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Office for Nuclear Regulation

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**OFFICE FOR NUCLEAR REGULATION (ONR)
NEW CIVIL REACTOR BUILD
NNB GENCO - WORKSTREAM 10 – NUCLEAR STEAM SUPPLY SYSTEM
MANUFACTURING INSPECTION ARRANGEMENTS**

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EXECUTIVE SUMMARY

Background

EDF Energy Nuclear New Build Generation Company Ltd (NNB GenCo) has applied for a nuclear site licence to install and operate a twin European Pressurised Reactor (EPR) nuclear power station at Hinkley Point C (HPC) in Somerset. As part of ONR's assessment of this application, a review of the prospective licensee's arrangements for compliance with the conditions to be attached to the nuclear site licence has been conducted. This report presents the findings of ONR's assessment of NNB GenCo's compliance arrangements for "Manufacturing Inspection" which forms a sub set of work stream 10, "Nuclear Steam Supply System" (NSSS). The assessment informs a judgement on whether a nuclear site licence should be granted to NNB GenCo to construct, commission and operate a power reactor at Hinkley Point C in Somerset.

The assessment considers the adequacy of the arrangements, and their implementation, for the stage of development that NNB GenCo has reached. It is recognised that the arrangements will continue to evolve as the project proceeds and continuing ONR interaction with NNB GenCo is anticipated to gain assurance that the arrangements remain fit for purpose and that they are being implemented effectively.

Assessment and Inspection work carried out by ONR

This assessment has been informed by a number of level 4 (working level) meetings with NNB GenCo Manufacturing Inspection Department (MID), several observations of their work plus a targeted intervention which took place on 10 to 12 July 2012. The level 4 meetings provided a forum for dialogue and for influencing the development of NNB GenCo's manufacturing inspection compliance arrangements.

NNB GenCo were able to demonstrate during the targeted intervention that their arrangements for compliance with manufacturing inspection have the essential elements as defined in international management system requirements for example, IAEA standard GS-R-3 "The management system for facilities and activities Safety Requirements" and relevant ONR Technical Guides.

The ongoing dialogue between ONR and NNB GenCo in support of this work over the past year has yielded positive benefits in terms of the approach adopted by NNB GenCo and the design of their arrangements.

This assessment concentrated on the development stage of the manufacturing inspection systems to meet international management system requirements. Objective evidence of compliance to the documented systems was sought to confirm that key elements of the processes are, or can be, implemented. Other processes that form parts of management systems also inform this assessment; for example, interface with the architect engineer (AE), quality management systems, procurement of goods and services, records management and document control. These are the subject of other Assessment Reports.

In the targeted inspection, and in level 4 interventions and meetings, I have found the manufacturing inspection systems arrangements and level of resource put in place to be adequate for this stage of the project. Processes have started to be implemented on long lead items (LLI) large forgings for the NSSS. ONR inspectors have witnessed the implementation of assessment and inspection requirements at AREVA and have observed monthly interface meetings with the architect engineer (AE) CEIDRE, CNEN and MID with no significant concerns identified against MID performance or processes.

The HPC project lifecycle has a number of key phases such as: design, manufacture, construction, commissioning and operation, shutdown and decommissioning. The manufacturing inspection compliance arrangements will need to be robust enough to cope with the varying demands of scale, complexity and technological challenges. As the project advances there will be increased users across a range of different geographical locations, and ONR will need to seek assurance that arrangements continue to develop appropriate to project lifecycle and that they are implemented effectively.

Matters arising from ONR's work

I have not identified any significant findings that I consider must be completed prior to nuclear site licence (NSL) granting. However I identified an action relating to lead assessor training requirements during the targeted intervention which will be tracked to completion via normal level 4 meetings. I have also identified several observations in the targeted intervention for consideration by NNB GenCo MID. I will reassess progress on these subjects in future interventions between ONR and NNB GenCo MID.

Conclusion

This report presents the findings of my assessment of NNB GenCo compliance arrangements, and their implementation, for Manufacturing Inspection.

I am satisfied that NNB GenCo's compliance arrangements for manufacturing inspection have adequately met international management systems standards and addressed ONR expectations. Implementation checks I and other ONR inspectors have carried out confirm an adequate level of oversight inspections by MID.

Recommendations

My recommendations are as follows:

1. NNB GenCo's arrangements for compliance with manufacturing inspection requirements, and their implementation of these arrangements, should be considered adequate to support a decision by ONR to grant a nuclear site licence for Hinkley Point C.
2. ONR should continue to monitor and influence the continued development of NNB GenCo's arrangements sampling implementations.

LIST OF ABBREVIATIONS

ALARP	As low as is reasonably practicable
BSL	Basic Safety level (in SAPs)
BSO	Basic Safety Objective (in SAPs)
BMS	(ONR) How2 Business Management System
HSE	Health and Safety Executive
IAEA	International Atomic Energy Agency
LC	Licence Condition
ONR	Office for Nuclear Regulation (an agency of HSE)
PCER	Pre-construction Environment Report
PCSR	Pre-construction Safety Report
PID	Project Initiation Document
PSA	Probabilistic Safety Assessment
PSR	Preliminary Safety Report
RGP	Relevant Good Practice
SAP	Safety Assessment Principle(s) (HSE)
SFAIRP	So far as is reasonably practicable
SSC	System, Structure and Component
TAG	Technical Assessment Guide(s) (ONR)
TSC	Technical Support Contractor
WENRA	Western European Nuclear Regulators' Association

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1 INTRODUCTION

1.1 Background

1 This report presents the findings of ONR's assessment of EDF Energy Nuclear New Build Generating Company Ltd's (NNB GenCo) manufacturing inspection department. The assessment was undertaken in accordance with the requirements of the Office for Nuclear Regulation (ONR) How2 Business Management System (BMS) procedure reference; PI/FWD, (Ref. 1). The ONR Safety Assessment Principles (SAP), (Ref. 2), together with supporting Technical Assessment & Inspection Guides (TAGs & TIGs) (Ref. 3), have been used as part of this assessment.

1.2 Scope

2 The scope of this report judges the adequacy of NNB GenCo's arrangements for compliance with those aspects of LC17 relating to manufacturing inspection management system requirements. The assessment has been undertaken before the NNB GenCo arrangements are fully developed and fully stressed but at a point when sufficient progress has been made to be able me to assess their adequacy for this stage of the project. The report sets out the activities that ONR has carried out associated with this sub work stream, which forms part of work stream number 10 (WS 10) "Nuclear Steam Supply System" on the subject of Manufacturing Inspection, up to present. The conclusions and work stream findings will contribute to informing ONR's decision on whether to grant a nuclear site licence for Hinkley Point C (HPC).

1.3 Methodology

3 The methodology for the assessment follows ONR BMS document PI/FWD, process (Ref. 1), in relation to mechanics of assessment within ONR.

4 This assessment has been focussed primarily on manufacturing inspection management systems that meet requirements as detailed for example in; IAEA GS-R-3 (ref 5) and ONR TAGs 049 & 077 and TIG 017 (ref 3).

5 A targeted compliance intervention was carried out between 10 and 12 July 2012 to confirm the adequacy of process compliance and implementation.

6 An important consideration during ONR assessment is our expectation that the applicant licensee should be able to demonstrate that it is managing for safety effectively for relevant processes at the point when it is granted a nuclear site licence.

2 ASSESSMENT STRATEGY

7 The assessment strategy for manufacturing inspection is set out in this section. This identifies the scope of the assessment and the standards and criteria that have been applied.

8 This assessment judged NNB GenCo's manufacturing inspection arrangements using established standards and guidance as outlined in several international standards and supported by ONR guides. The NNB GenCo management system identifies that they comply with several international standards which are taken into account in their documented processes. Compliance to NNB GenCo's own manufacturing inspection processes as documented in their procedures and instructions was also assessed. (See section 6 reference 9 for process documents assessed).

9 ONR and NNB GenCo have engaged in a series of Level 4 meetings to discuss the arrangements NNB GenCo have been developing to comply with relevant standards and requirements relating to manufacturing inspection. These culminated in an ONR intervention to assess the status of the arrangements and their implementation as part of the licensing process. This intervention was an opportunity for NNB GenCo to demonstrate how their arrangements are structured and how the discussions at the Level 4 meetings have influenced their development.

2.1 Standards and Criteria

10 The relevant standards and criteria adopted within this assessment are principally the Safety Assessment Principles (SAPs), (Ref. 2), internal ONR Technical Guides, (Ref. 3), relevant national and international standards and relevant good practice informed by existing practices adopted on UK nuclear licensed sites. The key SAPs and relevant technical guides are detailed within this section. National and international standards and guidance have been referenced where appropriate within the assessment report. Relevant good practice, where applicable, has also been cited within the body of the assessment.

2.2 Safety Assessment Principles

11 The key SAPs applied within the assessment are included within Table 1 of this report.

- SAP MS.1 MS.2 and MS4 "Leadership and management for safety".
- EMC 17 and 20 "Engineering principles: integrity of metal components and structures: general".

2.2.1 Technical Inspection Guides

12 The following Technical Inspection Guides have been used as part of this assessment, (Ref. 3):

- T/AST/049 "Licensee use of Contractors and Intelligent Customer Capability".
- T/AST/077 "Procurement of Nuclear Safety Related Items or Services".
- T/INS/017 "Management Systems".

2.2.2 National and International Standards and Guidance

13 The following international standards and guidance have been used as part of this assessment (Refs 5):

- IAEA GS-R-3 "The management system for facilities and activities";

- IAEA GS-G-3.1 “Application of the management system for facilities and activities”;
- IAEA S-G-3.5 “The management system for nuclear installations”;
- BS-EN-ISO 9001:2008 “Quality Management Systems – Requirements”.

2.3 Use of Technical Support Contractors

14 No supporting contractors were used.

2.4 Integration with other Assessment Topics

15 This report contains an assessment of the adequacy of NNB GenCo’s manufacturing inspection process which is linked to the procurement of goods and services process for the assessment qualification of contractors pre tender and during contract execution for assessment and inspection of the plant or services procured.

2.5 Out-of-scope Items

16 There are no out of scope items subject to MID retaining intelligent customer responsibilities for all UK EPR manufacture safety significant goods and services.

3 LICENSEE’S SAFETY CASE

17 NNB GenCo has not provided its compliance arrangements for manufacturing inspection and Licence Condition 17 management systems as a formal safety case; rather they have been presented as a suite of documentation to support the targeted intervention inspection carried out in July 2012. That intervention has formed the basis for this overall assessment. Documents provided by NNB GenCo are recorded in section 6 reference 9, and access to others was made available by NNB GenCo.

4 ONR ASSESSMENT

18 This assessment has been carried out in accordance with ONR How2 BMS document PI/FWD, “Permissioning Process” (Ref. 1).

19 This assessment was carried out in the period prior to nuclear site licence (NSL) granting. The assessment was on the subject of manufacturing inspection of safety significant goods and services and forms part of work stream 10, nuclear steam supply system (NSSS). It is considered at this stage to be part of NNB GenCo’s arrangements for complying with licence condition 17, management systems.

4.1 Scope of Assessment Undertaken

20 The scope of my assessment was to confirm the adequate development of manufacturing inspection management systems and confirm implementation of the developed processes. The assessment sought assurance that adequate arrangements that meet international standards are in place for this stage of the project.

21 I sought objective evidence of compliance to the manufacturing inspection management systems requirements to confirm that key elements of the processes are or can be implemented when required.

22 Procedures used during the assessment are as identified in section 6 ref 9. All procedures can be found on the NNB GenCo document control system called Business Collaborator (BC).

4.2 Assessment strategy

23 The strategy during this period has been to continue to adopt an open and transparent working relationship, offering constructive advice and guidance in line with ONR's guidance to its Inspectors and commensurate with any requirements of national and international standards and good practice. This has been achieved via Level 4 meetings, which have been held at NNB GenCo's London office. (See Annex 1 for details of meetings held so far). These meetings have been scheduled in conjunction with representatives of the Environment Agency (EA). Several observations of MID implementation of their processes were made by ONR inspectors.

24 A targeted inspection was carried out between the 10 and 12 July 2012 at NNB GenCo's London office to confirm the adequacy of processes and to sample compliance - refer to report reference: ONR-NNB-GenCo-IR-12-111, trim reference 2012/311406.

4.3 Assessment

25 Manufacturing inspection (identified in industry as quality control) department has two main functions; the assessment qualification of contractors' management systems and oversight inspection of products and processes to ensure that they meet contract requirements.

26 As well as attendance at bi-monthly level 4 meetings, ONR inspectors have witnessed the implementation of assessment and inspection requirements at AREVA and have observed monthly interface meetings with the architect engineer (AE) EDF SA CEIDRE, CNEN and MID with no significant concerns identified against MID performance or processes (see annex 1 for details of reports).

4.3.1 Assessment findings

27 We recognise that the documented processes have been developed in a short space of time to enable controlled engagement on long lead items (LLI) which are predominantly for large forgings for the NSSS. Work on LLIs has been split into two main manufacturing centres in France and Japan. Process development has continued in parallel with this work. The interface specifications between the architect engineer (AE) and NNB GenCo MID also have only been in place and agreed between the two parties for some months. This has resulted in the processes as documented not as yet being stressed fully, but I judge this to be sufficient at this stage to enable my assessment to be carried out.

28 There has been a significant amount of work completed in developing new processes and understanding the relationships internally with other interfacing departments and externally with, for example, the AE and the suppliers. It is also recognised that significant work has been completed on supplier assessments and manufacturing inspections. For manufacturing inspection MID are the lead reviewers of the work controlling manufacturing quality plans. These are reviewed by several groups in NNB GenCo with comments and approval being coordinated on the document management system BC. Management system assessments of contractors have been approached proactively by MID with findings identified being closed out in a reasonable time.

29 During the targeted inspection and in our level 4 meetings I have found that the MID arrangements put in place to be rigorous and robust and consider them to be fit for purpose. Objective evidence of compliance to the documented process was readily available and was supplied to ONR when requested. All those interviewed understood their process, were enthusiastic and know the importance of compliance to the approved documented processes.

- 30 Several works visits on LLI and interface meetings between MID and the AE have been observed by ONR inspectors. No significant findings have been identified against MID processes or their performance. The relationship between NNB's MID and the AE CEIDRE and CNEN functions appeared to be mature, and the interface meetings forum will be an extremely useful mechanism for MID to monitor CEIDRE's inspection activities for the HPC project when contract activity increases post-FIDD (Final Investment Decision Date). I consider that MID understands what information it requires to act as an 'intelligent customer' for the inspection service carried out on its behalf by CEIDRE.
- 31 I have found NNB GenCo's manufacturing inspection approach to be reasonable with no cause for concern for what has been developed and implemented at this point in the project. The quality of staff engaged so far in the department has met and in some instances exceeded expectations. However, key positions in the department are held by expats from France which has previously been identified as an area of future concern with succession management and continuity of the MID management if people rotate back to their parent group. Difficulty has been experienced by MID in getting UK people of the correct calibre and experience, particularly for the supplier assessment roles. Several graduates are now being trained for the inspection function in a programme shadowing CEIDRE inspectors.
- 32 I have not identified any findings that I consider must be completed prior to nuclear site licence (NSL) granting.
- 33 Several positive points were noted during the targeted inspection as follows;
- Several external management systems assessments have looked at the MID process developments and their implementation which has helped in forming the current documented processes.
 - The approach to competency assessment was considered to be good as it identifies minimum qualification requirements for the different departmental positions. Some key members of the group far exceed the minimum requirements for qualification training and particularly in the experience category. This group naturally will act as mentors for less experienced persons who join the group and eventually aid succession management.
 - The assessment group has been proactive with its choice of assessments of contractors, particularly contracts awarded by the AE; this will aid intellectual customer (IC) overview, understanding of how suppliers perform and develop contact interfaces.
 - The group take a key lead document reviewer role for manufacturing inspection work control documents for safety significant plant and others and are turning around documents to an approved state prior to work scheduled start. A similar role will be required for site construction work control documents.
 - The group are taking a lead role for NNB GenCo in the feedback of root cause analysis and lessons learnt for defective forgings identified from UK EPR and other contracts.
- 34 One action was identified in the targeted inspection that I will track to completion in our level 4 meetings with NNB GenCo. Reference 1428-EDF is due for completion in December 2012
- Assessor qualification requirement identified in process document reference; NNB-PCP-INS-000139 "MID Lead Auditor Qualification", could not be demonstrated at

the time of the assessment for each lead assessor for attendance at an IRCA certified course for management system lead auditors (assessors) to current international standards for example, BS-EN-ISO 9001:2008 or 2000 version + a transition course. Certificates or certified copies have not been retained as objective evidence of compliance. The lead assessor training requirements are considered to be a minimum requirement for lead assessors.

35 Observations have been recorded from the targeted inspection notes. These observations were relayed to NNB GenCo in the closing meeting. NNB GenCo MID should consider these and take action as they see fit to prevent those becoming actions in future interventions. The observations and NNB GenCo's response to them will be monitored in future level 4 meetings and interventions. level 4 meetings.

■ Observation 1

During the intervention minor differences were identified between the documented processes and actual practice. Process procedures and instructions should be updated if necessary to ensure a consistent approach. Rigorous implementation of the approved process should be implemented to ensure compliance. It is noted that several changes have been identified by MID and upcoming issue of the project execution plan (PEP) potentially may change some documented processes.

■ Observation 2

MID early involvement with procurement contract information would allow them to better plan assessments, inspections and resource availability development among other things. Late requests for assessment of suppliers from procurement and or project managers (formally delivery managers) compresses the available time to plan and complete assessments. Early detail of invitation to tender (ITT) listing, preferred bidder decisions and access to documents such as GPPS's and ITT's would help. MID and procurement should develop this interface.

■ Observation 3

Generic contract package FIDIC quality control requirements identified in appendices for example, appendix 12 and 18 do not appear to have been formally reviewed by MID. The process as witnessed in this intervention identifies responsibilities for MID based on what others perceive MID do and not what MID are responsible for or can deliver. A danger is that generic requirements or variability of requirements will be built into all FIDIC contracts without sufficient resource to deliver the expectation.

■ Observation 4

Supplier summary qualification reports and the classification of the contractor were not wholly consistent with the conclusions of the supplier assessment reports.

■ Observation 5

The AE perform assessments of suppliers for the UK-EPR extent of supply as part of the supplier pre contract assessments reports, copies of which MID have access to. Competency or SQEP records of those performing the assessments on behalf of NNB GenCo were not available at the time of this intervention. The independent assessment group IACO perform assessment of the AE in accordance with a schedule of assessments; these points should form part of their assessment of the AE. The demonstration of SQEP will be followed up in other ONR level 4 interventions.

- Observation 6

Copies of contractors' management systems (MS) arrangements for example, project MS (quality) manuals were not available for review by MID. These are made available to MID when assessments are performed at the manufacturing works. During the site construction phase the review and approval of specific contractor management systems arrangements, for example, for HPC site, may be essential to ensure site processes are documented and interface with requirements of the project team's quality, work control, safety, location and culture requirements. NNB GenCo might usefully consider identifying site contractor and sub contractor contract specific MS manuals (quality arrangements) on lists of deliverables (LODs).

- Observation 7

MID is currently part of the NNB GenCo engineering department. MID are intended also to have responsibilities for the independent third party inspection agency (ITPIA). Consideration should be given to how independence from programme and production is maintained for MID in their quality control and ITPIA management role. Consideration should be given to an integrated quality department free from production that incorporates all the quality functions, QA/QC, identified within the organisation.

4.4 Comparison with Standards, Guidance and Relevant Good Practice

36 I consider that NNB GenCo's processes are clearly defined and documented and have the essential features expected from a manufacturing inspection management system as defined in international management systems standards and technical assessment guides (Ref 3).

37 I consider that industry good practice has been taken into account in development of the MID processes and that these have been incorporated in the documented procedures now being followed.

4.5 IIS Rating Manufacturing Inspection Management Systems (LC 17)

38 NNB GenCo manufacturing inspection department has made significant progress over the past year which has been reflected in the Level 4 meetings, targeted inspections at manufacturing works and the recent targeted intervention in July. Manufacturing Inspection processes are now in place and internal and self assessment exercises have been completed with findings incorporated in the process. In recognition of the success that has been achieved and the strong positive forward momentum an **IIS rating of 3 (adequate) is allocated**.

5 CONCLUSIONS AND RECOMENDATIONS

5.1 Conclusions

39 NNB Generation Company Ltd (NNB GenCo) has applied for a nuclear site licence to install and operate a twin EPR nuclear power reactor at Hinkley Point C in Somerset. As part of ONR's assessment of this application, a review of the prospective licensee's arrangements for compliance with the conditions to be attached to the nuclear site licence has been conducted. This report presents the findings of ONR's assessment of NNB GenCo's compliance arrangements for those aspects of Licence Condition 17 (LC17) relating to work carried out by the Manufacturing Inspection Department (MID). The assessment considers the arrangements themselves, which are documented in process and procedural documentation; and the level of implementation up to the end of July 2012. The assessment has been based on the requirements set out in established standards and guidance including GS-R-3, BS-EN-ISO ISO 9001 and the ONR Technical Guides T/AST/049 and /077.

40 The assessment considers the adequacy of NNB GenCo's arrangements, and their implementation, for the stage of development that they have reached at this point. It is recognised that the arrangements will continue to evolve as the project proceeds, and continuing ONR interaction with NNB GenCo is anticipated to gain assurance that the arrangements remain fit for purpose and that they are being implemented effectively.

41 NNB GenCo has made significant progress in building up resource and processes in the last year or so. They have designed, documented and are beginning to implement adequate manufacturing inspection arrangements for this stage of the project. They are aware of the need to review and develop arrangements as the project progresses. The requirement to develop arrangements should reduce in time as the HPC project reaches maturity.

42 During the July targeted intervention NNB GenCo demonstrated their systems for manufacturing inspection from the management systems manual (MSM) through the MID manual to process procedures and instructions. The MID commitment to compliance and developing adequate arrangements that are fit for purpose was evident.

43 The granting of a site licence will enhance rather than diminish ONR's ability to influence future progress on developing further the arrangements. The arrangements are judged to be adequate for this stage of the project and will provide a sound platform for development as the project proceeds.

44 To conclude, I am broadly satisfied that NNB GenCo's compliance arrangements for manufacturing inspection are addressing the expectations of relevant ONR guidance and international standards. The arrangements and their implementation are still evolving, and there is a strong forward momentum within the company to carry this development forward. This gives confidence that they are sufficiently far advanced for this stage of the project.

5.2 Recommendations

45 My recommendations are as follows;

- NNB GenCo's arrangements for compliance with manufacturing inspection and their implementation of these arrangements should be considered adequate to support a decision by ONR to grant a nuclear site licence for Hinkley Point C.
- ONR should continue to monitor and influence the continued development of NNB GenCo's arrangements.

6 REFERENCES

1	<i>ONR How2 Business Management System</i> . Permissioning – Purpose and Scope of Permissioning, PI/FWD Issue 3. HSE. www.hse.gov.uk/nuclear/operational/assessment/index.htm .
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6	BS-EN-ISO 9001:2008 "Quality Management Systems – Requirement
7	BS EN ISO 14001:2004 "Environmental management systems. Requirements with guidance for use";
8	NNB-OSL-MAN-000004. Version 2. "Management Systems Manual".
9	NNB GenCo procedures access via NNB GenCo Business Collaborator (BC) NNB-PCP-MAN-000001, MID Manual NNB-PCP-PRO-000055, Supplier Qualification NNB-PCP-PRO-000088, Supplier Management System Audit NNB-PCP-PRO-000089, Supplier Management System Desk Review NNB-PCP-INS-000140, Supplier audit follow up NNB-PCP-INS-000139, MID Lead Auditor Qualification NNB-PCP-SPE-000003, Interface specification with AE "Supplier Assessment" NNB-PCP-PRO-000057, Manufacturing Surveillance

NNB-PCP-PRO-000082, Manage Site Surveillance process

NNB-PCP-INS-000134, Manufacturing Surveillance Instructions

NNB-PCP-TOR-000001, AE/NNB Monthly Forum TOR

NNB-PCP-SPE-000004, Interface specification with AE "In-shop Surveillance

NNB-PCP-REP-000103, Interface specification with AE "CEIDRE Doctrine"

NNB-PCP-REP-000102, Interface specification with AE "UK Addendum"

NNB-OSL-SPE-000013, Interface specification with AE "Manage Non Conformances"

NNB-OSL-PRO-000028, Manage Non Conformance

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Table 1

Relevant Safety Assessment Principles Considered During the Assessment

SAP No.	SAP Title	Description
MS.1	<p>Leadership and Management for Safety</p> <p>Paragraph 51: The QMS should be based on national and international standards or other defined documents and should be reviewed periodically. Consideration should be given to the adoption of a single company wide management system ensuring that the principle of continuous improvement is maintained.</p>	<p>Leadership</p> <p>Directors, managers and leaders at all levels should focus the organisation on achieving and sustaining high standards of safety and on delivering the characteristics of a high reliability organisation.</p>
MS.2	<p>Leadership and Management for Safety</p> <p>Paragraph 52 An organisation needs adequate human resources, which means having the necessary competences and knowledge in such numbers so as to maintain the capability to manage safety reliably at all times, including during steady state conditions, periods of change and emergency situations..</p>	<p>Capable organisation</p> <p>The organisation should have the capability to secure and maintain the safety of its undertakings.</p>

Table 1

Relevant Safety Assessment Principles Considered During the Assessment

SAP No.	SAP Title	Description
MS.4	<p>Leadership and Management for Safety Paragraph 67 Learning should occur throughout the organisation and information should be collected from inside the organisation from a number of sources including:</p> <ul style="list-style-type: none"> a) workers (eg about strengths, weaknesses, deviations and errors in safety procedures and processes); b) monitoring, review and audit of the implementation and effectiveness of safety strategies, policies, plans, goals, standards, processes and procedures; c) monitoring of plant, systems and processes; d) testing and validation of safety procedures under normal and emergency situations; e) the inspection of sites, facilities, plant and equipment and other operational feedback systems; f) the investigation of accidents and incidents specifically to ascertain immediate and underlying causes, including organisational, safety management and cultural factors; g) self assessments; and h) external assessments. 	<p>Learning from experience Lessons should be learned from internal and external sources to continually improve leadership, organisational capability, safety decision making and safety performance.</p>

Table 1

Relevant Safety Assessment Principles Considered During the Assessment

SAP No.	SAP Title	Description
EMC.17	Engineering principles: integrity of metal components and structures: general	<p>Examination during manufacture</p> <p>Provision should be made for examination during manufacture and installation to demonstrate the required standard of workmanship has been achieved.</p>
EMC.20	Engineering principles: integrity of metal components and structures: general	<p>Records</p> <p>Detailed records of manufacturing, installation and testing activities should be made and be retained in such a way as to allow review at any time during subsequent operation.</p>

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Annex 1

Summary of Meetings (inc teleconferences) Held

Date	Location	Topic	Contact Report TRIM Ref no
19/10/11	Qube	Level 4 Meeting: Manufacturing Surveillance (Quality Control). ONR-NNBGenCo-IR-11-197	2011/591184
21/12/11	Qube	Level 4 Meeting: Manufacturing Surveillance (Quality Control). ONR-NNBGenCo-IR-11- 255	2012/50822
09/03/12	Qube	Level 4 Meeting: Manufacturing Surveillance (Quality Control). ONR-NNBGenCo-IR-12-061	2012/156867
16/05/12	Qube	Level 4 Meeting: Manufacturing Surveillance (Quality Control). ONR-NNBGenCo-IR-12-093	2012/253859
13/06/12	Qube	Observation of MID Monthly interface meeting with AE ONR-NNBGenCo-IR-12-083	2012/274027
20/06/12	Qube	Level 4 Meeting: Manufacturing Surveillance (Quality Control). ONR-NNBGenCo-IR-12-123	2012/259059
10 to 12 July 12	Qube	Intervention Inspection of MID processes and their implementation. ONR-NNB GenCo-IR-12-111	2012/311406