

1st Topical Peer Review
Public event – 22nd November 2018
Brussels

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TG Cables -Aim

Reliable & functional cables are crucial for nuclear safety
Ageing affects cables, potentially causing inoperability

The scope of TRP assessment on Cables included:

All electrical cables important to safety: power (high & medium voltage), I&C, neutron instrumentation cables

All elements of the “cable” commodity (Conductor; Insulation; Armoring/Shield; Jacket, Sheath; Termination)

Identification of methods & criteria for selecting cables for AMP

Processes/procedures for identification of stressors/ageing mechanisms

Monitoring, testing, sampling and inspection activities

Preventive and remedial AM actions; their implementation

TG Cables



TG Cables- Activities

Review process

Thematic group “Cables”: 9 Nat’l experts + rapporteur + PM (11 MS)
Topical expertise for NPPs and RRs available within TG

Detailed review on NARs, 493 (152 from TG) questions raised
Expert evaluation, supplemented by Answers

Candidates for “Issues of relevance for all” identified by TG (for NPP:
25 challenges, 12 GP; for RR: 11 challenges and 4 GP)

For selected Issues (10 NPP+3 RR), write-ups & presentations prepared

During WS, experts raised questions on NAR presentations

In Thematic sessions, “ Issues” presented and discussed

Conclusions reached with input of all participants

Findings presented at the Plenary closing session

With additional info/input, “ Issues” consolidated in TPR report

TG Cables- Findings

Good practices

Ageing within plant's environment to assess degradation

Cables aged within real environment, tested for condition/res. lifetime

TRP expected level of performance

Documentation for AMP for Cables

Sufficient docs to enable reviews in a fully traceable manner

Monitoring and directing all AMP-activities

Cable ageing and performance data are collected&used to support AMP

Systematic (re) identification of ageing degradation mechanisms

DM/Stressors identified & regularly reviewed, no challenge to operability

TG Cables- Findings

TRP expected level of performance

Uncertainties in initial Environmental Qualification

Accuracy of initial EQ assessed against expected/experienced stressors

Determining cables' performance under highest stressors

Cables for AM assessed for DEC condition, throughout lifetime

Detection and prevention of water treeing

Curtail WT, by removing stressors or detecting degradation early

Detecting degradation on inaccessible cables

Selection of appropriate technique for specific circumstances

TG Cables- Conclusions



Assuring operability of cables subject to all enviro/operational conditions in normal operation, postulated accidents and DEC is of paramount importance

TPR found that all NPPs seems to have robust AMP for cables; those need to be vigilantly monitored and modified/improved throughout lifetime (incl. LTO)

New methods&techniques are becoming available, to be applied appropriately

At many RR, no systematic AMP on cables, though elements in place; RRs to implement AMP, reflecting risk significance; learning from NPPs is useful

Large quantities of cables, variation of types/characteristics of cables used, different design concepts and (consequential) lack of details did not support assigning technically-justified country-specific findings for cables

All countries are invited to assess their cable AMP activities against 7 “TPR expected level of performance” and provide appropriate technical justification