsed RR	Pulsed	1975	1979	In operation

Nuclear in Romania



National Response - State of Emergency

- President Klaus Iohannis decreed the **State of emergency** on the Romanian territory on **March, 16**, for 30 days.
- **Decree Purpose** - to prevent the spread of COVID-19 and to manage the consequences of pandemic. The establishment of a state of emergency in Romania came just days after the World Health Organization declared a coronavirus pandemic.
- During the state of emergency, the exercise of certain rights was restricted: free movement; private life; inviolability of the home; education right; gathering; private property; the right to strike; economic freedom.
 - **Emergency Measures with direct and immediate applicability** were established in several fields of activity: public order, economic, health, labor and social protection, justice, foreign affairs
 - **Emergency Measures with gradual applicability** depending on the fulfillment of some criteria
- **April, 14** - the **State of emergency was extended** for another 30 days. First emergency measures were applied with direct applicability in the fields of public order, economy, European funds, health, labor and social protection, justice, foreign affairs, marriage, transport and infrastructure, education and research.
- During this period, 12 military ordinances were issued

National Response - Alert State

- ▶ **May,15** - in order to keep the epidemic under control, a **State of alert** was declared at national level for a period of 30 days
 - ▶ the declaration regarding movement on one's own responsibility is not anymore necessary, but no exaggerations regarding the trips are recommended
 - ▶ the obligation to wear a mask in closed public spaces, in public transport, is maintained
 - ▶ maintain social distance, avoid any crowd places
- ▶ Certain relaxations of the measures, step by step, every 2 weeks on the basis of the health reports
- ▶ **June,17** – **prolongation of State of Alert** at national level, for 30 days

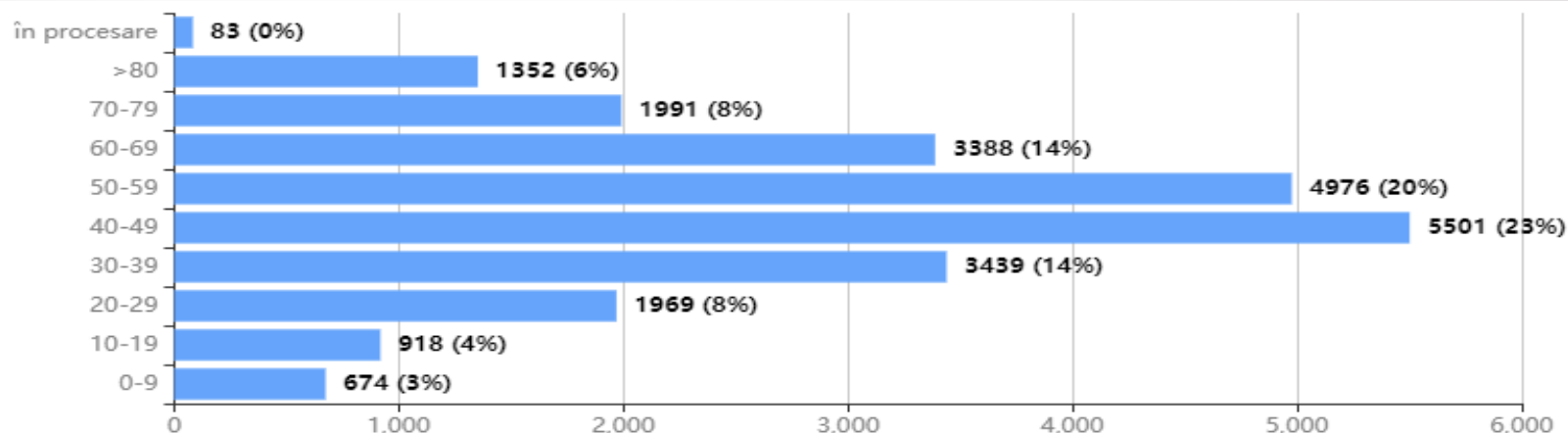
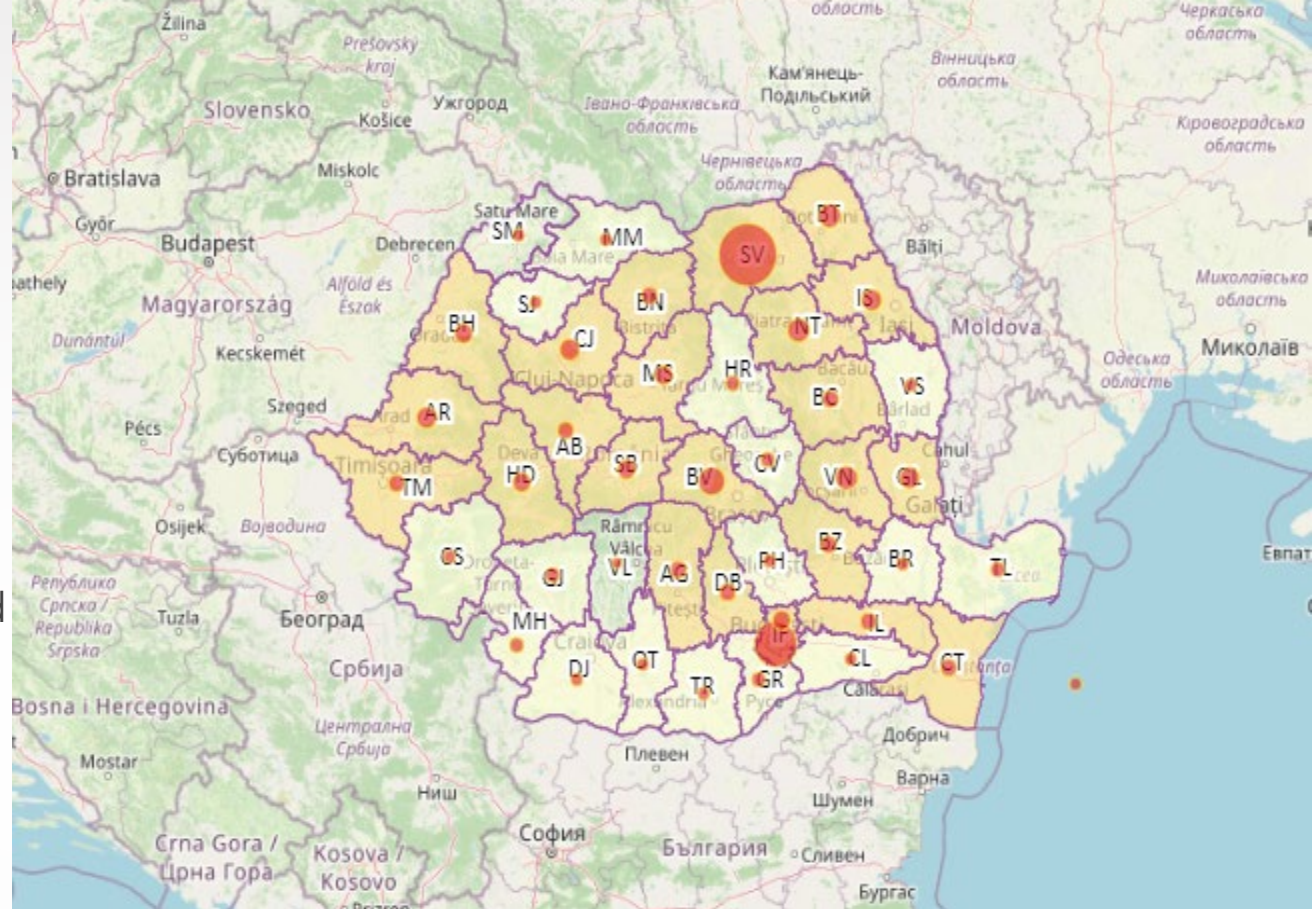
ORDER no. 1731 -May 15- MINISTRY OF ECONOMY, ENERGY AND BUSINESS ENVIRONMENT

Goal: to ensure safe activities during the Alert period

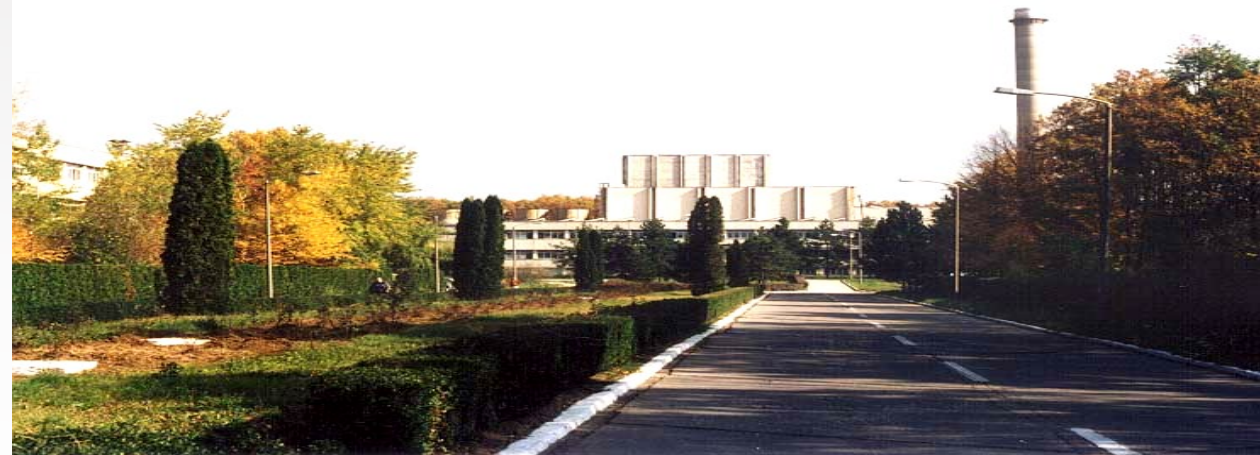
- Employers will ensure the staggered work schedule, in order to avoid crowding at the entrance / exit of the premises and to limit the number of employees present, at the same time, in the same premises
- Employers will ensure the observational triage of employees and will not allow the presence at work of persons with symptoms of respiratory infection (cough, sneezing, rhinorrhea, fever, altered general condition)
- Employers will perform thermometry of personnel daily, upon entering the shift; employees with a temperature above 37.3 °C will be sent home, with the indication of consulting the family doctor
- Employers shall organize work spaces so as to ensure a minimum distance of 1.5 m between employees working in front-to-back and back-to-back offices
- For face-to-face offices, employers will ensure their separation with partitions that will be disinfected daily with alcohol-based solutions
- Employers will ensure the disinfection of work surfaces at the beginning of the work schedule and subsequently once every 4 hours
- Employers will organize staggered lunch breaks so that the physical distance of at least 2 m is respected. Employers will ensure regular ventilation of rooms.
- In the case of air-conditioned rooms with air recirculation, employers perform nebulization once a week, preferably at the end of the week, and disinfect the air conditioning system according to the manufacturer's instructions.

COVID-19 national situation

- First case of Coronavirus - 26 February 2020
- 22 June
 - **24,291 infected persons** (confirmed); **17,031** healed
 - **1,523 diseased** from COVID-19 infection
 - **1.258 persons quarantined**;
 - **71.895 isolated** and under medical monitorization
 - **630,374 national tests** performed



RATEN ICN response



- A coronavirus prevention and control plan has been developed (updated several times) to ensure an optimal level of nuclear safety
- The essential functions for the activities to be carried out without discontinuity to ensure the safety of the nuclear installations in RATEN ICN have been established
- Measures have been agreed in order to prevent the illness of the employees and to ensure the operation in conditions of nuclear safety of the installations
- 06 April Protocol in accordance with the Decree on the establishment of the state of emergency due to the coronavirus pandemic
 - re-planning the paid leave from 2020 and performing 21 days starting with April 13, 2020
 - The proposed date for resuming the activity was June 17, 2020. "Depending on the evolution of the pandemic, the date will be rescheduled, and will be communicated to employees."

Preventive measures

- Two work programs, starting with 24.03.2020, for full-time staff
- Employees have the obligation to immediately inform the hierarchically superior person if they are isolated, quarantined or tested positive with COVID-19
- Staff who returned from abroad will isolate themselves at home for 14 days, with the information of the management
- Employees whose family members returned to the country after 24.03.2020 will isolate themselves at home for 14 days, informing the management
- The contacts of the employees from different compartments are restricted
- Meetings are restricted, video-meetings are recommended
- Missions abroad are prohibited and missions in the country are limited
- Visitors / students have no access on the premises, during the activation of the plan (until de-activation)
- Disinfectants are purchased and placed at the entrances of each pavilion
- Hygienic-sanitary materials are provided, following the request of the department heads
- The usual contact surfaces are disinfected daily
- The means of personal transport are disinfected daily
- Disinfection of access roads in the institute is performed periodically

State of individual responsibility

The activity of RATEN ICN was resumed starting with May, 18

Control measures

- Two work programs and the previously established measures to prevent and combat COVID-19 are maintained
- The epidemiological triage is performed by the Medical Service by checking the temperature of the employees at the entrance to RATEN ICN, temperatures that must not exceed 37.3 degrees Celsius
- The obligation to wear a protective mask at work and in transport means
- The access to the Institute will be conditioned so as to ensure a minimum distance of 2 m between any two close people
- Assure human resources for essential functions by rescheduling rest leave and recalling staff on leave, if needed
- At the first case of contamination of an employee, confirmed by the authorities, all staff who had contact with him, except those who hold essential positions, will remain isolated at home for 14 days. If the contaminated person occupies one of the essential functions, continuity is ensured by its deputy, with the possibility of extending the shift program. The building where the contaminated person's work is located will be disinfected with the support of DSP Arges

Nuclearelectrica response



- Nuclearelectrica (SNN) has developed an internal Plan to ensure the **continuity of activity** in the event of an epidemic and has formed an internal Working Group that develops, coordinates and implements prevention measures and plans protection measures according to the possible evolution of the situation.
- **Goal:** to ensure measures to protect personnel and continuity of safe operation and production, given the strategic importance of the company at the national level (ensuring constant production of electricity at national level, in safe conditions, in conjunction with the protection of staff and the local community)
- The continuity plan is developed in accordance with national legislation and measures established at the governmental level and is continuously updated taking into account international best practices and experience in the nuclear field.
- Initially, the plan was conceived with a gradual implementation of the measures, depending on the evolution of the coronavirus spread. The plan contained complex and complementary measures, from the constant provision of sanitary and protective materials, to teleworking, rotating staff in stand-by, all designed to reduce as much as possible the risk of contamination of SNN personnel.

Main correlated measures

- All activities carried out under the conditions imposed by the pandemic are covered by 30 specific instructions, developed for this situation. The company has prepared reaction plans for various risk scenarios.
- Implementing a rotation system for the staff to reduce physical presence at the office
- Implementing all the protection measures for the staff
- Ensuring protection materials for the staff and equipment to facilitate work from home
- Canceling trips and meetings
- Adopting special measures for the general meeting of shareholders to limit physical participation
- Until the end of May, the essential staff of the Cernavoda nuclear power plant was kept in strict isolation at work, in order to minimize the risk of coronavirus infection

Plan for returning to work

- The company has used a simplified public tender procedure to purchase medical RT-PCR testing services in order to diagnose COVID-19 infections for SNN workers
- After returning to work, all Cernavoda personnel was tested for COVID-19 infections

So far, the plant does not register any case of infection and operates at normal parameters.

Source: Nuclearelectrica SA

Isolation of Personnel

- The measure of isolating the personnel essential for maintaining the production and functions of nuclear safety at Cernavoda NPP was included in the Continuity Plan to ensure continuity of activities from the beginning of the pandemic, two weeks before the issuance of military ordinances imposing for various industrial branches the personnel isolation. Therefore, in order to be able to implement this measure, it was necessary to cooperate with the authorities in order to issue a decision of the National Committee for Special Emergency Situations in this regard.
- The National Committee for Special Emergency Situations adopted the measure for isolating the plant's personnel on March 14, 2020, and Cernavoda NPP initiated the implementation of the measure for isolating essential personnel on March 15, 2020 (at the appearance of the third case of coronavirus in Constanța). Since March 19th, all essential staff (840 people) were isolated within Cernavoda NPP campus. There was no contact with the world outside the isolation area, the only means of communication for those in isolation with the outside world were electronic.
- Essential staff - consist of SNN's own staff, part of the contracting staff - because it is necessary, regardless of the external context, to continue the contracted works - and gendarmes, to ensure the security of the isolated people. Protective measures are also provided for the staff who provide food, but also for cleaning.
- Isolated personnel have been previously medically evaluated by a specialized medical team. The company took care of the complete provision of people's food, transport (direct from the campus to the plant and return), medical services, their psychological counseling, and the very clear delimitation of the areas in the plant, so that the essential staff does not come in contact with other colleagues.
- The measure of isolating such a large number of people on the site for such a long time (ensuring food and transfer for 840 employees for a period of more than 75 days) is extremely rare even in the global nuclear industry, because there are few plants that have staff accommodation solutions in the immediate vicinity.

Source: Nuclearelectrica SA

Consequences

- **Delay of the planned outage** of Cernavoda NPP Unit 1 until June 20th 2020
 - April, 7 - The Board of Directors of Nuclearelectrica decided to postpone the planned outage of Cernavoda Unit 1, the decision being determined by the context of the COVID-19 epidemic, in conjunction with the measures related to the Personnel Protection Plan to ensure continuity of operation and production, as the development of a planned stop is a complex investment project through the logistics structure, contracting and staff involved.
 - Usually, the planned outages of nuclear units are performed alternately, once every two years for each unit, in May-June
 - May, 8 - The decision to start the planned outage program of Unit 1 Cernavoda NPP on June 20, for a period of approximately 42 days, was adopted by the Board of Directors of SNN, based on analysis of all the impact factors on the planned outage works of Unit 1.
 - The company's representatives emphasized that the postponement of the planned outage of Unit 1 Cernavoda NPP does not affect the high level of nuclear safety and the efficiency in operation of the plant, production taking place at normal parameters.
- The **validity of authorizations and permits** to carry out nuclear activities issued by CNCAN, which expires during the alert period, is maintained throughout this period, as well as for a the period of 90 days from the cessation of this state (Order of the President of the CNCAN no.111 of 27.05.2020)
- **Decrease in national energy consumption** with 15% in April 2020 compared to the same period of last year

Main challenges

The coronavirus crisis has revealed a significant Achilles' heel: The nuclear installations cannot operate if their highly skilled operators get sick or become contagious and have to be quarantined

- Social distancing and personnel protection
- Organizing outage preparation and investment projects
- Organizing basic activities, deliveries and works
- Maintaining the highly skilled workforce
- Communication and cooperation within the company and outside
- Gaining authorities support for specific measures
- Longer term uncertainty regarding the economic landscape

Thank you for your attention

Спасибо за внимание

Danke für Ihre Aufmerksamkeit

Kiitos huomiosta

Ačiū už jūsų dėmesį

Děkuji za vaši pozornost

Bedankt voor je aandacht

Merci de votre attention

Vă mulțumesc pentru atenție

Нвада за vašo pozornost

Grazie per la vostra attenzione

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KEY CHALLENGES FOR NUCLEAR SAFETY DURING THE COVID-19 PANDEMIC

Frederic Wheeler, Head of Jacobs RSD (UK TSO)

Malcolm Spence, RSD Regulation Manager

23 June 2020



Challenging today.
Reinventing tomorrow.

Introduction

- UK industry overview
- Organisational responses
- Involvement of the regulator
- Specific challenges of the TSO
- Long-term strategy and considerations for future pandemics

Industry overview

- The Sellafield Magnox reprocessing plant has been closed down as a precaution to better prepare it for restart
- Staff working on construction of Hinkley Point C plant reduced by more than half – further reductions as work in progress is completed
- ONR recently served an Improvement Notice on EDF Energy for 11 missed statutory inspections at Heysham 1 NPP. The pandemic had necessitated a planned statutory outage to be moved from May to September
- Unit 2 at Hartlepool NPP restarted in April following a planned outage, despite COVID-19. Measures have been implemented such as vulnerable staff staying at home while the remainder manage safe operations

Organisation and Staffing

- UK has a 'goal-setting' regulatory framework
- Licence Condition 36 requires organisations to adequately resource their activities with resilience against all foreseeable circumstances, including pandemics
- Critical national infrastructure sites (i.e. NPPs) have continued operating. Other sites, e.g. Sellafield, moved to limited working where possible – reduced manpower on site but still able to oversee plant and respond to emergencies
- Licensees are providing daily reports to the regulator of staffing levels and numbers of people off work due to COVID-19
- Regulatory focus includes assurance from site licensees that they are applying the public health measures introduced to reduce the spread of COVID-19

Involvement of the regulator

- Balanced approach to regulation – not creating undue burden on industry at an unprecedented time, while gaining suitable assurance of safety
- Working according to some high-level principles:
 - Protect our own people
 - Protection of the public and environment must endure
 - Ensure duty holders continue to adequately resource their operations
 - Enabling approach but enforce and influence where appropriate
 - Maintain capability were an incident or event to occur coincident with the pandemic
 - Prioritising work accordingly
 - Making best use of technology
 - Being consistent
 - Engaging with stakeholders
 - Benchmarking with other UK regulators and sharing best practice

Specific challenges of the TSO

- Focus on maintaining support to nationally important programmes
 - RSD has continued supporting UK regulators
 - Jacobs' nuclear laboratories have remained operational by implementing social distancing and hygiene measures
- Challenges of working from home
 - Keeping in touch
 - Ensuring staff have the necessary equipment
 - Supporting physical and mental wellbeing
- Challenges of remote regulatory support
 - Site visits curtailed to reduce burden on industry and protect people
 - More focus on assessment activities
 - Virtual and paper-based inspections using site staff to video/photograph plant
 - Virtual meetings with duty holders

Long-term strategy and considerations for future pandemics

- The pandemic may change the way we do certain things for good
- Regulators working on plans to begin on-site activities to regain independent oversight
- Potential for more flexible working and less office space
- Travel to sites will require a risk assessment – how to get there, where to stay, PPE...
- Can we do more remotely whilst maintaining adequate independent oversight?
 - Trust between licensees and regulators may become more important
 - More utilisation of licensees' internal assurance function to provide evidence remotely
- A learning from experience review of how licensees coped with the pandemic will be required to inform preparation and response to future events
- Enhanced stress testing of industry

Thank You

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Challenging today.
Reinventing tomorrow.





INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

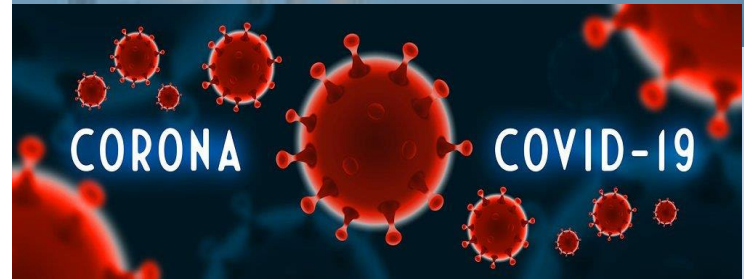
Enhancing nuclear safety

COVID-19 effects on nuclear facilities in France

Preliminary elements about the effects of COVID-19 on nuclear safety

Olivier DUBOIS

IRSN, safety analysis deputy head



MEMBER OF

ETSON

EUROPEAN
TECHNICAL SAFETY
ORGANISATIONS
NETWORK

Summary

- Organisational responses of nuclear operators in France (short overview)
- Focus on EDF's nuclear division organisational response
- Involvement of the regulator (ASN) and inspections during the pandemic
- Outage management (mainly for EDF NPPs)
- Specific challenges for IRSN
- Lessons learned and long term strategy

Organisational responses of nuclear operators

■ Operators having to ensure continuity of operations

- Nuclear power plants, fuel cycle operators, fuel transportations...
- On site-staff reduced but essential activities maintained: shift crews, site protection teams, surveillance and maintenance teams
- Telework for other staff (technical engineering support staff...)

■ Operators having halted operations during the pandemic

- Research installations (experimental reactors), installations being dismantled, waste storages...
- Installations put in a safe shutdown state (similar to summer or Christmas shutdowns)
- Surveillance activities maintained, very few staff on site

Focus on EDF nuclear division organisational response

- 57 (+1) nuclear reactors producing 75 % of electrical energy
- During the crisis:
 - Up to a few hundreds sick people at the same time
 - Shift crews reduced from 7 to 5 teams (still working on a 3 x 8-hour shift basis), no replacements between teams allowed
 - Maintenance personnel split into two teams (A & B), not allowed to meet
 - At the peak of the crisis, reduction of 60 % of daily accesses on sites
 - Regulatory minimum staffing requirements have always been fulfilled
 - Some worse case organisations have been prepared by EDF “just in case” but have not been implemented
- Maintenance activities slowed-down, especially in controlled areas where COVID protective measures are difficult to implement

Involvement of the regulator and inspections

- ASN (and IRSN) maintained very frequent exchanges with operators, both at a local level (with each site) and with the national organisations of operators (weekly meetings covering the impact of the pandemic on the staff, short and long term safety issues...)
- Inspections:
 - On site inspections suspended during the pandemic
 - Remote verifications, especially to check documents related to day-to-day operations, audio-conferences with operators...
 - Some lessons have been learned from these “remote inspections”
 - Compliance gaps are especially difficult to correct during a pandemic

Outage management (mainly EDF)

EDF's strategy for outage management of French nuclear reactors:

- Strategy: carry out the activities planned during outages, in order to avoid workload or regulatory difficulties later
- First priority (from mid-march): finish 5 on-going outages and restart the reactors
- Other planned outages delayed and extended, “fuel saving” strategy for some reactors
- Consequences of this strategy:
 - Very few demands for exemptions to periodic tests or compulsory maintenance operations
 - But a major impact on nuclear power production planning, resulting in possible tensions between supply and demand during the next winter
 - Extended in-cycle outages: impact on safety ?

Specific challenges for IRSN

■ Internal challenges for IRSN staff :

- First priority: health of IRSN staff. Rapid extension of telework for the staff (already partially operational before the pandemic).
- Second priority: maintain activities, both research activities and safety analysis :
 - Safety analysis teams: staff on telework (good feedback), weekly meetings with ASN and licensees to exchange information on the consequence of the pandemic.
 - Research teams : more difficult to maintain some activities (experimental work) but telework as much as possible.

➔ We are now in a phase in which staff is partially and progressively back on-site (~20 % this week, 50 % in July/August...)

Specific challenges for IRSN

■ With respect to IRSN safety analysis activities:

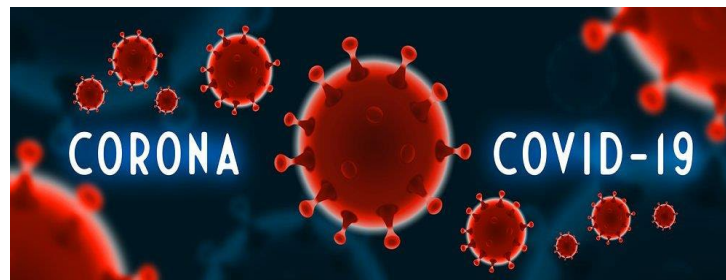
- Follow safety indicators during the pandemic:
 - Reduction of the number of safety events during the crisis (due to reduced activities ?)
 - Back to “usual” (and possibly even more) for a few weeks...
- Risks raised by possible excessive workloads when activities of licensees resume
- Collecting the feedback of this period (IRSN is preparing a list of “questions” in order to help collecting feedback from the licensees after the crisis)
- More precise safety issues:
 - Analyse the extensions of in-cycle outages for some reactors (what is the best shutdown state for these reactors with respect to safety ? Are there some consequences of very long cycles including in-cycle outages ?)
 - Make sure NPP's are ready to face possible losses of off-site power during next winter (reliability of inner electrical sources...)

Lesson's learned and long term strategy

- Autonomy of licensee's staff versus contractors' staff for some critical operations in NPPs ?
- Improve preparedness in case of nuclear accident during a pandemic
- What if resurgence of this pandemic or more severe pandemic ?
- Several studies to be carried out in the field of human and organizational factors :
 - Decision making in degraded environment (telework...)
 - Consequences of COVID-19 protection measures on the reliability of maintenance activities
 - ...



**Thank you
for your attention**





Key Challenges for Nuclear Safety during the COVID-19 Pandemic

***Denis Mistryugov, PhD
Head of International Cooperation Division***

SEC NRS

Situation in nuclear industry



- COVID-19 total cases: > 400 in 2 months
- Precautions taken: masks, gloves, social distancing, telework when possible
- Backup staff for the top-management team
- Sites abroad: precautionary measures in place, construction in progress
- Restricted entry to nuclear cities (where nuclear facilities are located)
- Rosatom conducts sterilization of medical equipment and materials and provides other support to combat the epidemic
- Since May 18 ~ 96 % of the employees in nuclear industry have returned to work, telework still in place where possible

Source: <https://www.rosatom.ru/>

Situation at a regulatory body



- Number of employees in the office reduced to the optimal need to fulfil the regulatory functions
- Telework when possible
- Necessary amount of inspections and other measures to monitor the safety status of NPPs is provided
- Control over the implementation of the additional measures to ensure safety during the operation of NPPs in connection with the introduction of the high alert regime in the Russian Federation

Source: presentation of Mr Alexey Ferapontov, Rostekhnadzor Deputy Chairman, at the 47th meeting of the IAEA Commission on Safety Standards on June 4, 2020 (available at <https://www-ns.iaea.org/committees/csscomments/default.asp?fd=2002&dt=>)

Situation at a regulatory body



Recommendations to operating organizations:

- Ensure the safe operation of the nuclear power units under current restrictions
- Develop additional measures to ensure safety during the operation of the nuclear power plants:
 - increase in the number and thoroughness of walkdowns of the process systems and equipment;
 - conduct of unscheduled briefings to the staff on the regime of operation in high alert;
 - restrictions on planned transitions, switchings and repairs of equipment, with the exception of emergency ones;
 - ensuring the safety of operational and duty personnel of the nuclear power plants regarding sanitary and epidemiological requirements.

Source: presentation of Mr Alexey Ferapontov, Rostekhnadzor Deputy Chairman, at the 47th meeting of the IAEA Commission on Safety Standards on June 4, 2020 (available at <https://www-ns.iaea.org/committees/csscomments/default.asp?fd=2002&dt=>)

Situation at a regulatory body



Recommendations to operating organizations:

- Develop measures to ensure the needed minimum number of operational personnel justified in the project, subject to the hospitalization of some of the employees
- Determine, in the established manner, the operation mode of the power units when it becomes impossible to ensure the minimum number of operational personnel
- Develop additional measures to ensure the safety of the operational and duty personnel of the nuclear power plants regarding sanitary and epidemiological requirements

Source: presentation of Mr Alexey Ferapontov, Rostekhnadzor Deputy Chairman, at the 47th meeting of the IAEA Commission on Safety Standards on June 4, 2020 (available at <https://www-ns.iaea.org/committees/csscomments/default.asp?fd=2002&dt=>)

Situation at a regulatory body



Methodological recommendations providing for use of remote interaction tools to control compliance with industrial safety requirements and license conditions by juridical entities and private entrepreneurs*

- Valid until the end of 2020
- To be used by organizations which carry out:
 - industrial safety review;
 - activities connected with use of industrial explosive materials;
 - surveys;
 - operation of explosion- and chemical – hazardous industrial facilities of hazard classes I, II and III

**adopted by the Order No. 201 of the Federal Environmental, Industrial and Nuclear Supervision Service (Rostekhnadzor) on May 27, 2020*

Situation at SEC NRS



March 30 thru May 15

- Majority of employees: telework
- Certain employees at the office on Mondays and Tuesdays (masks, gloves, social distancing are obligatory)
- All the responsibilities and duties related to safety review and state tasks were performed in a timely manner

May 15

1/3 of all employees in the office (after passing COVID-19 tests)

June 1

All employees back to the office

SEC NRS Director twice addressed the staff members with announcements supporting them and their families psychologically and thanking for their work in difficult conditions



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Thank you for attention!

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Interruptions of decommissioning work at Lithuania's Ignalina NPP due to Coronavirus

Algirdas Kaliatka,
Lithuanian Energy Institute

ETSON Workshop on Key Challenges for Nuclear Safety
during the Covid-19 Pandemic

23 June 2020, Videoconference

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Outline

- Introduction (historical content)
- INPP decommissioning projects and activities
- Situation at Ignalina NPP during the quarantine
- Situation at Nuclear Regulator during the quarantine
- Ignalina NPP lessons learned
- Conclusion



Introduction (historical content - 1)

- In 1990, after Lithuania declared its independence, Ignalina NPP came to jurisdiction of the Republic of Lithuania.
- Lithuania inherited Ignalina NPP from the Soviet Union together with the responsibility to ensure safe operation of the plant.





Introduction (historical content - 2)

- Main Nuclear Facilities in Lithuania (1)
 - Ignalina NPP
 - Unit 1 (RBMK-1500) in operation 1983-2004
 - Unit 2 (RBMK-1500) in operation 1987-2009
 - Facilities in the vicinity of Ignalina NPP
 - Interim Spent Fuel Storage Facility (ISFSF): 120 casks (118 casks are stored, places for 2 casks are reserved for unforeseeable operations); totally there are 6018 spent nuclear fuel assemblies stored in this storage facility.





Introduction (historical content - 3)

- Main Nuclear Facilities in Lithuania (2)
 - Facilities in the vicinity of Ignalina NPP
 - New Solid Waste Management and Storage Facilities (B234-SWMSF) were commissioned in 2005.
 - New Interim Spent Fuel Storage Facility (B1-ISFSF). Industrial operation of NISFSF started in May 2017.





INPP decommissioning projects and activities (1)

- Key decommissioning milestones (2014) and the estimated year of completion include:
 - ISFSF Interim Spent Fuel Storage Facility (Project B1) construction and commissioning completed (2017)
 - SWMSF SW Management and Storage Facility (Project B3/4) construction and commissioning completed (2018)
 - Landfill Facility for Very Low Level Waste (Project B25) commissioning completed (2018)
 - Unit 2 reactor defueling completed (2019)
 - Near-Surface Repository commissioning completed (2020)
 - Units 1 and 2 spent fuel storage pools defueling completed (2022)
 - Units 1 and 2 reactors R1, R2 zones dismantling completed (2027)
 - Units 1 and 2 reactors R3 zones dismantling and decontaminating completed (2034)
 - Unrestricted release of reactor areas (2036)
 - Site restoration completed - "brown field" (2038)



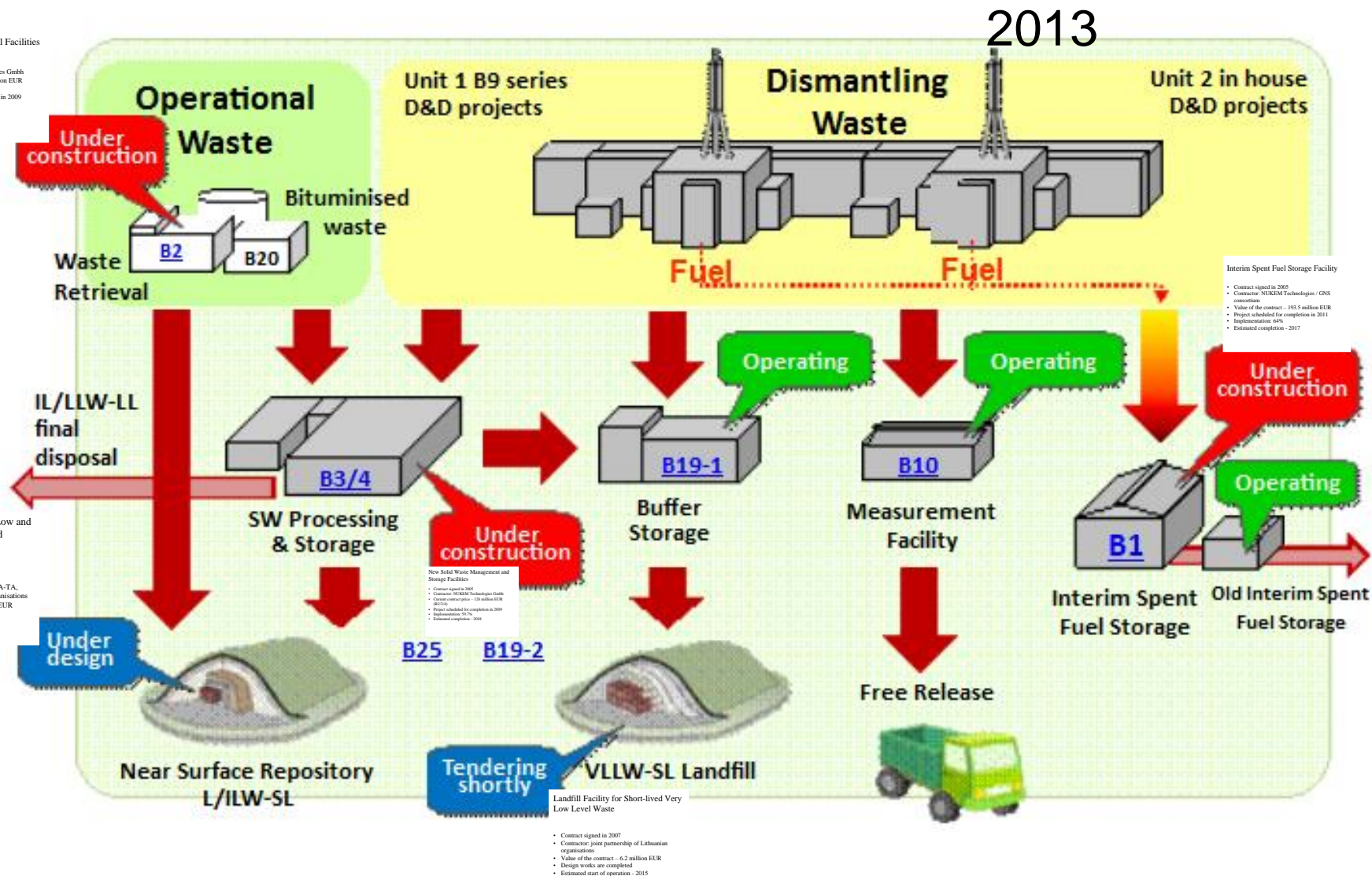
INPP decommissioning projects and activities (2)

New Solid Waste Retrieval Facilities

- Contract signed in 2005
- Contractor: NUKEM Technologies GmbH
- Current contract price - 124 million EUR (B2/B4)
- Project scheduled for completion in 2009
- Implementation: 40.3%
- Estimated completion - 2018

Near Surface Repository for Low and Intermediate Level Short-lived Radioactive Waste

- Contract signed in 2009
- Contractor: joint partnership - AREVA-TA, ANDRA (France) and Lithuanian organisations
- Value of the contract - 117.5 million EUR
- Estimated start of operation - 2020





Situation at Ignalina NPP during the quarantine (1)

- The key processes at the facility, including the management of spent nuclear fuel, solid waste management etc., involves a lot of elder people. Following the quarantine announced in the country (three months ago), the Ignalina NPP immediately **took measures to protect the health of its employees.**
- From **April 6**, 540 people started to work remotely, and there are some were on sick leave and some take care of their children. Up to 1,000 people were sent off into downtime.
- From **April 6**, Ignalina NPP **transferred into minimal shift regime**. The system's safe maintenance was ensured, but work was not performed during that time. Among other things, the **unloading of spent nuclear fuel from the SNF storage pool of Unit 1, which depends on the schedule of IAEA SNF inspections, was suspended.**



Situation at Ignalina NPP during the quarantine (2)

- The two most difficult weeks - from **April 6** the Ignalina NPP **activities were suspended**. The Ignalina NPP has taken these actions in response to a widespread virus to increase employee safety and ensure the smooth running of company.
- Starting from **April 20**, INPP updated the processes that are strategically important and necessary to ensure the smooth implementation of the decommissioning process. These are:
 - the process of loading spent nuclear fuel into containers and transporting it to storage and
 - related ancillary activities, such as: radiation protection, repair, laboratory testing, waste removal, solid radioactive waste management and preparation for dismantling.
- Dismantling work and related activities began starting from **April 27**, and the initial treatment of radioactive waste and all remaining processes were resumed starting from **May 4**.

2020 APRIL						
SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

MAY 2020						
SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5 Cinco de Mayo	6	7	8	9
10 Mother's Day	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25 Memorial Day	26	27	28	29	30
31						



Situation at Ignalina NPP during the quarantine (3)

Measures taken:

- The flow of employees was regulated by changing work schedules and avoiding the gathering of employees at the entrances.
- More frequent disinfection of premises and surfaces has been organized, hand disinfectants have been installed at all entrances to the most important premises, employees are constantly provided with personal protective equipment.
- Measures such as strict regulation of distances and movement of workers, minimization of contacts, installation of additional entrances and physical barriers to direct personnel according to the planned movement schemes have been introduced.



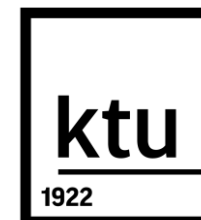
Situation at Ignalina NPP during the quarantine (4)

- According to Audrius Kamienas (Director General of Ignalina NPP), the temporary changes will not effect the work schedule and the progress of the project. *"Our project will last until 2038, and we are speaking about two weeks,"* he said (BNS).
- INPP smoothly resumed operation activities, which were temporarily suspended due to the risk of COVID-19 spread. Today, all activities are underway, almost all workers (previously worked "remotely" returning to their jobs (**all employees will return to their jobs from June 23**)).



Situation at Nuclear Regulator and TSO during the quarantine

- During the current COVID-19 pandemic, **State Nuclear Power Safety Inspectorate (VATESI)** performed the supervision of nuclear facilities in Lithuania as usual with some changes in inspection activities.
- Some inspections **performed remotely**, by means of telecommunication, other regular and not urgent inspections, **were postponed**.
- VATESI **closely followed the situation and measures** taken by license holder to assure safe and secure activities at permanently shut down Ignalina NPP Unit 1 and Unit 2 as well as at other nuclear facilities.
- The challenges of the TSO – minimal





Ignalina NPP lessons learned (1)

- The experience and lessons learned during quarantine are analyzed in preparation for possible new waves of COVID-19 virus.
- The existing Emergency Preparedness Procedures at Ignalina NPP will be revised according to the IAEA, VATESI leading documents.
- In addition to the planned response to design and non-design basis accidents, human initiated (internal and external threats), natural disasters, airplane crashes and other external threats, the organizational **arrangements for emergencies based on experience with COVID19 management threats** will be described in details.



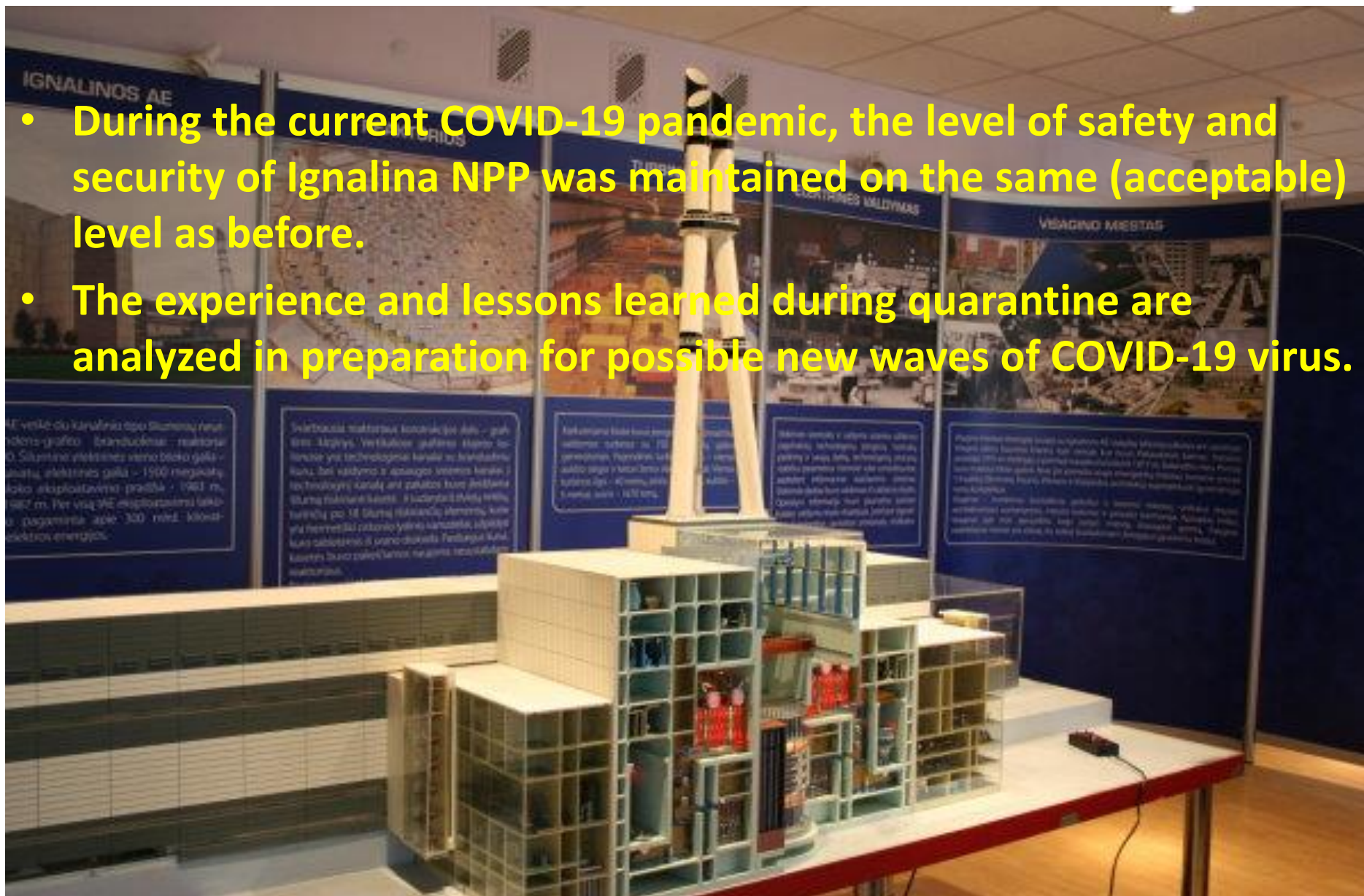
Ignalina NPP lessons learned (2)

- The advantages and disadvantages of **work remotely** will be analyzed, and the **procedure for organizing remote work mode** in the Ignalina NPP will be prepared.
- Almost all of the company's communications have been moved to the **digital space**, and the process of digitizing documents is underway.
- The company has compiled a **list of employees** performing critical functions and operating and servicing the main systems.
- **IT solutions will be implemented**, which will allow smooth and fast exit to the **remote work mode** if necessary.



Conclusion

- During the current COVID-19 pandemic, the level of safety and security of Ignalina NPP was maintained on the same (acceptable) level as before.
- The experience and lessons learned during quarantine are analyzed in preparation for possible new waves of COVID-19 virus.



Thank you for the attention

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Key challenges for nuclear safety during the COVID-19 pandemic - Germany

Oliver Mildenberger, GRS

23 June 2020

ETSON Workshop, VC

Content

- Measures by German operators of NPP
 - Continuity plan and staffing at NPP facilities
 - Protection concept and preventive measures
 - Personnel planning for the refuelling
- Provisions by the German regulatory body
 - Inspections
- GRS during the COVID-19 pandemic

Continuity plan and staffing at NPP facilities

Continuity plan:

- The German NPP have developed plans for prevention, control and contingency
- They have general pandemic plans, which they adapted for the specific case of coronavirus (such as the incubation period of the virus)
- The competent nuclear regulatory authorities of the Länder are informed about the respective plant-specific precautionary measures

Staffing:

- Reduced staff on-site and strict access regulations especially to sensitive locations for example main control room

Protection concept

In the following, measures for the first refuelling outage under pandemic conditions in a German NPP are presented as an example. The 6-week refuelling outage was completed end of May 2020 without any COVID-19 cases.

- The protection concept includes principles of the licensee's preventive strategy
- The objective of the protection concept is to effectively prevent infection chains
- Amongst other things the following barriers are established
 - avoidance of contact
 - hygiene behaviour
 - staff reduction on-site
 - medical controls
 - organizational measures
- It implements the requirements of the responsible public health authorities

Preventive measures

- The preventive measures include amongst other things
 - a corona test of all personnel (personnel of the NPP and external service personnel)
 - a daily fever measurement before access is given to the site
 - an additional corona test in case of any abnormalities in the fever measurement or flu-like symptoms
 - the issuing of face masks (mouth-nose protection or higher-quality, duty to wear a face mask) and a briefing of the personnel regarding the correct application
 - personnel keep a log book of personal contacts on a daily basis
 - the use of a security service to ensure compliance with the general rules of conduct (e.g. distance in queues)

Preventive measures

- As part of the implementation of measures, “contact-sensitive locations” were identified for which measures were derived
- For the main control room for example, strict access regulations, special protective measures such as the requirement to wash hands every two hours and to hand over shifts in less than 15 minutes were implemented
- Full supply with food and other necessities was offered on-site as well as organization of lodging and transportation for employees of external companies
- The licensee provided the managers of the NPP with a decision event tree for dealing with suspected infection cases, which is a decision-making aid for the further place of work (plant or home)

Preventive measures

- Rules of conduct are visible everywhere (main control room access regulations, distance, separation, isolation, hygiene etc.)

Conference rooms

Control room restrictions

Canteen

Isolation room for suspect cases



With separate
area for the shift



Beispiele

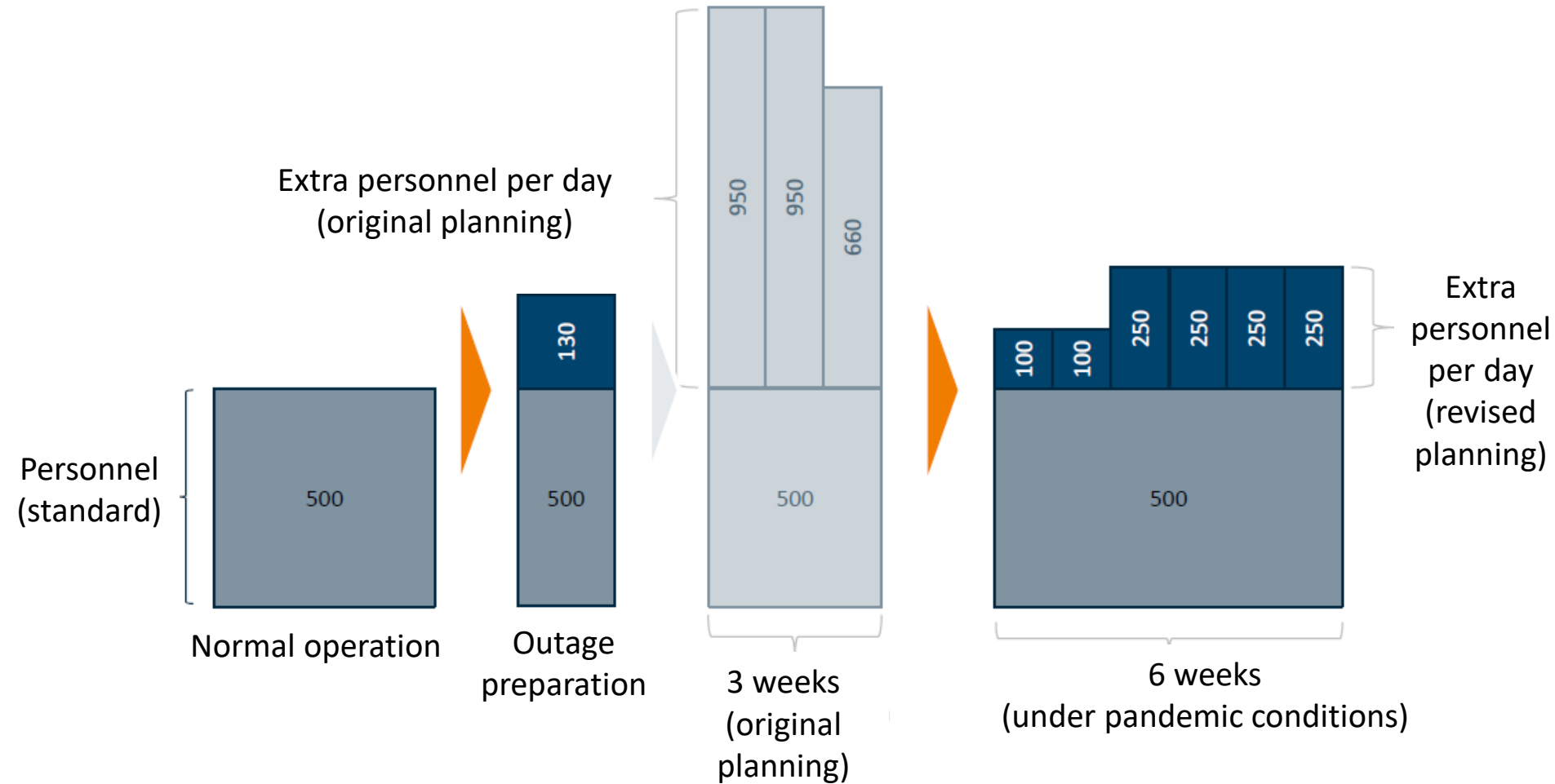


Source: PreussenElektra

Personnel planning for the refuelling

- In the refuelling outage, all safety-related maintenance and repair measures as well as periodic inspections are carried out
- The personnel planning for the refuelling stipulates a reduction in the scope of work (if not safety-relevant) and an adjustment of the work processes
 - The original planning was based on a three-shift operation for three weeks with 660-950 service personnel per week
 - In the revised planning the refuelling outage was completed within six weeks with 100-250 service personnel per week
- For a second NPP, the number of additional personnel during the outage could be halved and the revision was completed after 3 weeks also without any infection
- Further revisions scheduled this year at two-unit sites with one unit in operation and the other in decommissioning consider the halt of decommissioning activities during the outage in order to reduce the number of personnel simultaneously present on the site

Personnel planning for the refuelling



Source: PreussenElektra

Provisions by the German regulatory body

- The German regulatory body has implemented provisions to maintain its operability in consistence with the general national provisions
 - The necessary supervisory visits take place to the extent necessary in compliance with hygiene and precautionary measures
 - Options for contact minimization are used where this is possible from a supervisory perspective (e.g. video/telephone conferences)
 - There is a weekly telephone conference between the department heads of BMU and the Länder authorities
 - The accessibility of the administrative staff is still given. Many employees work in home office. Work can be maintained in this form in the long term
 - To support the BMU, a working group of the Reactor Safety Commission was established on the subject of coronavirus and ensuring nuclear safety.

- Both a General Contingency Plan and a Specific Addition for Pandemic Situations were developed in 2018 and are updated annually

Inspections

- Necessary inspections are carried out in compliance with additional hygiene and precautionary measures
- Options for contact minimization are used. Where it is possible from a supervisory perspective, site visits which are not absolutely necessary at the moment may be postponed
- In charge of the supervisory authorities, the authorized experts (e.g. TÜV or - in case of security - GRS) take part in the in service-inspections and maintenance activities as scheduled in the testing manual, also in compliance with additional hygiene and precautionary measures
- If possible, alternative methods can be practiced in order to minimize risk, e.g. videos or checks of the documentation

Remote inspections

- Where it is possible from a supervisory perspective, also remote inspections are an option
- Remote inspections of the control room: the inspector requests a selected sample of shift records to be electronically transmitted, then these records are examined and discussed – together with other information – with the shift personnel by phone
- A useful remote inspection technique that is used routinely (not only during the pandemic) is the “remote monitoring system”
 - By this IT tool, essential operational parameters (e. g. reactor power, emergency power supply, position of important valves, radioactive emissions) are transmitted electronically to the (home) office of the supervisory authority (update every ten minutes in normal, i.e. non-emergency mode)

Internal Measures of GRS (1/2)

Objectives	Prevention of infections within GRS' area of responsibility Business operation continuity (esp. availability of GRS emergency centre)
End of February	Appointment of Covid-19 officer (contact person for employees and external partners) Establishment of crisis management core group (both directors, Covid-19 officer, head of central service division, head of IT department, head of communication department)
Since mid-March	Employees shall work from home (exceptions: employees needed to ensure continued business operation at GRS offices) → periods with > 90% of teleworking Suspension of non-essential business trips No meetings with external participants in GRS offices, internal meetings only via phone/videoconference Enhanced hygiene measures Enhanced internal communication on ongoing developments (intranet, FAQs) Suspension of core hours to help employees to handle work and changing private obligations (esp. child care) and to avoid rush hours in public transport Plans for essential staffing (organised by divisions) Establishment of Virtual Desktop Infrastructure (enabling use of private PCs)

Internal Measures of GRS (2/2)

Today	<p>Employees free to work at GRS offices, no mandatory attendance</p> <p>Approx. 25 % of employees work at GRS offices</p> <ul style="list-style-type: none">■ Minimum distance between employees (1,5 m)■ Meetings via phone / videoconference as far as possible■ Only single occupation of rooms■ Employees have gone through mandatory online instructions on occupational health and safety with focus on Covid-19■ FFP-2 masks available for inspectors and emergency centre
Findings	<p>One infection case</p> <p>No situation in which GRS was not able to deliver as planned</p> <p>Employees tend to work more in home office / no major issues regarding motivation</p> <p>However, greater effort for leaders to communicate / manage their personnel</p> <p>GRS extended the use of home office already in 2019, thus many employees had laptops and were prepared</p>

**Thank you
for your attention**



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ETSON Workshop on Key Challenges for Nuclear Safety during the Covid-19 Pandemic

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SUMMARY OF THE WORKSHOP (PRESENTATION FOR ETSON GENERAL ASSEMBLY)

ETSON Workshop on Key Challenges for Nuclear Safety during the Covid-19 Pandemic (June 23, 2020)

Justus Oldenburg, GRS

10 July 2020

ETSON General Assembly Meeting

ETSON Workshop on Covid-19 Challenges

Format

- Date: 23 June 2020, 13:00 - 16:00 CET, organized by GRS
- Announcement at short notice (3 weeks)
- Virtual Meeting with Cisco Webex / Test run one day before the meeting
- Main goal: Exchange of information on how Covid-19 affects the operation of nuclear facilities and organisations dealing with nuclear safety
- Every TSO was asked to give a presentation of max. 15 min
- Some guidance on what topics are to be addressed
- 21 Attendees from 9 TSOs (Bel V, ENEA, GRS, JSI, IRSN, Jacobs, LEI, RATEN ICN, SEC NRS)
- Workshop report with presentations and summary is still to be prepared



Front page of workshop flyer

ETSON Workshop on Covid-19 Challenges

General observations

- Broad spectrum of issues
 - Different organisations concerned and involved (operators, TSOs, others)
 - Different goals of measures (health protection, business continuity, nuclear safety)
 - Different types of challenges (specific vs. general, immediate vs. long-term)
- Similar measures concerning health protection / prevention of infections (e.g. teleworking, social distancing, restricted access, travel restrictions, hygiene protocols, disinfection measures)
- Challenges and measures similar on an abstract level, but significant differences on a more detailed level
- Focus on immediate challenges during the crises, however, also quite a few concerns / thoughts regarding the upcoming months (further impacts and changes are expected in the future)

ETSON Workshop on Covid-19 Challenges

Key areas and selected issues (1/6)

Special attention to key staff	What staff is needed for continued (safe) operation? Segregation of essential teams and key staff , Backup for top management, Key staff often elderly persons, Emergency centre staffing, Planning for worst case scenarios
Digitalisation	Infrastructure for teleworking, E-learning, Virtual meeting with duty holders, Online coordination of activities, Fast transition to large-scale teleworking, Establishment of Virtual Desktop Infrastructure (VDI)
Telework	How to keep in touch? In many organisations still in place where possible, In some cases staff has (partially) returned to offices, Telework actually works and may work even in the long-term , Maybe easier where teleworking has been “practiced” before, Not appropriate for research work, Need to develop procedures for remote work

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Key areas and selected issues (2/6)

Communication

Need to adjust communication (e.g. clear communication to staff on ongoing developments), Additional tasks for leaders / superiors, Need for more communication between organisations, Covid-19 officer as contact person for employees and partners

Organisational measures

Suspension of core hours, **Prioritizing work**, Benchmarking with other regulators, Sharing best practices, Developing and updating continuity plans, More focus on assessment activities, Changing working patterns need to be considered

Health issues (other than infection protection)

Responsibility of organisations to support physical and mental wellbeing of their employees, Pressure on employees

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Key areas and selected issues (3/6)

- Facility-related (General)** [Reduced staff at facilities](#), Reduced regulatory site-visits, Consideration of minimum staff requirements, [Suspension of non-essential activities](#), Work schedules were changed to ensure distance between staff, Covid-19 tests for personnel, Log books for personal contacts (contact tracing), Maintenance work slowed down, Segregation of teams (e.g. key maintenance staff), [Isolation of NPP essential staff for 75 days](#), Verification and replenishment of critical stocks, Vulnerable staff at home, Rotation system for staff
- Shift organization** Concern whole shift will be quarantined, [Changes in shift rotations to limit shift turnovers and staff interactions](#), Reduced shift size, Backup plans,
- Outage management** [Delays due to reduced personnel](#) (doubling of outage period) e.g. due to travel restrictions, purchasing issues etc., In some cases postponements, Fuel saving strategy, Split outage strategy (refuelling, overhaul), What is the safest shutdown state for in-cycle outages? What are the consequences of very long cycles including in-cycle outages?

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Key areas and selected issues (4/6)

Inspections

Some were suspended or postponed, Sometimes performed without exception, Focus on essential inspections and on impacts from Covid-19 measures, Increased number of plant walkdowns, Compliance issues hard to correct during pandemic, More trust needed between regulator and operator?

Remote inspections

Learning curve, Lessons learned available, Effectiveness? Methodological recommendations for tools to ensure compliance, Video check of the documentation (e.g. shift records), Remote monitoring system

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Key areas and selected issues (5/6)

Risks Experienced staff most at risk, Prevention of infections sometimes in conflict with other goals (e.g. producing energy, performing inspections), Economic situation of operators, Reduced willingness to report events? Availability of contractors (versus availability of licensee's staff) for critical operations, Key personnel not available, What cannot be done today will be a additional work load tomorrow (risk of excessive workload), Maybe increased risk of loss of offsite power during winter due to postponed maintenance work, Emergency preparedness / response in case of a nuclear accident during a pandemic, Reliability of maintenance activities performed considering the Covid-19 protection measures, not creating undue burden on industry at an unprecedented time

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Key areas and selected issues (6/6)

Future Holistic view important, Cybersecurity, Catching up on activities after the pandemic, Development of pandemic response plans, Long term changes in our working patterns (greater use of teleworking), Restart of on-site regulatory involvement, Assessment of licensee's handling of the crises → Preparation and response to future events, What to do in second Covid-19 wave or a more severe pandemic? Decision making in degraded environment (telework...), Availability of maintenance resources during pandemic, In what operation mode do you have to transition if minimum number of personnel can not be ensured? Need to analyse the lessons learned for second wave / other pandemics (adapting emergency preparedness response), Implications of teleworking to be analysed, Procedures for telework, Digitalization of documents, Improved IT such that fast transition to telework possible, Crisis presents stress test for industry, Investments in E-learning & augmented reality tools, Lessons learned need to be considered in emergency preparedness and response

ETSON Workshop on Covid-19 Challenges

Conclusions

- Effective exchange of information among the TSOs / Good overview of country specific challenges and measures
- Quite a few measures and developments need to be analysed / assessed in retrospect
- Guidance for the presentations was helpful
- ETSON Workshops can be prepared even at short notices (why not doing it ad-hoc for ongoing issues)
- Cisco Webex went fine (test run beneficial), minor technical issues
- Probably a good idea: Submission of presentation before the meeting → One person is managing the presentations during the meeting

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