

Design Modification Support for NPPs



Presented by

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APOSS scope for supporting modification in Krsko NPP

- Independent review of analysis, supporting the design, etc.
- 10CFR50.59 (Authorization of plant changes)
 - Preparation of Safety Evaluation Screening, per ESD-2.303
 - Preparation of Safety Evaluation, per ESD-2.303
- Preparation of STS Change Package (TCP per ESD-2.301)
- Preparation of USAR Change Package (TCP per ESD-2.302)

- Technical Assistance in Preparation of DMP for Replacement of Thermal Insulation Inside Containment 542-RC-L (2007), with SIPRO and WESE
 - part of the plant specific response to NRC Bulletin 2003-01, “Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors”.
 - NEK ESD-TR15/04, „NPP Krsko Response on NRC BULLETIN 2003-01 (“Potential Impact Of Debris Blockage On Emergency Sump Recirculation At PWR“)" (written by I. Basic/I.Vrbanic), required the evaluation and replacement of the non-acceptable piping insulation bellow elevation 98.6m OR potentially exposed to LOCA (HELB) break jet.

- Technical Assistance in Preparation of DMP for RB Recirculation Sump Strainer Replacement (ECCS/CI Suction Strainer) 531-AB-L (2007) with SIPRO and CCI
 - Resolution of USNRC GSI-191 with installation of new recirculation sump strainers sufficient size and appropriate mesh to limit the amount of NPSH loss so that the ECCS and CI pumps will maintain their safety function during a LOCA

- Technical Assistance in Preparation of DMP for NEK's RAO HVAC Modification 475-VA-L (2008) with IBE
 - new ventilation system VA72791 preclude potential unacceptable release of airborne contaminants to the environment providing continuous negative pressure inside the RWSF building relative to the surrounding atmospheric pressure

- Technical Assistance in Preparation of DMP for CZ Chillers Replacement Modification 182-CZ-L (2008) with SIPRO and Worley Parsons
 - replacement of old water-cooled water chillers CZ841CHL-01A, 01B and 01C using prohibited CFC (R-12) refrigerant with the new air cooled water chillers which use optimal refrigerant HCFC R-134a
 - NPP Krsko disengage 150m³/h of the ESW flow and accomplish other operational benefits

- Technical Assistance in Preparation of DMP for NEK's Reactor Coolant Pump Cranes 133-HE-L (2010) with EKONERG
 - new console cranes for maintenance in area RB03A in RB03B with maximal height move up to 111.800m for RCP01 and 111.550m for RCP02

- Technical Assistance in Preparation of DMP for NEK's installation of the automatic cleaning device for travelling water screens 717-CW-L (2010) with EKONERG
 - installation of one automatic cleaning device for travelling water screens (CW) with a purpose to continuous remove the debris from the trash sump in a container

- Technical Assistance in Preparation of DMP for Preventing malfunction of the NEK MOV gate valves caused by Pressure Locking phenomena 751-NA-L (2010) with EKONERG and ENCONET Zagreb
 - Intention of this modification was the prevention of not anticipated malfunction (blockage) of safety related flex wedge gate NEK MOVs caused by potential appearance of the pressure locking phenomena as it is addressed and described in the US NRC GL 89-10 and GL 95-07.

- Technical Assistance in Preparation of DMP for Enhancement of the Emergency Power Supply (599-EE-L) with 3rd EDG (2010-2011) with SIPRO, IBE and Worley Parsons
 - a new Diesel Generator (DG3) and its supporting components housed in a new Seismic Category I Safety Related Emergency Diesel Building (EDB) located south of Decontamination Building
 - DG3 serves as either an Alternate AC (AAC) source to the plant in case of a total loss of on site and off site power or as a substitute to either of the existing plant Emergency Diesel Generators (DG1 or DG2)

- Technical Assistance in Preparation of DMP for Supply And Replacement Of Reactor Vessel Closure Head And Associated Equipment (2009-2010) with SIPRO and Westinghouse
 - the replacement of reactor vessel closure head (RRVCH), including associated equipment and to install a simplified head assembly (SHA)
 - the decision to replace the RVCH was influenced by recent corrosion events involving Alloy-600 penetrations and 82/182 weld material in the reactor vessel closure head penetrations at several facilities

- Technical Assistance in Preparation of DMP for Cooling the IB building on elevation 107m (782-VA-L) (2012) with IBE
 - Redistribution of the air flow from Non-Safety Class and Non-Seismic Category systems VA72331 in VP72611,
 - Opening of the IB wall classified as Seismic Category 1 and rerouting of the IA for Safety Related component PCV3703 and etc.

- Technical Assistance in Preparation of CDP for Safety Upgrade Project of Heat Sink (SU-UHS), 1024-SW-L (2012-2013) with IBE
 - Future additional heat sink (SU-UHS) as a new Alternative Ultimate Heat Sink (AUHS)
 - AUHS it modification will be designed to serve as a backup of ordinary, Ultimate Heat Sink (UHS) in the case that Sava River cannot be used as ultimate heat sink

- Technical Assistance in Preparation of DMP for Waste Manipulation Building (WMB) with associated systems (714-AB-L) (2013) with IBE
 - WMB is used for the disposal of drums during the treatment process, collection and sorting of waste and the production of waste from packaging, the temporary disposal of radioactive materials and their preparation for transport, RAO packaging and compaction, installation of super-compactor, isotope measurements, radiological measurements and radiological monitoring of shipments, storage of a mobile station for the drying of the concentrate, storage of platforms, space for the maintenance of snubbers, handy workshop and warehouse maintenance personnel

- Technical Assistance in Preparation of DMP for replacement of AFW Turbine Driven Pump 1011-AF-L (2014) with IBE
 - Old AFW TDP is replaced with new

- Technical Assistance in Preparation of DMP for Construction Of Krsko NPP Emergency Control Room – Remote Shutdown Capabilities – Phase 1 and 2 (1007-XI-L) (2015-2016) with SIPRO Krško

- Technical Assistance in Preparation of DMP 1027-NA-L (2015) with IBE
 - BB1 building, new underground cable duct and new plateau for mobile equipment

- Technical Assistance in Preparation of DMP 1063-PW-L (2016) with EKONERG Zagreb
 - Groundwater Wells Construction and Level Monitoring due to Hydro Power Plant Brežice Construction

- Technical Assistance in Preparation of DMP for Generator load break switch (GLBS) replacement (1103-GN-L) (2016) with SIPRO Krško

Past Experience



- Technical Assistance in Preparation of DMP 1051-GN-L (2016) with SIPRO Krško
 - for Generator excitation system (without brushless exciter) supply and replacement

- Technical Assistance in Preparation of DMP 1140-RC-L (2016) with SIPRO Krško
 - for implementation of Inadequate Core Cooling Monitoring System

- Technical Assistance in Preparation of DMP 1030-EE-L (2018-2020) with IBE
 - for implementation of BB2 bunker building 2 emergency electrical power supply

- Technical Assistance in Preparation of 1010-AF-L (2018-2020) with ANN/IBE
 - For implementation of Alternative Auxiliary Feedwater System

- Technical Assistance in Preparation of 1005-SI-L (2018-2020) with ANN/IBE
 - For implementation of Alternative Safety Injection System

- Technical Assistance in Preparation of DMP 1024-BS-L (2018-2020) with ANN/IBE
 - Implementation of BB2 bunker building 2 support systems

- Final Independent Evaluation of DMP 1676-MS-L (2020) for Krško NPP
 - FIER for adding isolation AOVs downstream of MOV 20124 and 20125

- Final Independent Evaluation of DMP 1230-SE-L (2022) for Krško NPP
 - FIER for seismic instrumentation upgrade

- Final Independent Evaluation of DMP 1098-TU-L (2022) for Krško NPP
 - FIER for Replacement of HP Turbine
- Final Independent Evaluation of DMP 1230-SE-L (2022) for Krško NPP
 - FIER for seismic instrumentation upgrade