



01 July, 2020, Paks | Pál Tóth, technical director

Lessons learned from Covid-19

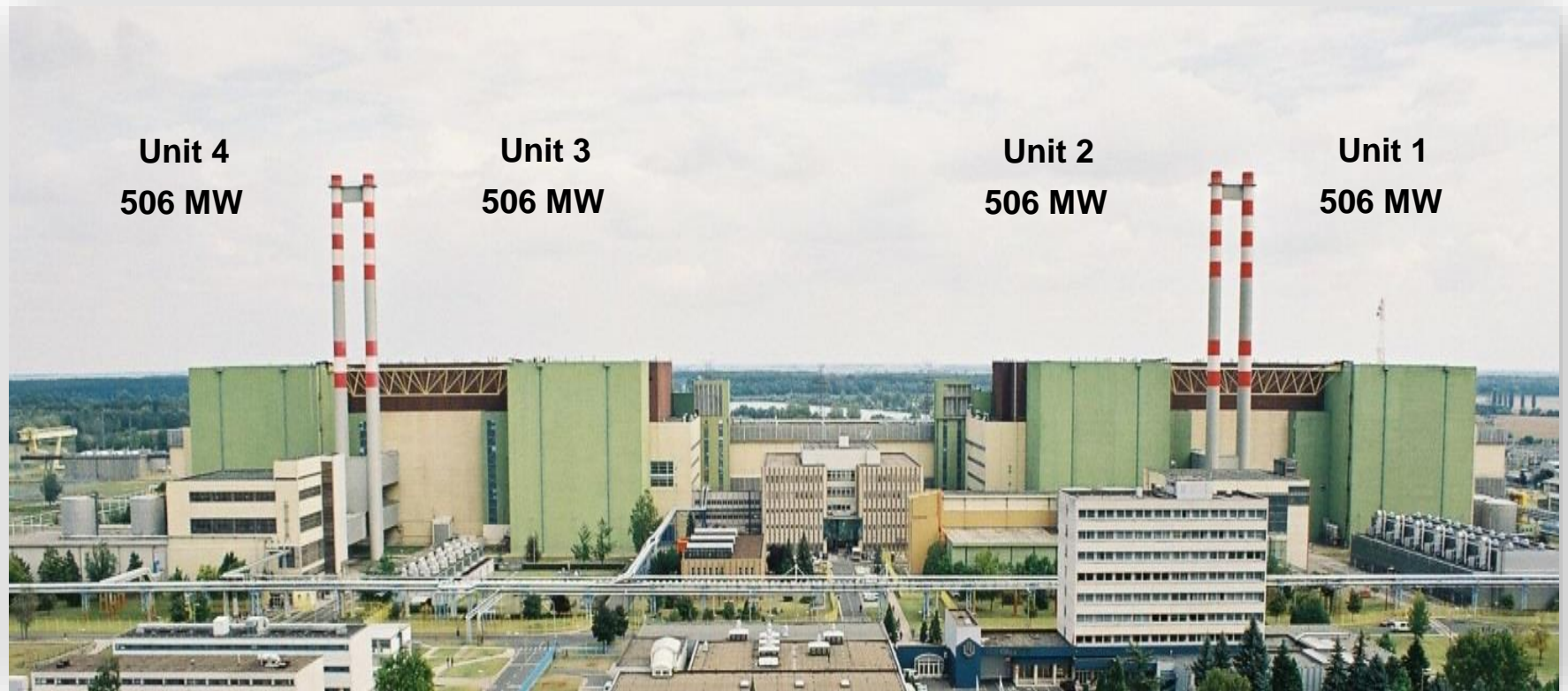
MVM Paks NPP, Hungary

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MVM Paks Nuclear Power Plant



	Start up of the unit	Power up-rate	30-year life time	50-year life time
Unit 1	14/12/1982	19/07/2007	2012	2032 - licenced
Unit 2	26/08/1984	05/12/2008	2014	2034 - licenced
Unit 3	15/09/1986	13/11/2009	2016	2036 - licenced
Unit 4	09/08/1987	28/09/2006	2017	2037 - licenced

Plant Capacity Extension – 2 x 1200 MW



Existing pandemic procedure

- Prior to the Covid-19: existing pandemic procedure for about **8 years** (version 7 was issued at the outbreak of the pandemic – 03.03.2020.).
- Considering basically a potential flu-pandemic situation.
- **Part of the Emergency Preparedness Procedures.**
- Main content:
 - Setting up and the tasks of the Pandemic Management Group (first meeting was on 11. March).
 - Minimum number of key personnel (operational, security, fire fighters, maintenance, engineering, etc.).
 - Limitations for meetings, visitors, travels.
 - Storage and usage of antiviral medicines, disinfection means, masques.
 - Communication (responsibilities, outside organizations, phone numbers).
 - Basic measures at different stages (declared by authority, according to WHO classification) of pandemic.

Areas to be further developed

- This is an EP procedure. But the situation was: we were running the plant almost on every areas.
- Contains only the requirements for a lot of areas which must be further analyzed and ruled in case of a pandemic.
- Does not contain detailed sub-procedures for example:
 - Different scenarios for operation and how to „save” the personnel from infection (travel, accomodation, meal, entering the MCRs, etc.).
 - Evaluation and planning of maintenance and repair works.
 - How to rule the home office.
 - The requirements of electronic document handling.

Measures to maintain the operation

- Most important task was to save the operational personnel in order to maintain the continuous operation of the four units.
- Normally 6 shifts are available.
 - First stage: introduction of 3x12 hour shifts with 3 shifts in standby.
 - A set of procedures (**eight**) were developed to cope with the different scenarios of pandemic circumstances, determining:
 - minimal personnel at different stages of the availability
 - schedule of shift's turnovers
 - shut-down of units (as a final solution; luckily was not the case)
 - entering into the CRs, how to avoid contacts during shift turnovers,
 - all of the saving and support activities to maintain the availability of the operational personnel: travel, accomodation, meal, laundry and cleaning in case of separation, etc.



Measures on other areas of plant life

- More than 200 tasks (evaluations, proposals, procedures, communication, etc.) were performed, determined by the Pandemic Management Group.
- 37 temporary procedures were issued due to the pandemic. Some examples:
 - Home office for the personnel where effective (paid „stay at home” for some others not necessary to be at the plant).
 - Nominal lists of the non-operational personnel ready to perform essential support tasks.
 - Schedule for the „shifts” of the heads and deputy heads of the organizations.
 - Electronic document management on different areas (human, technical, finance, regulatory issues, etc.).
 - Operation of entrances: semi-directional routes, temperature measurement.
 - Temporary rules for training and qualification (licensing) of personnel.
 - Meetings, consultations through Skype (Webex, Teams, etc.).

On-line maintenance and outage

- On-line maintenance of the 3 safety systems on unit 1 and 2 in March and April:
 - We have postponed all of the big engineering changes (ESWS pipelines, distribution cabinets) and dieselgenerator 12 years overhaul.
 - Only the essential maintenance tasks were done.
- Outage of unit 4 in May-June:
 - Engineering evaluation and categorization of all of the planned maintenance, repair work orders (more than 5000) and evaluation of the planned engineering changes (about 40):
 - Non-allowable to postpone (e.g. heat exchangers must be periodically cleaned)
 - Possible risk due to the potential failure of the equipment during the next campaign
 - Can be postponed to the next outage
 - Development of a longer start-up process of the unit due to the possible unavailability of additional operational personnel.
 - Development of detailed procedures for the preparation and performance of the actual works in the field (minimizing the contacts during the work).

We have performed the outage successfully. Only two ECs were postponed, none of the maintenance tasks and the startup process was re-shortened.

Coming back to normal life

- Dedicated procedure to determine the tasks and schedule in 3 phasis.
- 1st phase – 01.06.2020.:
 - Re-establish the 6 shifts for 3x8 hour operation.
 - Start of training for the operational personnel.
 - Start of training for other relevant personal.
- 2nd phase – 22.06.2020.:
 - Making an end to body temperature measurement at the gates.
 - Re-establish the normal operation of entrances (bidirectional go-through).
 - Partial deletion of home office for support personnel (in case there is no effective possibility for HO).
 - Partial opening of the restaurant.
- **3rd phase – 06.07.2020.????:**
 - Finish for home office (but we will use this opportunity in the future)
 - Continuation of training for every positions, including the summer trainees from secondary schools.
 - Re-opening of the Visitor Center.
 - Making an end to almost all of the temporary pandemic procedures: document handling, organizing conferences, meetings, manufacturer visits, etc.
 - Terminating the operation of Pandemic Management Group.

(Not entirely) Coming back to normal life

There will some measures still be effective for a longer period of time (also in a dedicated procedure!):

- precautions during travelling to the plant by bus and car (using masque, keeping distance)
- mandatory disinfection of hands at the entrances and in the restaurant
- periodic cleaning of the dedicated rooms of operational personnel and the restaurant,
- keep distance during travel, training, at the entrance, in the restaurant, etc.,
- minimizing the enters into main control rooms,
- keep the shift change procedure (disinfection of means and papers, keeping distance),
- operation of ventilation and climatic systems,
- prefer to Skype conferences instead of living ones,
- collection of critical wastes: masques, handkerchiefs, towels, etc.
- general precautions in case of suspicious symptoms.



THANK YOU FOR YOUR ATTENTION!

