



PROJECT ASSESSMENT REPORT			
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Title:	NP/SC 7747 Heysham 1 and Hartlepool power stations boiler spines safety case: temporary change to Technical Specifications 8.2.1. to allow Clayton boiler maintenance		
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Reviewer	██████████	Inspector		
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Request for agreement or acknowledgement under arrangements made under licence condition LC22(1)

EC357561 – NP/SC 7747 Heysham 1 and Hartlepool power stations boiler spines safety case: temporary change to Technical Specifications 8.2.1. to allow Clayton boiler maintenance.

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REPORT

Request for agreement or acknowledgement under arrangements made under Licence Condition (LC) 22(1)

EC357561 – NP/SC 7747 Heysham 1 and Hartlepool power stations boiler spines safety case: temporary change to Technical Specifications 8.2.1. to allow Clayton boiler maintenance.

PERMISSION REQUESTED

The licensee EdF Energy Nuclear Generation Limited (NGL) has requested (Ref. 1) ONR's agreement or acknowledgement under arrangements made under LC 22(1) to NP/SC 7747 Heysham 1 and Hartlepool power stations boiler spines safety case: temporary change to Technical Specification 8.2.1 to allow Clayton boiler maintenance.(Category 1 EC 357561 Revision 000, Proposal Version No.002)

SUMMARY OF SAFETY CASE & CLAIMS

The Category 1 safety case (Ref. 2) outlines the intent of the modification.

Background

Heysham 1 and Harlepool power stations are equipped with three seismically qualified Clayton boilers. Each boiler is connected to the steam header of the auxiliary steam supply system (ASSS) through a single Isolation/non-return discharge valve (*SA/1233).

The ASSS drives the CO₂ evaporator which provides additional CO₂ needed to purge the gas circulator motors for prevention of water ingress. This ensures successful post-trip cooling by forced gas circulation for the case of a boiler spine failure combined with reactor depressurisation – e.g. due to a bottom-line seismic event.

The auxiliary oil fired steam boilers are not qualified for a bottom-line seismic event. Hence the only confirmed source of steam to vaporise CO₂ following a seismic event is the set of Clayton boilers.

Identified issue

Defects were recently identified in two of the (*SA/1233) valves at Heysham 1 which can't be separated from the ASSS steam header. Hence repair/replacement of the valves can only be carried out by isolating all three boilers from the ASSS. This means that for the duration of the repair/replacement work, the protection line for a bottom-line seismic event would be lost. Under the current operating rules, this would result in the need for both reactors to be shut down (Technical Specification 8.2.1).

Proposed resolution

Temporary (72 hours, with an allowable extension by 24 hours) change of Technical Specification 8.2.1 to allow for running one of the reactors at power (the other being in outage) in an Urgent Maintenance State (UMS) without the Clayton boilers. This would allow for the installation of new isolation valves between each Clayton boiler and the ASSS, without losing generation. After the requested period of Technical Specification change has expired and the works have been completed, the station will have means to isolate one Clayton boiler for repair without compromising the ASSS safety function.

The safety case makes two claims:

- The increase in risk due to the short period with all Clayton boilers unavailable is not significant.
- The proposed modification is consistent with the ALARP principle.

ONR view these claims as appropriate for the following main reasons:

- The proposed modification will reduce the post-seismic protection for three to four days in order to recover the protection reliability in the long term.
- The proposed modification is temporary, i.e. it will be applied only once per station and will not be repeated in the foreseeable future.
- The licensee has identified a number of risk mitigations applicable during the period of Clayton boilers unavailability.
- The licensee has carried out a reasonably detailed assessment of five other options for resolution of the issue to select the proposed modification as most appropriate for keeping the station risk ALARP.

BACKGROUND

The purpose of this Project Assessment Report (PAR) is to record ONR's decision not to assess a safety submission from NGL. This decision was taken by the Civil Nuclear Reactor Programme (CNRP) Operating Reactors Sub-Programme Board based on judgement of the safety significance of the licensee's submission and its relative priority compared to other safety significance issues.

ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST

The ONR CNRP Operating Reactors Sub-programme Board has based its decision not to assess NGL's submission on the following factors:

1. There are no significant unresolved nuclear safety issues.
2. There is no novelty/complexity for ONR or NGL.
3. ONR has confidence in NGL's arrangements for undertaking this project.
4. There are no significant reductions in safety margins.
5. There is no conventional safety risk in undertaking project.
6. There are no additional radiological risks in undertaking the project.

These factors have been addressed in the "CNRP Evaluation Check Sheet" (ref 6) A Licence Instrument is required by The licensee's arrangements.

MATTERS ARISING FROM ONR'S WORK

None

CONCLUSIONS

Standard acknowledgement Licence Instruments should be issued to NGL based upon the outcome of the ONR CNRP Operating Reactors Sub-programme Board's review.

RECOMMENDATIONS

The CNRP Operating Reactors Sub-programme Board recommends the issue of a standard acknowledgement Licence Instruments to NGL for Heysham 1 and Hartlepool power station when requested.

REFERENCES

- 1 HYA letter 197/HYA/PMO/CAI, 29-Feb-2016, TRIM: 2016/99528
- 2 EC HYA 357561 / HAR 357570 Nuclear Safety Requirements Specification
TRIM: 2016/81076
- 3 NP/SC 7747 Heysham 1 and Hartlepool power stations Boiler spines safety case: temporary change to Technical Specification 8.2.1 to allow Clayton boiler maintenance, Feb-2016, TRIM: 2016/81097.
- 4 NP/SC 7747 INSA Approval Statement, Feb 2016, TRIM: 2016/99817
- 5 EDF NGL Nuclear Safety Committees - Minutes of the meeting held at Barnwood on 24 February 2016, TRIM: 2016/104422
- 6 CNRP Evaluation Check Sheet TRIM: 2016/110303

LIST OF ABBREVIATIONS

CNRP	Civil Nuclear Reactor Programme
NGL	EDF Energy Nuclear Generation Ltd
ONR	Office for Nuclear Regulation
ALARP	As Low as Reasonably Practicable
ASSS	Auxiliary Steam Supply System