



UK EPR GDA PROJECT				
UK EPR	Title: Resolution Plan for GI-UKEPR-CI-01			
	RP unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 1 of 19
Approved for EDF by: A. PETIT		Approved for AREVA by: C. WOOLDRIDGE		
Name/Initials	Date	30/06/2011	Name/Initials	Date
				30/06/2011

Resolution Plan Revision History

Rev.	Description of update	Date issued
0	Initial issuance	30/06/2011

1.0 GDA ISSUE

GDA Issue Title	Main Assessment Area	Related Assessment Area
Design Information for Non-Computerised Safety System Required	C&I	None

GDA Issue	Absence of adequate C&I architecture. The proposal to address the issues raised in RI 02 includes provision of a hardware based backup system known as the NCSS. Detail of the NCSS design has not been made available within GDA. EDF and AREVA have provided a commitment that the NCSS will be implemented in diverse technology to the computer based protection systems. A Basis of Safety Case for the NCSS is required for GDA.
------------------	--

2.0 OVERVIEW OF SCOPE OF WORK

In response to RI-UKEPR-02, EDF and AREVA proposed a C&I architecture enhancement through the addition of a class 2 diverse Non-Computerised Safety System (NCSS). EDF and AREVA have outlined the diversity principles which will be used to guide the selection, design and development of this system but no detailed information has yet been made available.

EDF and AREVA will present details of the technology platform selected for implementation of the NCSS, along with specific details of requirements for the design of the UK EPR NCSS.

EDF/AREVA will provide a Basis of Safety Case (BSC) for the NCSS that sets out the applicable standards and safety principles and justifies that the processes of design, development, implementation, verification and validation comply with these requirements.

Where referenced supporting evidence is not available at the time of writing, the BSC will include

UK EPR	<i>UK EPR GDA PROJECT</i>			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 2 of 19

details of when the evidence will be available.

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 3 of 19

3.0 GDA ISSUE ACTIONS AND RESOLUTION PLAN DELIVERABLES

3.1 Action GI-UKEPR-CI-01.A1

Action I/D	Action Description
GI-UKEPR-CI-01.A1	<p>EDF and AREVA to provide a Basis of Safety Case (BSC) that includes substantiation of the design of the Class 2 Non-Computerised Safety System. An action plan for completion and supply of detailed evidence supporting the basis of safety case document should also be supplied. The BSC should consider:</p> <ul style="list-style-type: none"> • The safety principles and standards (i.e. company, national and international) that EDF and AREVA has adopted for the NCSS. • The identification of arguments for assigning safety functions and performance requirements to the NCSS in compliance with these principles and standards. • The basis of the safety case should demonstrate how the safety principles and standards adopted have or will be complied with at each step of the development and deployment of the NCSS. • It should outline why the NCSS is considered to be fit for purpose and demonstrate how all of the safety principle, standards, functional and performance requirements will be satisfied. • It is expected that these demonstrations and examinations would identify the detailed evidence supporting the claims and arguments. • The BSC is also expected to identify any supporting analysis such as hazards analysis, FMEAs, reliability analysis, environmental qualification and link them to claims made and the demonstration of fitness for purpose of the systems. • It is expected that in undertaking this exercise compliance with ONR's SAPS would also be demonstrated with deviations justified. • The BSC should describe the system, breaking it down such that the major elements can be identified (such as input/output and logic cards). The BSC should include the demonstration of adequacy for each of these elements (including identification of revisions) as well as the NCSS as a whole. • The BSC should set down the production excellence arguments and identify the independent confidence building measures. • The BSC should describe the project QA arrangements, e.g. ISO 9001, this should include a clear description of the interface to the NCSS supplier (and any other suppliers). The BSC would also be expected to outline the NCSS supplier QA arrangements. • The BSC should identify the pedigree of any COTS, pre-developed components as this might influence how they are justified for use. • The BSC should demonstrate that the management arrangements for COTS/pre-developed components has been and remains adequate. This demonstration should cover, amongst others, configuration

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 4 of 19

	<p>management, collection of Operating Experience and any changes along with their cause and how the change was implemented (capturing the evolution of the QA regime and processes by which this has been done).</p> <ul style="list-style-type: none"> The BSC should address the process by which the individual components will be brought together and integrated as a system. It is anticipated this would be detailed in the BSC (or other documents referenced from the BSC) covering factory and commissioning testing as well as environmental qualification work that might be called upon to support system justification. For completeness, it should also address through life operating and maintenance, for example identifying the scope and frequency of any proof testing that is required. Should elements of the implementation of the NCSS system make use of complex electronic devices e.g. FPGAs (but not microprocessors) then the basis of the safety case would be expected to demonstrate how the design and implementation of the NCSS complies with relevant EDF/Areva safety principles and standards. The basis of safety case should also identify how ND guidance, for example, that contained in ESS.21 which requires the safety demonstration to include measures such as independent third party assessment (para. 355) will be addressed. Given the programmable nature of such complex devices, the justification should draw on elements of ESS.27 and the special case procedure with an argument of excellence in production and independent confidence building in respect of the systems fitness for purpose. It is expected, as above, that the demonstration would identify the detailed evidence supporting the claims and arguments made. <p>For further guidance see also T15.TO1.46 in Annex 5, T16.TO1.02 in Annex 6, T17.TO1.24 in Annex 7 and T20.A1.2.4 in Annex 9 of Step 4 C&I Division 6 Assessment Report, No. 11/022 Revision A (DRAFT).</p> <p>With agreement from the Regulator this action may be completed by alternative means.</p>
--	---

3.1.1 Deliverables already submitted to ONR/EA in response to GI-UKEPR-CI-01.A1

The following documents will form part of the justification of the NCSS (Basis of Safety Case). They have been provided in response to RI-UKEPR-02 and/ or RO-UKEPR-82 but have not yet been assessed by ONR.

Title and reference of the document	Reference of the transmission	Date of submission
Safety requirement for NCSS NEPS-F DC 555 B <i>The document presents the safety requirements for the UK EPR Non-Computerised Safety System (NCSS). It</i>	ND(NII) EPR00708R	07/01/2011

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 5 of 19

Title and reference of the document	Reference of the transmission	Date of submission
<i>specifies the safety requirements for the safety functions, the safety classification redundancy, diversity and independence.</i>		
EPR UK functional requirements on NCSS I&C functions NEPR-F DC 551 B <i>The document lists the safety functions that are implemented in the Non-Computerised Safety System (NCSS). It specifies the physical measurements, the processing and the actions that are triggered by the NCSS</i>	ND(NII) EPR00389R	06/05/2010
Probabilistic Justification of NCSS NEPS-F DC 192 A <i>The document is a probabilistic justification of the functional coverage of the Non-Computerised Safety System (NCSS) which demonstrates that an acceptably low level of risk is achieved by the UK EPR following the integration of the NCSS in the I&C architecture</i>	ND(NII) EPR00356R	09/04/2010
Principles to be used for the implementation of the NCSS for emergency operating procedures ECEP100659 A <i>The document describes how the safety functions implemented in the Non-Computerised Safety System are integrated in the emergency procedures</i>	ND(NII) EPR00346R	31/03/2010
NCSS system description (pilot study) NLN-F DC 192 B <i>The document provides a description of the I&C architecture of the Non-Computerised Safety System</i>	ND(NII) EPR00459R	12/08/2010
NCSS – Diversity criteria PELL-F DC 11 B <i>The document defines the requirements for NCSS diversity from the Protection System and from the Safety Automation System.</i>	ND(NII) EPR00718R	18/01/2011
Requirements for NCSS I&C platform PTI DC 2 B <i>The document defines the technical requirements to be fulfilled by the non-computerised I&C platform.</i>	ND(NII) EPR00726R	07/01/2011

3.1.2 Planned submissions in response to GI-UKEPR-CI-01.A1

3.1.2.1 Description of Scope of Work

In GDA Steps 3 & 4, EDF AREVA proposed a C&I architecture enhancement through the addition of

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 6 of 19

a class 2 Non-Computerised Safety System (NCSS). This Design Change Modification is managed through the UK EPR GDA project Design Change process

The description of, and rationale for, the change have been provided in GDA step 4, including a set of documents related to the safety definition of the NCSS (see section 3.1.1).

Detailed design information about the implementation of the system has to be provided to address GI-UKEPR-CI-01.

The Scope of Work for the resolution plan to the GI-UKEPR-CI-01 is composed of three sequential steps:

- **Step 1 [Task 1]:** Inform ONR of the technology to be used to implement the Non-Computerised Safety System and justify its adequacy with regard to the diversity criteria specified in document PELL-F DC 11 and with regard to the requirements specified for the platform in document PTI DC 2.
- **Step 2 [Tasks 2, 3 & 4]:** Establish the Basis of Safety Case for the Non-Computerised Safety System. The nature of the Safety Case is further described in the section 3.1.2.2 where the work to be performed is detailed. The purpose of the Safety Case is to set out the applicable standards and safety principles and to justify that the processes of design, development, implementation, verification and validation are consistent with these requirements. The Basis of Safety Case is an initial version of the Safety Case which will contain details of the claims, arguments, evidence approach along with the evidence available during 2011 and details of further evidence to be provided during the Nuclear Site License. The Basis of Safety Case covers the complete set of safety principles applicable to the Non-Computerised Safety System and explains how they are taken into account in the design and in the qualification programme.
- **Step 3 [Task 5 & 6]:** Update the PCSR and assess the impact on documents included in the GDA submission master list to ensure proper integration and consistency between the plant Safety Case and the safety Case for the Non-Computerised Safety System.

3.1.2.2 Description of Methodology to be employed

The work will be carried out by EDF/AREVA staff who have the necessary competence in Nuclear I&C design. Support will be provided as necessary from equipment suppliers, and specialist contractors, where appropriate. The work will be carried out under QA arrangements established for the GDA, which comply with ISO 9001.

All deliverables will be subject to co-applicant review by the requesting parties. Regular technical review meetings will be programmed to ensure that the work carried out is proceeding to plan in line with the proposed requirements and standards. The GDA and EDF/AREVA change management processes will be used to address design changes, resulting from the work carried out.

Regular review meetings will be organised with ONR and their technical support.

Step 1 of the scope of work – Selection of the I&C platform for the Non-Computerised Safety System

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 7 of 19

Task 1 – Selection of the NCSS platform and supplier by AREVA/EDF.

Description of task including methodology

The aim of this task is to select the NCSS platform and supplier through a consultation process of potential suitable solutions.

For this purpose a set of diversity criteria that this system and related platform shall satisfy was developed during the GDA step 4 (defined in document PELL-F DC 11 - see §3.1.1)

A requirements specification for the NCSS I&C system and platform has also been established (see document PTI DC 2 in §3.1.1). This document gathers applicable standards, quality assurance, technical requirements generic functional requirements and the diversity criteria from the note PELL-F DC 11.

An invitation to tender based on the above referenced NCSS specification has been sent to several potential suppliers. The responses will be analysed to choose the NCSS solution..

The outcome of this task is a documented justification of the selected supplier and platform, which will summarize the analysis performed and the conclusions reached.

.Deliverables

Justification note on selected NCSS I&C platform

This document justifies the compliance of the selected platform with the technical criteria given in document PTI DC 2.

Step 2 of the scope of work – Establish the Basis of Safety Case for the Non-Computerised Safety System

The requirements for the Non-Computerised Safety System have been defined and submitted in GDA Step 4. A set of documents has been provided to describe the safety and the functional requirements applicable the NCSS, as listed in section 3.1.1. These documents are:

- NEPS-F DC 555 – Safety requirement for NCSS
- NEPR-F DC 551 – EPR UK functional requirements on NCSS I&C functions
- ECEF100659 – Principles to be used for the implementation of the NCSS for emergency operating procedures

A second set of documents, also listed in section 3.1.1, have been produced to define the requirements applicable the I&C platform of the NCSS, as follows:

- PELL-F DC 11 – NCSS Diversity criteria
- PTI DC 2 – Requirements for NCSS I&C platform

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 8 of 19

A pilot study of the NCSS architecture was conducted in Step 4 to determine the global organization of the system. This study was naturally limited due to the absence of final technology selection at that time. The selection of the supplier for the technology to be used in the NCSS will allow provision of more detailed information about the NCSS and a full response to this GDA issue.

The detailed information about the NCSS will be presented using a Safety Case format. The Safety Case documentation justifies that the safety requirements are adequately addressed for the design, implementation, verification, validation and operation of the NCSS. The structure of the Safety Case is based on ONR guidelines TAG51 "Nuclear Safety Case" and the report "Licensing of safety critical software for nuclear reactors - Common position of seven European nuclear regulators and authorised technical support organisations" It also responds to the issues raised in the GI-UKEPR-CI-01. The structure of the safety case is described in the table below.

STRUCTURE OF THE SAFETY CASE FOR THE NCSS

0 – INTRODUCTION

This section identifies the scope of the Safety Case – in this case the boundary of the Non-Computerised Safety System (NCSS).

It summarises the plant safety objectives and the principles that lead to the definition of the NCSS. It summarises the main safety requirements (safety class, reliability claims) of the system.

1 – DESCRIPTION OF THE NON-COMPUTERISED SAFETY SYSTEM

This describes at a high level the design of the Non-Computerised Safety System (NCSS), breaking it down such that the key elements can be identified. It specifies the objectives, the tasks, the architecture of the NCSS and its interfaces. It identifies the technology used for the different key elements.

2 – SYSTEM DESIGN PRINCIPLES

This section demonstrates the completeness of the safety requirements assigned to the Non-Computerised Safety System, covering all of the topics and items in §5.1 of the international standard IEC61513 ("Deriving the I&C requirements from the plant safety design base"). This part is structured as follows:

2.1 Safety requirements

This section specifies the safety requirements deduced from the safety objective of the NCSS in the overall safety context of the plant. The main requirements, given in the document NEPS-F DC 555, address the following topics:

- Safety classification,
- Seismic requirements,
- Qualification requirements,
- Reliability targets,
- Role in the defence-in-depth and subsequent requirements for diversity and independence,
- Robustness to single failure,

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 9 of 19

- Hazards protection,
- Emergency power supply (need of backup or not)
- Testing, inspection and maintenance requirement.

2.2 System functional requirements

This section defines the I&C functions allocated to the Non-Computerised Safety System as defined in document NEPR-F DC 551. It also provides the performance requirements to be fulfilled for each of the I&C functions, in particular:

- Purpose of the function
- Identification of inputs
- Logical description and parameters
- Range,
- Accuracy,
- Response time

2.3 Operational requirements

This section identifies the requirements for the Non-Computerised Safety System derived from HMI needs. It deals with two types of information:

- Requirements from operating procedures, providing the list of alarms and information that need to be provided to the operators,
- Operator HMI requirements from a human factors point of view (e.g. management of alarm annunciation).

2.4 Plant constraints

This section defines the conditions for which the Non-Computerised Safety System has to be qualified. It addresses, among others, environmental conditions (e.g. normal or degraded ambient conditions), seismic spectrum, electromagnetic conditions and hazards to be considered.

It also addresses any specific constraints resulting from the EPR plant layout.

2.5 Safety Standards

This section gives the list of standards applicable to the design of the Non-Computerised Safety System, including international, national and licensee-specific codes and standards. It also identifies the UK Safety Assessment Principles that are applicable to the NCSS.

3. DEMONSTRATION OF SAFETY (THE SAFETY CASE)

This section demonstrates that the design safety objectives of the plant are met.

For each claim listed in Section 2, arguments and evidence are provided to demonstrate that the claims are achieved by the NCSS.

The arguments and evidence are based on deterministic analysis, probabilistic safety analysis, engineering substantiation and plans for validation and testing.

3.1 Justification of the adequacy of the requirements

This section provides the rationale and/or the justification of the requirements with regard to the safety objective of the plant. For example,

- Transient analysis is described to demonstrate that the system will enable the safety objectives for the deterministic safety analysis to be met;
- Probabilistic analysis is presented to show that the reliability and functionality of the system allows EPR probabilistic safety targets to be met.

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 10 of 19

3.2 Validation of the implementation

This section describes the methods that will be used to justify the implementation or the compliance of each type of requirement by test or analysis (e.g. validation of reliability by FMEA and reliability analysis).

If any Complex Electronic Components are used, the justification for their use is provided, including details of configuration management arrangements;

This section will also describe the system integration, testing and commissioning activities. Compliance with the identified standards will be demonstrated.

Compliance with SAPS will be demonstrated and any deviations will be justified.

4. MANAGEMENT OF QUALITY

This section describes the project QA arrangements including the interfaces to the NCSS supplier and any other suppliers. The NCSS supplier QA arrangements are also described in outline.

The Quality Plans (QPs) for the design, implementation, verification, validation and qualification of the I&C system or platform are referenced and put into context, ensuring that all validation steps and evidence of the implementation (contained in §3.2) are integrated in the QPs.

The organisational arrangements, including the independence of those undertaking the safety demonstration activities, are described.

5. OPERATION AND MAINTENANCE

This section describes the periodic test and maintenance procedures (coverage & frequency) to be performed during the plant lifetime and how they ensure that the system continues to meet its safety objectives.

The detailed design of the NCSS will be carried out during the Nuclear Site License phase. The Safety Case will also be completed during that phase.

The Basis of Safety Case to be produced in response to this GDA issue is an intermediate version of the Safety Case with the following objectives:

- To provide the complete list of requirements applicable to the NCSS in section 2. If the full definition of requirements is not available for the Generic Design Assessment phase, the Basis of Safety Case will provide a generic value or clearly identify how it will be provided during the site license phase. This applies in particular to requirements which are site dependent, like environmental requirements.
- To develop the arguments for the correct implementation of the requirements in section 3.
- To supply the evidence supporting the arguments such as results of analysis or of test campaigns. If evidence is not available for the issue of the Basis of Safety Case the

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 11 of 19

evidence is replaced by details of the methodology that will be followed. This applies for example to the platform test that will be executed in the target components prior to site installation.

- To provide, in section 4, the development plan, including the verification & validation plan, the quality process for the design of the NCSS and the schedule of evidence delivery during the steps of the design process.
- To identify, in section 5, the NCSS documentation for the operators that will have to be produced during the Nuclear Site License phase.

Step 2 of the scope of work is composed of the three following tasks:

Task 2 – Outline of NCSS Basis of Safety Case

Description of task including methodology

The contents of the Basis of Safety Case for the NCSS will be set out. This activity defines in detail the topics that will be covered in the Basis of Safety Case to address and demonstrate the suitability of the NCSS platform and system. The topics will be based on input from the generic Basis of Safety Case structure. It includes description of the platform, design principles (including safety principles and list of applicable standards), demonstration of safety, management of quality and description of operation and maintenance principles.

The list of technical supporting documentation and delivery dates will include documents related to the NCSS system and NCSS platform, notably the following:

NCSS system

- NCSS Quality plan
- NCSS V&V plan
- NCSS System Description (NLN-F DC 192)
- NCSS Justification of reliability

NCSS platform

- Justification of diversity between NCSS and other platforms
- Description of NCSS I&C platform
- NCSS platform qualification programme

Deliverable

Outline of NCSS BSC and schedule of supporting documentation.

Task 3 – NCSS Basis of Safety Case

Description of task including methodology

This task includes development and issuance of the NCSS BSC.

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 12 of 19

Deliverable

NCSS BSC

The Basis of Safety Case sets out the safety principles applicable to the NCSS and justifies that the design and the process of development are consistent with these requirements.

Task 4 Delivery of BSC Supporting documentation

This Task provides the supporting documents according to the schedule defined in Task 2.

Deliverables

Supporting documentation as defined in Task 2

The supporting documentation consists of design documents that are referenced in the Basis of Safety Case.

An update of the NCSS System description NLN-F DC 192 B (as part of the supporting documentation)

The document provides a description of the I&C architecture of the Non-Computerised Safety System. The updated version integrates information about the selected technology.

Step 3 of the scope of work – Impact analysis and PCSR update

Task 5 – Impact analysis

Description of task including methodology

An Impact Analysis will be performed to assess the impact of the introduction of the NCSS. This analysis is part of the design change process of the UK EPR project (stage 2 of the Change Management Form) to guarantee the consistency of the plant safety case when changes are introduced into the design. It will assess the impact of the change upon documents already provided in GDA, as identified in the UK EPR Submission Master List and in the PCSR.

Deliverables

Impact analysis of the design change “Non-Computerised Safety System”

Task 6 – Update of PCSR

Description of task including methodology

PCSR Chapter 7 will be updated to take due account of the introduction of NCSS and the documentation identified in the Basis of Safety Case for the selected NCSS platform and system.

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 13 of 19

A draft version will be sent to ONR for comments.

Deliverables

Update of PCSR Chapter 7

3.1.2.3 Deliverable description

Submission date to ONR/EA

Justification note on the selected NCSS I&C Platform (Task 1)

30/06/2011

This document justifies the compliance of the selected platform with the technical criteria given in document PTI DC 2.

Outline of NCSS BSC and schedule of supporting documentation (Task 2)

31/10/2011

The document defines the content of the Basis of Safety Case.

NCSS BSC (Task 3)

15/07/2012

The Basis of Safety Case sets out the safety design principles applicable to the NCSS and justifies that the design and the process of development is consistent with these requirements.

Supporting documentation (Task 4)

15/04/2012

The supporting documentation consists of design documents that are referenced in the Basis of Safety Case.

Documentation will be delivered in 2 packages : one by 15/01/2012 and one by 15/04/2012.

NCSS – System Description (Pilot Study) - NLN-F DC 192 (Task 4)

31/12/2011

The document provides a description of the I&C architecture of the Non-Computerised Safety System. The updated version integrates information about the selected technology.

Impact analysis of the design change (Task 5)

15/07/2011

The impact analysis identifies the documents impacted by the introduction of the Non-Computerised Safety System in the Submission Master list.

PCSR Chapter 7: Control and Instrumentation (Task 6)

Draft version

13/07/2012

Final version

05/11/2012

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 14 of 19

* Basis of Safety Case supporting documentation should be provided during 2011 as soon as available. The schedule of delivery will be provided as an outcome of Task 2.

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 15 of 19

4.0 SUMMARY OF IMPACT ON GDA SUBMISSION DOCUMENTATION

The following lists are to be validated and completed in Task 4.

4.1 GDA submission documents impacted by GDA Issue and scheduled to be created (C) or updated (U) within GDA

GDA Submission Documents	C/U	Related GDA Issue Action(s)	Submission Date to ONR/EA
SSER sub-chapters			
PCSR Chapter 7: Control and Instrumentation	U	GI-UKEPR-CI-01.A1	Draft 13/07/2012 Final 05/11/2012
Other GDA submission supporting documents			
Impact analysis of the design change (CMF 14) - Addition of NCSS	C	GI-UKEPR-CI-01.A1	15/07/2011
Justification Note for NCSS Platform selection <i>This document justifies the compliance of the selected platform with the technical criteria given in document PTI DC 2.</i>	C	GI-UKEPR-CI-01.A1	30/06/2011
Outline of NCSS BSC and schedule of supporting documentation <i>The document defines the content of the Basis of Safety Case.</i>	C	GI-UKEPR-CI-01.A1	31/10/2011
NCSS BSC <i>The Basis of Safety Case sets out the safety principles applicable to the NCSS and justifies that the design and the process of development are consistent with these requirements.</i>	C	GI-UKEPR-CI-01.A1	15/07/2012
NCSS BSC supporting documentation <i>The supporting documentation consists of design documents that are referenced in the Basis of Safety Case</i>	C/U	GI-UKEPR-CI-01.A1	15/04/2012
NCSS – System Description (Pilot Study) - NLN-F DC 192 <i>The document provides a description of the I&C architecture of the Non-Computerised Safety System. The updated version integrates information about the selected technology</i>	U	GI-UKEPR-CI-01.A1	31/12/2011

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 16 of 19

4.2 GDA submission documents impacted by GDA Issue and scheduled to be updated post GDA

None

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 17 of 19

5.0 JUSTIFICATION OF ADEQUACY

The structure of the Basis of Safety Case, given in section 3.1.2, is based on UK nuclear inspector guideline (TAG051) and international "Licensing of safety critical software for nuclear reactors - Common position of seven European nuclear regulators and authorised technical support organisations" and integrates a Claim-Argument-Evidence trail through sections 2 and 3 of the Safety Case.

The Basis of Safety Case (BSC) will demonstrate that the safety principles are adequately covered and that the design of the Non-Computerised Safety System is consistent with these principles. The Basis of Safety Case will also identify the documents and evidence that will be produced during the Nuclear Site License phase.

A demonstration of compliance to the UK nuclear Safety Assessment Principles, will also be introduced into the Basis of Safety Case.

This Resolution Plan and the proposed BSC addresses the technical observations relevant to GI-UKEPR-CI.01:

- T15.TO1.46 is addressed by tasks 2 and 3
The list of applicable standards and guidelines applicable to the design of the NCSS will be addressed in the BSC.
- T16.TO1.02 will be included in task 3
The compliance of the design process with regards to applicable standards is planned to be introduced in the BSC of the NCSS.
- T17.TO1.24 is addressed by task 1 and 3
The selected technology to be used for the implementation of the NCSS will be described in the BSC of the NCSS.
- T20.A1.2.4 is addressed by task 2 and 3
The safety demonstration of the design of the NCSS (lifecycle process, reliability claim, safety requirements and diversity criteria is totally include in the proposed structure of a BSC.

UK EPR	UK EPR GDA PROJECT			
	Title: Resolution Plan for GI-UKEPR-CI-01			
	GI unique number: GI-UKEPR-CI-01-RP	Revision No.: 0	Effective Date: 30/06/2011	Page No.: 18 of 19

6.0 TIMETABLE AND MILESTONE PROGRAMME LEADING TO THE DELIVERABLES

Consult the following pages for the associated timetable and milestone programme.

