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**Confidential**

# Appointment of the Designer of the Nuclear Island

Pre-Qualification Document

Reference	PALLAS-50-451	Reviewed	PALLAS Management Team		
Author(s)	PALLAS Design & Licensing Team	Current version	1.0	Approved version	1.0
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## Abbreviations

The following abbreviations are used in the PQD:

“Candidate” means any economic operator responding to the PQQ.

“D&L” means Design and Licensing.

“Directive” means Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts.

“DNI” means the Designer of the Nuclear Island.

“DNI Contract” means the EPCM contract to be awarded to the DNI.

“DPPA” means the Dutch Public Procurement Act 2012.

“EPCM” means Engineering, Procurement and Construction Management.

“ITT” means the Invitation to Tender for the Nuclear Island to be issued by PALLAS in accordance with paragraph 3.3.2 below.

“LEOPS” means Licensing Engineer and Off Plot Scope Designer for the duties described in paragraph 13.2 below.

“Negometrix” means Negometrix Inc which is the owner of the Negometrix System.

“Negometrix System” means the e-procurement system designed by Negometrix to be used for communications during the DNI selection process.

“NI” means the Nuclear Island.

“NRG” means the Nuclear Research and Consultancy Group.

“OE” means the Owner’s Engineer appointed by PALLAS.

“OPS” means the Off Plot Scope being the remainder of the new reactor facility outside the NI.

“PALLAS” means the Stichting Voorbereiding PALLAS-Reactor.

“PALLAS Project” means the project to design and construct the PALLAS Reactor as described in the PQD.

“PALLAS Reactor” means the new reactor to be designed and built for PALLAS as generally described in the PQD.

“Participant” means an economic operator responding to the PQQ and/or submitting a Tender and includes economic operators acting as an independent Candidate, a prime contractor, a subcontractor or a member of a group.

“PQD” means this document (including Attachment 1 hereto) setting out the details of the selection process for the DNI and details of the DNI role and defining the responses required from Candidates during the Pre-Qualification Phase.

“PQQ” means the Pre-Qualification Questionnaire defined on the Negometrix System and in Attachment 1 hereto containing the questions to be answered by Candidates during the Pre-Qualification Phase.

Pre-Qualification Phase” means the first phase of the DNI selection process as defined in paragraph 3.3.1 below;

“Tender” means a Tender submitted by a Tenderer in response to the ITT issued by PALLAS.

“Tender Phase” means the second phase of the DNI selection process as defined in paragraph 3.3.2 below.

“Tenderers” means the Candidates that PALLAS selects to participate in the Tender Phase of the selection process.

“URS” means the User Requirements Specification for the Nuclear Island as referenced in paragraph 6.2 below.

## PART I: INTRODUCTION AND GENERAL INFORMATION

## 1 Introduction

The Foundation Preparation PALLAS Reactor (PALLAS) is pleased to invite Candidates to pre-qualify as part of the selection process for the appointment of the Designer of the Nuclear Island (DNI) for the new PALLAS Reactor.

This PQD provides further information about the DNI role and defines the responses required from Candidates wishing to qualify for the Tender Phase of the selection process. Your responses will be assessed so that PALLAS can determine which Candidates should proceed to the Tender Phase which forms the second and final part of the DNI selection process.

The aim of the Pre-Qualification Phase is to thoroughly evaluate and examine the capability, competence, experience, resources and systems of Candidates. This PQD defines the response required from your company during the Pre-Qualification Phase of the selection process.

## 2 General Information

PALLAS aims to design and build a state of the art nuclear reactor, which is suitable for producing medical and industrial radio isotopes and for conducting nuclear technology research. This reactor is to replace the current High Flux Reactor (HFR) in Petten (NL).

PALLAS was originally set up as a single project organisation within NRG (the operator and licensee of the HFR). As of December 16, 2013 the project was incorporated in an independent foundation, the Foundation Preparation Pallas reactor.

The objectives of PALLAS are to prepare a design, to obtain the necessary licenses and to assure that there are private resources available for the construction and commissioning of the PALLAS Reactor (stage 1). The actual construction and commissioning of the PALLAS Reactor will take place during stage 2. Subsequently, the operation of the PALLAS Reactor will commence (stage 3).

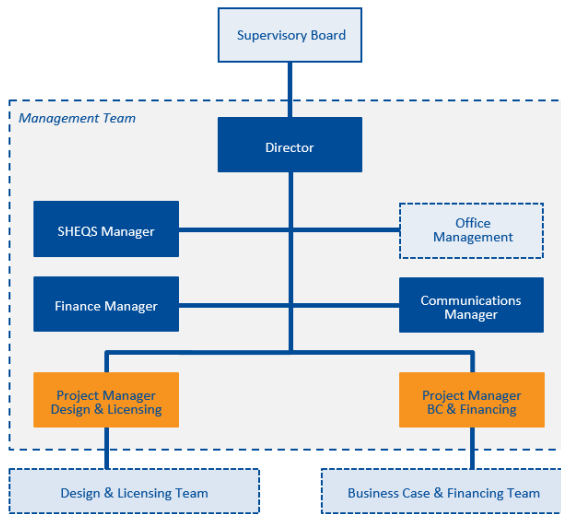
For the first stage the Dutch government has granted a loan of 80 million euros. The design, construction and commissioning combined will take about ten years. PALLAS is expected to be commercially financed and privately owned and operated (from stage 2).

In the past NRG had commenced a competition for a new reactor (EC Tender No. 2007/S 186-226734). Unfortunately this Tender had to be discontinued in early 2010 due to lack of funding.

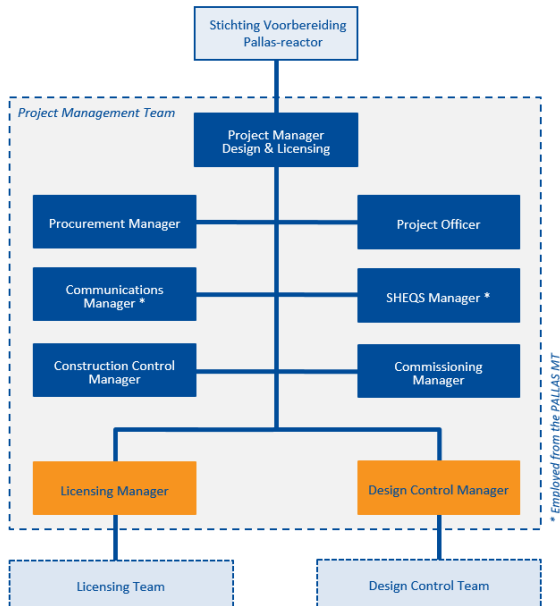


## 2.1 Organisation

To achieve its objectives (design, licensing and financing the PALLAS Reactor) PALLAS has two lead projects: Design and Licensing and Business Case and Financing (orange). Both projects have a lead time of approximately five years from commencement.



The Design and Licensing Project is (again) hierarchically organised and consists of nine project management team members. The team is staffed by dedicated (technical) members and members of the PALLAS Management Team (Communications and SHEQS), who together with the Project Manager Design and Licensing closely monitor the interfaces between PALLAS and the two lead projects.



The Design & Licensing project management team gives guidance to an integrated project team consisting of PALLAS employees and contracted personnel.

The Design & Licensing Project distinguishes two subprojects:

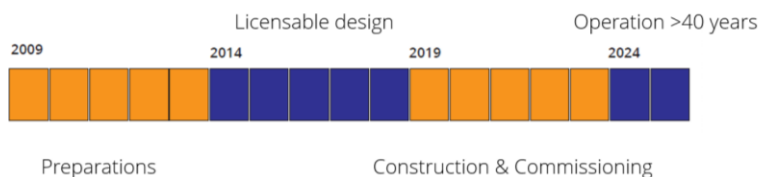
- **Nuclear Island (NI)**: all nuclear and related systems including the reactor building and related systems
- **Off Plot Scope (OPS)**: all buildings/facilities outside of the reactor building (e.g. secondary cooling water supply, connection to gas, water, electricity and sewage, office buildings, roadworks, guardhouses and fences).

The Design & Licensing Project is supported by:

- An **Owner's Engineer (OE)**: a contractor that will use its project management and nuclear expertise to give general support to the PALLAS Design & Licensing team in selecting and managing the future Designer of the PALLAS Reactor and in providing intelligent customer capability.
- A **Licensing Engineer and Off Plot Scope designer (LEOPS)**: a contractor that provides all necessary support to secure that all the licenses and permits required for the PALLAS Reactor are obtained in time. The LEOPS is also responsible for the the design of the Off Plot Scope.

## 2.2 Phasing and Timings

To meet the overall objective of PALLAS – to realise a state of the art nuclear reactor - there are three stages defined: the licensable design stage (stage 1), the construction and commissioning stage (stage 2) and the operational stage (stage 3).



In stage 1 the Design & Licensing Team is responsible for preparing a design, obtaining the necessary licenses and preparing the building plot in order to start the construction of the PALLAS reactor. To manage this stage, it is split up into three consecutive sub-stages: Tenders (1.1), licensable design (1.2) and construction preparations (1.3). Each sub-stage spans roughly one-third of the total lead time.

The Business Case & Financing Team has the responsibility during Phase 1 for developing a sound business case and attracting private funding (for the construction, commissioning and operation of the PALLAS Reactor).

## 3 DNI Procurement

### 3.1 Public Procurement Rules

This European Tender is based on Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts (the "**Directive**"), as implemented by Section 2 of the Dutch Public Procurement Act 2012 (*Aanbestedingswet 2012*, the "**DPPA**").

### 3.2 Publication

This document has been published on Negometrix on 12 August 2015. Instructions to publish the EU Notice and to publish on TenderNed have been given at the same time as publication on Negometrix.

### 3.3 Two Phases of the Selection Process

The selection process is divided into two phases:

#### 3.3.1 Phase 1 (Pre-Qualification Phase)

PALLAS will use this phase to select the Candidates to be invited to participate in the Tender Phase. Candidates must in their Pre-Qualification applications answer the questions defined in the PQQ and provide all information requested in the PQQ. PALLAS intends selecting the four (4) most qualified Candidates that meet the eligibility conditions as listed in the PQQ. If more than four (4) Candidates meet the eligibility criteria defined herein, PALLAS will score the responses in accordance with paragraph 19 below and the PQQ to select the four (4) most qualified Candidates. If fewer than four (4) Candidates meet the eligibility criteria, PALLAS may continue the selection process with those Candidates that have satisfied the eligibility criteria.

### 3.3.2 Phase 2 (Tender Phase)

After the qualified Candidates have been selected at the end of Phase 1, the Tender Phase will start provided that there are 2 or more eligible Candidates. During Phase 2, the selected Candidates will be invited to participate in a dialogue with PALLAS in accordance with paragraph 3.4 below and subsequently to submit Tenders against the ITT issued by PALLAS. It is the intention of PALLAS to enter into an agreement with the winning Tenderer.

The ITT will require Candidates inter alia to:

- provide details of its proposed design for the Nuclear Island
- demonstrate how they will fulfil the requirements of an EPCM Contract
- define their proposed team
- nominate key team members and provide curriculum vitae for them
- produce schedules for the execution of the EPCM Contract
- submit prices and rates in Euros for its services
- provide estimated costs in Euros for designing and constructing the Nuclear Island for the PALLAS Project;
- make their key personnel available for presentations and interviews with PALLAS;
- provide a detailed mobilisation plan;
- identify long lead items;
- define proprietary equipment (please see paragraph 5 below);
- accept the contract conditions included in the ITT;
- commit to the specified scope of work and duration; and
- provide responses related to the financing and risk management of the PALLAS Project.

## 3.4 Negotiated Procedure

PALLAS will utilise the EU Negotiated Procedure with prior publication of a contract notice. Pursuant to article 30 of Directive 2004/18 EC, this is justified:

- in exceptional cases, when the nature of the works, supplies, or services or the risks attaching thereto do not permit prior overall pricing;
- in the case of services, inter alia services within category 6 of Annex II A, and intellectual services such as services involving the design of works, insofar as the nature of the services to be provided is such that contract specifications cannot be established with sufficient precision to permit the award of the contract by selection of the best Tender according to the rules governing open or restricted procedures;
- in respect of public works contracts, for works which are performed solely for purposes of research, testing or development and not with the aim of ensuring profitability or recovering research and development costs.

At the start of the Tender Phase, PALLAS will provide the selected Candidates (hereinafter referred to as Tenderers) with the draft User Requirements Specification and other documents. PALLAS will thereafter enter into a dialogue with each Tenderer concerning technical, commercial and financial matters related to the PALLAS Project. Once PALLAS is satisfied that the dialogue has been satisfactorily completed, PALLAS will inform the Tenderers and issue the ITT.

At the commencement of the Tender Phase, PALLAS will define the topics to be addressed and the detailed timetable, protocol and plans for the dialogue. PALLAS will assess the Tenders it receives and will enter into negotiations with Tenderers in accordance with the EU Negotiated Procedure. The protocol for these negotiations will also be published in the ITT. Following these negotiations, Tenderers will be invited to revise their Tenders and these revised Tenders will be assessed by PALLAS. It is the intention of PALLAS to issue the ITT by 4 January 2016 and to require Tenderers to submit Tenders by 26 February 2016. Using the Negotiated Procedure, PALLAS will allow for up to 2 rounds of negotiation and reTendering after receipt of the initial Tenders.

Under the Negotiated Procedure, PALLAS may have recourse to a staged procedure to reduce the number of solutions to be discussed and/or Tenders to be negotiated.

Please note that the Tender revisions described will be found under “BAFO Fase” in the Negometrix System.

PALLAS will award the DNI Contract to the Tenderer which has submitted the most economically advantageous Tender

## 3.5 Tender Fees

To demonstrate the commitment of PALLAS to the DNI selection process, PALLAS is pleased to confirm that it will pay a Tender fee in the sum of €250,000 to any Tenderer that:

- (i) submits a compliant Tender in response to the ITT issued by PALLAS; and
- (ii) Responds to any requests for retender by PALLAS.

The terms and conditions applicable to this fee will be published in the ITT.

## 3.6 Indicative Timeline for the Tender Procedure

With regard to the current Tender procedure the following indicative timeline applies:

	Date	Time	Action by
<b>Phase 1 – Pre-Qualification Phase</b>			
Publication of Pre-Qualification Document and Questionnaire	12 August 2015		PALLAS
Last day and time to submit questions	4 September 2015	1700 CET	Candidates
Deadline for submitting the pre-qualification application	18 September 2015	1700 CET	Candidates
Target date for definitive selection and rejection of Candidates	6 October 2015		PALLAS
<b>Phase 2 – Tender Phase</b>			
Issue of draft User Requirements Specification	12 October 2015		PALLAS
End of standstill period of 15 days and start of dialogue with Tenderers	21 October 2015		PALLAS and Tenderers
End of dialogue with Candidates	18 December 2015		PALLAS and Tenderers
Target date for issuing ITT	4 January 2016		PALLAS
Receipt of Tenders	26 February 2016		Tenderers
Assessment of Tenders completed	24 March 2016		PALLAS
Negotiations and reTendering completed, announcement of Preliminary Contract Award and start of standstill period of 20 days	20 May 2016 (latest)		PALLAS and Tenderers
End of standstill period of 20 days	10 June 2016		

The timescales described above are indicative only and are subject to variation by PALLAS at any time. Please note that PALLAS will be endeavouring to improve these dates where possible.

Candidates should note that the Tender Phase will involve dialogue as described in paragraph 3.4 above as well as visits by PALLAS personnel to Tenderers' sites and operating plant. These visits and the dialogue are scheduled to commence on 21 October 2015 and Candidates should ensure that their teams are available for such dialogue and visits. PALLAS will select the order by lot in the presence of a Notary Public once the Participants in the Tender Phase have been selected and will inform Tenderers of the relevant dates promptly thereafter. The duration of the dialogue will be dependent upon the number of participating Tenderers.

## 3.7 Worldwide Candidates

PALLAS confirms that it will be pleased to receive and assess responses to the PQQ from Candidates located in countries which are not signatories to the Agreement on Government Procurement.

## PART II: DNI Project Description

## 4 Purpose of the PALLAS Reactor

PALLAS aims to build a state of the art - best available proven technology and compliant with the latest Dutch Safety Requirements - nuclear reactor that is suitable for:

- producing medical and industrial radio isotopes
- conducting nuclear technology research (private and public).

## 5 Contract Basis

PALLAS intends (1) to award an EPCM Contract to the selected DNI covering the design, procurement and construction management of the Nuclear Island and (2) to select the DNI at the earliest possible opportunity.

By using an EPCM Contract, PALLAS is able to award the DNI Contract at an early date because the amount of design activity undertaken during the Tender Phase will be minimised and there is no need for Tenderers to quote fixed prices for the whole PALLAS Project and/or to complete a detailed technical design prior to contract award. Under an EPCM Contract, suppliers of equipment (other than proprietary equipment) and contractors are selected by tendering managed by the EPCM Contractor.

As an EPCM contractor, the DNI will

- a) take responsibility for the NI design ("E");
- b) procure contracts with suppliers and contractors on behalf of PALLAS ("P"); and
- c) manage, supervise and co-ordinate all suppliers and contractors ("CM").

It will be necessary for the appointed DNI to have the capability to design the Nuclear Island and to undertake the procurement and construction management activities referred to above. It may therefore be necessary for Candidates to form consortia to ensure that the required range of capabilities is available. PALLAS confirms that it will be happy to accept Tenders from consortia provided that the proposed consortia have been defined during Pre-Qualification.

The DNI will be required to design the NI (stage 1), supply and install key equipment and procure and manage the construction of the NI (stage 2). For the purpose of stage 2, the DNI will recommend the most effective procurement strategy (consistent with EU and PALLAS rules and regulations) to maximise cost savings and to achieve the best possible prices for PALLAS and will conduct procurement and Tendering activities on behalf of PALLAS. All contracts with suppliers and contractors will be executed by PALLAS generally following the DNI's recommendations. The DNI will be expected to recommend and manage effective Tender processes and to negotiate with suppliers and contractors. In the design of the construction of the NI, the DNI should therefore minimize as far as possible the use of proprietary technology that would prevent such an effective procurement process.

If the appointed DNI is a group or uses subcontractors, PALLAS recognises that members of the group or subcontractors may wish to tender for contracts to be tendered upon the recommendation of the DNI. PALLAS confirms that it has no objection to such parties tendering in this manner provided that the DNI ensures the Tender procedure is conducted in an objective and proper manner, consistent with EU and PALLAS rules and regulations and thus allowing a level playing field for all participants in the procedure. This may include an obligation for the DNI to provide all relevant data and information to all parties in order to prevent the members of groups or subcontractors to the DNI from having an unfair advantage.



Additionally members of groups or subcontractors to the DNI who wish to bid for contracts will not be allowed to participate in the preparation of the relevant Tender documents or the assessment of the resultant Tenders. To avoid any semblance of a conflict of interests, PALLAS may also require the assessment of the Tenders to be performed by a third party, to be appointed by PALLAS. Upon first request of PALLAS, the DNI will demonstrate that there is no conflict of interest whatsoever as a result of such participation. Should the DNI fail to do so, the abovementioned members of groups or subcontractors to the DNI will be excluded to the Tender procedure concerned.

Based on the timing of the DNI selection process, PALLAS anticipates that there will be changes occurring after the issue of the ITT due to Licensing Requirements, Business Case Developments, Financing Requirements and subsequent Changes in Technical Requirements. An EPCM Contract provides considerable flexibility under these circumstances as the change process is very simple and it is not necessary to have extensive negotiations on Change Orders when changes are required.

Although the Tender process will involve an assessment of the likely total project costs, the EPCM Contract awarded will not be a fixed price contract. At the outset, the contract will be largely reimbursable. As the project proceeds, fixed prices will be agreed for packages of work and supply as specifications are finalised and the project proceeds. Once design, licensing and financing aspects have been further detailed, PALLAS may elect to convert the DNI Contract to an EPC Contract and this conversion may include changes to the participants entering into the EPC contract. For the avoidance of doubt, this conversion to an EPC Contract is considered by PALLAS to fall within the scope of the PALLAS Project.

PALLAS wishes to be involved in the development of the design, in achieving construction savings and in value engineering.

PALLAS intends including risk sharing and incentivisation in the DNI Contract based on:

- Delivery against milestones
- Achievement of target costs
- Performance against Key Performance Indicators

As noted in paragraph 2 above, funding is in place for the Licensable Design Stage (stage 1). The PALLAS Business Case and Finance Project has been established to arrange financing for the construction and commissioning of the PALLAS Reactor. PALLAS is confident that suitable financing will be arranged in good time but the DNI Contract will contain provisions to enable PALLAS to terminate or suspend the Contract in the unlikely event that the said financing is not forthcoming or is delayed.

## 6 DNI Project Overview

A schematic overview of the project is provided in the figure below:

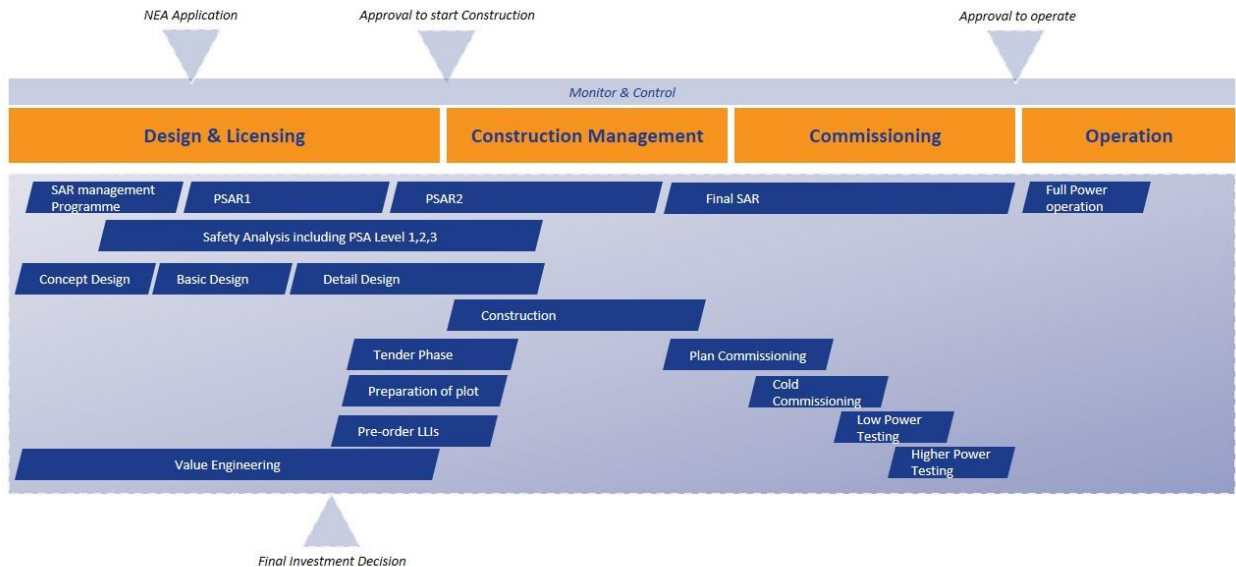


Figure 1: DNI Project Overview

The DNI will be responsible for the design, preparation of licensing documentation, demonstration of safety, construction management and commissioning of the Nuclear Island. The physical boundary between the Off Plot Scope (OPS) and Nuclear Island are set at 1 meter outside the NI-buildings unless otherwise specified. The DNI shall supply PALLAS with the interface requirements between the NI and OPS.

### 6.1 Key features of the Nuclear Island

The key features of the NI to be supplied by DNI are:

#### 6.1.1 Technology

- Process systems and layout of the PALLAS reactor shall be of a simplistic design.
- To increase availability and reliability the process systems shall use commercial-off-the-shelf items.
- Items shall be qualified as per their safety, seismic and quality classification.
- The DNI shall use design codes and standards that are acceptable to the Dutch Regulatory body.
- Best practices for human factors, ergonomics and maintenance shall be applied by the DNI.

### 6.1.2 Safety

- The DNI shall demonstrate as per the Dutch Safety Requirements and IAEA standards and guidelines that the reactor can be safely operated.
- Reactor safety risks shall be identified for the whole plant life cycle, including decommissioning
- Identified safety risk of the reactor shall be mitigated throughout the whole plant life cycle.
- Dutch Safety Requirements and IAEA (i.e. NS-R-4 “Safety of Research Reactors”.) recommendations shall be followed and integrated within the design.
- There shall be long-term autarchy after station blackout and / or loss of the ultimate heat sink.
- The PALLAS Reactor shall have a high level of inherent and passive safety applied in the design (i.e. negative temperature coefficient and use passive systems for cooling during loss of power (natural convection)).
- Systems, structures and components (SSCs) important for safety shall be enveloped and isolated from the environment, through confinement /containment (use multi-level confinement/barriers).
- The containment building to protect safety class SSCs from external hazards
- The containment building shall withstand internal loads.
- Safety class SSCs are independent and segregated.
- The PALLAS Reactor shall withstand external and internal events as well as human threats.

### 6.1.3 Availability

- The reactor shall at least have 300 effective full power days per year.
- The design lifetime of the reactor shall be 40 years.

### 6.1.4 Reactor Unit

- The power of the reactor shall be as low as possible to support customer demands and enable a licensable design.
- The design of the reactor shall allow for flexibility of the core. The aim of the flexible core size is to obtain a compact core and corresponding flux profile, to minimise fuel usage, waste production and corresponding cost while the irradiation volume is reduced or increased according to market demands.
- The reactor shall be a pool type reactor.
- The reactor shall have a light water moderator and coolant.
- The reactor shall utilise LEU operational fuel comprising of  $U_3Si_2$  in an Al-matrix clad with Al, conversable to UMo type fuel.
- A Dismantling Cell shall be provided for the dismantling of experiment capsules.
- The reactor shall include at least one Hot Cell for radioisotopes handling and processing.

## 6.1.5 Electrical, Instrumentation and Control

- Cost effective automation and mechanization for increased operating efficiency shall be considered.
- Identified plant parameters shall be controlled, monitored and recorded.
- The reactor protection system shall be physically separated and independent from the reactor control system.
- Dose rates and radioactivity shall be monitored.
- Automatic scram of the reactor shall be initiated when the reactor operates outside the operating limits and conditions.
- Manual scram by the operator shall be possible.
- PALLAS shall have a main control room from which the plant can be monitored and controlled.
- A supplementary control room shall be provided that is separated and functionally independent from the main control room.
- Provision shall be made for effective communication, early warning and warning systems.
- Monitoring of post-accident conditions shall be possible.
- The emergency power supply enables the functioning of safety class SSCs.

## 6.1.6 Reactor Shutdown

- The reactor can be safely shut down and held sub-critical with adequate margins for all operational states and design basis events (DiD levels 2, 3a, 3b and 4).
- PALLAS shall have a first and second reactor shutdown system.
- The second shutdown system shall be diverse and redundant from the first shutdown system (non-common cause failure between first and second shutdown system).
- The second shutdown system shall function after a postulated failure of the first shutdown system.

## 6.2 User Requirements Specification

All work shall be performed in accordance with the Nuclear Island User Requirements Specification ("URS") which will detail the NI supply requirements. The URS is a functional requirements specification that is based on a functional breakdown structure developed for the PALLAS Project. The URS will therefore not prescribe technical solutions as these will be provided by the DNI.

A draft URS will be provided by PALLAS to Tenderers at the start of the Tender Phase and an updated URS will be issued to Tenderers when PALLAS issues the ITT.

## 7 Reactor Output

The Candidate will be required to provide PALLAS with a sustained capability for the production and application of neutrons with the aim of isotope, material and fuel irradiation through fission in a safe manner.

Examples of medical radioisotopes to be produced are Lu<sup>177</sup>, Ho<sup>166</sup>, I<sup>131</sup>, Sr<sup>89</sup>, Xe<sup>133</sup> to Mo<sup>99</sup> and examples of radioisotopes for industrial use are Ir<sup>192</sup>, Co<sup>60</sup>, Se<sup>75</sup> and Yb<sup>169</sup>.

Research and development will be aimed at the support of existing and new nuclear industries. This includes support of existing fission power plants with their fuel cycle and material issues and the development of Generation-4 fission power plants, HTR and ADS with their materials and components. In addition the development of materials and components for fusion reactors may be pursued.

## 8 Design

As part of a systems engineering approach (INCOSE, System Engineering Handbook), the DNI is required to deliver a concept, basic and detail design. After each design stage, PALLAS will review the design and authorize the next design stage. The design shall be conducted within a strict configuration management environment. The objectives as part of the contract of these design stages are:

- Concept Design: The DNI will be responsible for identifying and exploring feasible system concepts and to deliver system development specifications containing system level functional and performance requirements.
- Basic Design: The DNI will be responsible for defining the constituent parts (items) and allocating functions to each and for developing item development specifications for each of the constituent parts, containing all the item level functional and performance requirements.
- Detail Design: The DNI will be responsible for developing, testing and evaluating each item as specified in the basic design and for developing item product specifications for each of the constituent parts, containing all the item level built-to requirements as well as the operating manuals, maintenance manuals and training manuals.

PALLAS will work with the DNI to optimise the design through the application of value engineering.

## 9 Licensing

The Dutch Safety Requirements (DSR) provide guidelines for the Dutch regulator to assess the Nuclear Energy Act licence application of PALLAS. As part of licensing effort the DNI shall supply PALLAS with the Preliminary Safety Analysis Reports, Final Safety Analysis Report, Probabilistic Risk Assessment/Safety Assessments (level 1, 2, and 3), the safety report and other supporting information identified in the URS. It is intended that the LEOPS is used as an independent reviewer.

PALLAS is still negotiating with the Dutch nuclear regulator to determine whether a combined license or two step license process will be followed.

## 10 Long Lead Items

The DNI will be required to identify, specify and start ordering/ contracting and manufacturing of the long lead items to ensure adherence to PALLAS Project schedules.

## 11 Construction

As the DNI will be working under an EPCM contract, the responsibilities of the DNI shall include but not be limited to the following:

- Procurement of services, equipment and works
- Supply of core, proprietary equipment
- Construction management
- Contract management

## 12 Commissioning

The DNI shall be responsible for the commissioning of PALLAS. This includes commissioning planning, testing and the execution thereof. The commissioning process shall involve co-operation between PALLAS and the DNI to ensure compliance to licensing requirements and an effective means of familiarising PALLAS with the characteristics of the facility.

## 13 OE, LEOPS AND NRG

### 13.1 OE

Due to the complexity of the design, licensing and construction of the PALLAS Project, PALLAS elected to establish a project team of highly qualified professionals to ensure that Tenders and contracts for the DNI are managed effectively. For this reason, PALLAS has run a competition to appoint an Owner's Engineer which will be able to provide PALLAS with technical and project management personnel to staff its integrated project team. As a result of this competition, PALLAS has appointed Tractebel Engineering S.A. to be its Owner's Engineer and employees of PALLAS, Tractebel and NucAdvisor (Tractebel's subcontractor) are already working together in an integrated customer project team.

Candidates should note that Tractebel Engineering S.A. and NucAdvisor (and their affiliates) are not permitted to provide services related to the PALLAS Project to the DNI (or to Candidates and Tenderers).

### 13.2 LEOPS

PALLAS has also run a competition to select a Licensing Engineer and Off Plot Scope Designer (LEOPS). The LEOPS will:

- (i) provide all necessary support to PALLAS to secure the required licences and permits;
- (ii) undertake the design of the OPS including the preparation of the building plot; and
- (iii) be responsible for the construction management of the OPS under an EPCM Contract.

Following the LEOPS competition, PALLAS has appointed Arcadis Nederland B.V. to act as the LEOPS with NRG acting as a subcontractor to Arcadis Nederland B.V.

Any Candidate or Tenderer wishing to nominate Arcadis as a partner or subcontractor must obtain the prior written approval of PALLAS before submitting a response to the PQQ or a Tender, as the case may be.

### 13.3 NRG

PALLAS recognizes that Candidates may wish to engage NRG to work as a partner or subcontractor. PALLAS confirms that it has no objections to NRG being engaged in such a role provided that:

- (i) it does not cause any conflict of interest with NRG's role as a subcontractor of the LEOPS; and
- (ii) Candidates do not require NRG to commit to an exclusive commitment during the DNI selection process (thus enabling NRG to participate in two or more responses to the PQQ and two or more Tenders).

## 14 Safety, Health, Environment, Quality and Security

All aspects of Safety (including but not limited to occupational safety, industrial safety and nuclear safety), Health and the Environment, Quality and Security (SHEQS) are of critical importance and have the highest priority for PALLAS.

Safety, Health and the Environment, Quality and Security are of critical importance for the success of all stages of the PALLAS reactor project and cannot under any circumstances be compromised.

In respect of the above, the DNI shall:

- Comply with national- (Dutch) legislation and regulations and IAEA standards;
- Apply effective quality management during all stages of the PALLAS Project;
- Apply effective risk management identification, mitigation and management;
- Comply with all necessary security requirements, whether statutory, prescribed by regulatory authorities or required by PALLAS;
- Apply such security measures as are necessary to ensure security at all times.
- Proactively support the development of an enhanced Culture of Safety for the PALLAS Project;
- Provide PALLAS with regular reports on Safety, Health, Environment and Quality; and
- Identify and implement any (remedial) actions to ensure adherence to the standards set out above and the successful completion of the PALLAS Project.



## 15 Systems

PALLAS uses the following systems: Microsoft Office, PrimaVera, SharePoint, Citrix Desktop Delivery and Relatics.

The DNI may recommend and/or provide any additional systems where the use of such systems will improve the execution of the PALLAS Project. The use of proprietary systems will be subject to the DNI securing for PALLAS (or giving PALLAS) the right to use the systems throughout the life of the PALLAS Project and during subsequent operation and decommissioning.

## PART III: CRITERIA AND REGULATIONS

## 16 Pre-Qualification procedure

- 16.1 PALLAS wishes to ensure that the appointed DNI has the capability and resources required to successfully undertake and complete the PALLAS Project. PALLAS has therefore identified a number of eligibility criteria that Candidates must satisfy if they are to proceed to the Tender Phase of the selection process. These eligibility criteria are defined in Attachment 1 hereto.
- 16.2 If there are more than four (4) eligible Candidates, the Candidates that will be invited to the Tender Phase will be selected on the basis of the selection criteria listed in Attachment 1.
- 16.3 Candidates may seek to qualify for the Tender Phase by submitting their response to this Pre-Qualification Document as:
  - a. An independent Candidate with no third party involvement;
  - b. A prime contractor which will engage other parties as subcontractors; or
  - c. A number of parties working together as a group or consortium.
- 16.4 Candidates selected by PALLAS to participate in the Tender Phase must submit Tenders using the same parties and contracting structure for their Tenders as defined in their responses to the PQQ. Qualified Candidates shall not be permitted to join together to submit Tenders. If a qualified Candidate withdraws during the Tender Phase, Participants may participate in other Tenders but only as second tier Candidates.
- 16.5 Where responses to this PQQ are submitted under b or c of paragraph 16.3 above, PALLAS will consider the combined expertise of all parties identified in the response.
- 16.6 Except as provided in paragraphs 13.3 and 16.4, no Candidate may be a Participant in two or more responses to the PQQ and no Tenderer may be a Participant in two or more Tenders.

## 17 Minimum Requirements

- 17.1 Candidates are required to complete and sign the Self-Declaration (Eigen Verklaring), referenced on Negometrix. Where responses to the PQQ are submitted under b or c of paragraph 16.3 above, all parties identified in the responses must submit Self-Declarations.
- 17.2 Candidates to which one or more of the mandatory grounds for exclusion as described in section 2 of the Self-declaration apply will be excluded from this Tender procedure.
- 17.3 PALLAS may also exclude from the Tender procedure Candidates to which one or more of the facultative grounds for exclusion as described in section 3 of the Self-declaration apply.
- 17.4 Candidates must provide certificates requested by PALLAS within five (5) working days of a request by PALLAS to provide the same.

## 18 Eligibility Conditions and Information to be Provided

- 18.1 Attachment 1 defines the eligibility conditions to be satisfied by Candidates and all other information to be provided in responses to this PQQ. Candidates must at least satisfy all the eligibility conditions stated in Attachment 1 and failure to meet one or more of these conditions will result in the Candidate being considered ineligible for qualification.
- 18.2 The Council of Europe Regulation of 5 May 2009 for the control of exports, transfer, brokering and transit of dual-use item is applicable (Council Regulation No 428/2009). In order to be able to release confidential information to Tenderers, it is necessary for PALLAS to obtain a permit from the Dutch Government for Candidates located outside the EEC. If the Dutch Government rejects the application by PALLAS for a permit for any Candidate or significantly delays the issuing of such a permit, PALLAS shall be permitted to exclude the Candidate in question from further participation in the selection process.

## 19 Selection Criteria

- 19.1 Where more than four (4) Candidates satisfy the eligibility criteria in Attachment 1, PALLAS will assess the responses received against a predetermined scoring mechanism. The information which will be assessed is also defined in Attachment 1 and Candidates should ensure that they provide all requested information. Please note that PALLAS will assess the responses received and that there will be no opportunity to address omissions before the assessment takes place.
- 19.2 The assessment against the scoring mechanism will apply the following weightings to different aspects of responses, as defined in Attachment 1:

<b>Attachment 1 Reference</b>	<b>%</b>
B.2	5
B.5	10
D.1	10
E.2	5
E.3	5
H.1	10
I.2	10
I.3	10
I.4	5
I.5	5
I.6	10
I.7	5
I.8	5
J.1	5
<b>TOTAL</b>	<b>100</b>

## 20 Instructions to Candidates

- 20.1 All communications between PALLAS and your company must be conducted using the Negometrix System. In case of any difficulty in accessing the Negometrix System, you should in the first instance contact the helpdesk of Negometrix by email to [servicedesk@negometrix.com](mailto:servicedesk@negometrix.com) or by phone to +31 (0) 30 666 18 10. If you are still unable to access the Negometrix System after contacting Negometrix, you must inform PALLAS by sending an email to [dniTender@pallasreactor.com](mailto:dniTender@pallasreactor.com). Please note that you should not use this email address for any other purpose.
- 20.2 Your response to the PQQ must be submitted by 17.00 (CET) on Friday 18 September 2015. Responses received after this time will not be accepted and will not be reviewed by PALLAS. All questions requiring responses are defined in Attachment 1 hereto and on the Negometrix System and you must submit your responses through the Negometrix System.
- 20.3 The Candidate bears the risk and burden of proof for timely submission of its response to this PQQ.
- 20.4 The responses received will not be reviewed by PALLAS until the above due date. They will be assessed by PALLAS and PALLAS intends to inform Candidates on 6 October 2015 as to whether or not they will be invited to participate in the Tender Phase.
- 20.5 During the period PALLAS is assessing the responses to the PQQ (i.e. from 18 September 2015 until 6 October 2015), Candidates may be required to answer questions raised by PALLAS and eligible Candidates will be required to provide evidence to verify their self-certification within 5 days of a written request by PALLAS to provide the same. Candidates should therefore nominate a point of contact who will be readily available during this period and who can ensure that PALLAS receives prompt replies to any questions it raises.
- 20.6 All questions requiring responses on the Negometrix System must be answered against the relevant Negometrix survey. Attachments may be used where necessary to support an answer but you must provide an answer in the relevant box. You are encouraged to minimise the use of standard company publications but, where this is unavoidable, your answer should state the relevant paragraphs or paragraphs of the attachment. All attachments must reference the question for which they are providing support.
- 20.7 Candidates may raise questions on the PQD and/or PQQ up to 1700 (CET) on Friday 4 September 2015 and must use the Q&A facility on the Negometrix System. At 0900 (CET) each working day PALLAS will review all questions received since the last review. PALLAS will endeavour to provide a response to questions within 3 working days of the review. (This means that a question raised on a Monday will be reviewed by PALLAS at 0900 (CET) Tuesday and normally answered at the latest on the Thursday of the same week.) All potential Candidates will be informed of any questions raised and the responses made by PALLAS thereto. All questions should be submitted using the Negometrix System and answers will be provided by PALLAS using the Negometrix System.

- 20.8 The Negometrix System has the facility for Candidates to ask private questions where neither the questions nor the responses made by PALLAS would be disclosed to other Candidates. This facility should only be used in exceptional circumstances when the disclosure of a question and/or answer would result in confidential information being released to other Candidates and when such release may harm the justifiable economic interests of the Candidate. PALLAS will review each private question received and will only provide an answer if (1) PALLAS accepts that there are confidential issues related to the question and/or answer and (2) other Candidates will not be disadvantaged by the private question being answered. If PALLAS is not willing to accept a private question, PALLAS will give the questioner the options of (1) asking the question again under paragraph 20.7 (so that all Candidates will see the question and answer) or (2) withdrawing the question.
- 20.9 Candidates should prepare their responses based only on the provisions of the PQD and PQQ and any answers to questions provided by PALLAS in accordance with paragraphs 20.7 and 20.8 above. No reliance should be placed on any other communications (whether oral or written) or documents.
- 20.10 The working language of the PALLAS Project is English and your response (and any questions raised in accordance with paragraphs 20.7 and 20.8 above) to the PQQ should be submitted in English.
- 20.11 PALLAS will not reimburse any costs incurred by a Candidate in connection with the selection process for the DNI. PALLAS shall not be held liable by any Candidate for costs and/or other expenses it incurs as a result of its participation in the Pre-Qualification and Tender Phases of the selection process.
- 20.12 You are reminded that the PQD contains confidential information belonging to PALLAS which:
- (i) must be kept confidential,
  - (ii) must be used only for the purpose of preparing a response to the Pre-Qualification Questionnaire; and
  - (iii) must not be disclosed to any third party.
- 20.13 The questions to be answered by Candidates are set out below and are repeated on the Negometrix System. Answers must be provided against the relevant survey questions on the Negometrix System.
- 20.14 Where a Candidate is responding to the PQQ under b or c of paragraph 16.3, it must specify which Participant is demonstrating the relevant experience against each question in the PQD.
- 20.15 Where the name of the organisation which undertook the Reference Project or any other project differs from that of the relevant Participant due to takeovers, name changes or reorganisations, the Candidate must explain the reasons for the name change and justify the Participant being regarded as being the successor organisation.
- 20.16 An indicative word count is given against the questions in the PQD. Candidates should endeavour to keep within this word count but may exceed it if additional words are required to explain an exceptional or unusual circumstance.

## 21 Regulations

- 21.1 The selection of the Candidates during Pre-Qualification is based on the eligibility conditions and selection criteria as laid down in this PQD and Attachment 1 hereto. In their responses to this questionnaire, it is the responsibility of the Candidates to ensure that they answer the questions fully in order to demonstrate to PALLAS that they satisfy the relevant eligibility criteria. Any failure (1) to answer any question in the PQQ fully or (2) to submit the requested information may lead to exclusion from the selection procedure.
- 21.2 PALLAS will exclude responses that do not satisfy and/or comply with the requirements defined in this PQD.
- 21.3 PALLAS has endeavoured to ensure that there are no errors or omissions in this PQD and/or the PQQ but PALLAS will not be liable for any such errors or omissions herein. If a Candidate becomes identifies any inconsistencies, errors, omissions, irregularities or requirements that are unclear, it must inform PALLAS by raising a question in accordance with paragraph 20.7 or 20.8 above. If the Candidate omits to do this, it will be considered to have forfeited its rights to raise the same topic at a later stage.
- 21.4 PALLAS shall:
- 21.4.1 not be required to award any contract related to the work described in this PQD;
  - 21.4.2 be permitted at any time to temporarily suspend or terminate the pre-qualification process;
  - 21.4.3 be permitted to amend the criteria of the pre-qualification process if new insights or developments give cause for this. If Candidates have already made their qualification application, Candidates will be given the opportunity to submit a new qualification application on the basis of the amended criteria.
- Candidates will not be entitled to any compensation (including the Tender fee of €250,000 in accordance with paragraph 3.5) in the event of the occurrence of the events referenced in paragraphs 21.4.1, 21.4.2 or 21.4.3 above.
- 21.5 Dutch law applies to any disputes regarding the Tendering procedure and the civil court in the district of The Hague is competent to settle any such disputes.



- 21.6 PALLAS shall inform the Candidates that have not been selected to participate in the Tender Phase in writing. If a non-selected or rejected Candidate is of the opinion that PALLAS's decision violates the Directive, the DPPA or any other applicable legal regulations, it must summon PALLAS for interlocutory proceedings (*kort geding*) within the term of 15 calendar days after the dispatch of the afore-mentioned decision to the Candidates. If no Candidate summons PALLAS within the said period in the prescribed manner, PALLAS will conclude that no legal action will be taken. Any legal actions against PALLAS shall not suspend the selection process at any time. If a Candidate summons PALLAS after the said period, the claim will be declared inadmissible.
- 21.7 If a summons has been served for interlocutory proceedings within 15 calendar days of dispatch of the notification, PALLAS shall not make a final selection until such time as a ruling has been given in the interlocutory proceedings, unless there is an imperative reason to demand immediate selection. If interlocutory proceedings have not been instituted within 15 calendar days of dispatch of the selection decision, the disregarded/rejected Candidates shall not be able to make any further objection to the decision and they shall be deemed to have forfeited their rights in this matter. In such a situation, PALLAS shall be free to carry out the notified decision and disregarded and rejected Candidates shall have forfeited their rights to claim compensation in full proceedings.
- 21.8 Candidates shall inform PALLAS immediately if they consider that:
- 21.8.1 PALLAS is not entitled to use the EU Negotiated Procedure as described in paragraph 3.4 above;
- 21.8.2 there are any errors or omissions in the selection process; or
- 21.8.3 PALLAS has failed to follow the specified selection process.
- Candidates which fail to notify PALLAS immediately they become aware of the circumstances defined in paragraphs 21.8.1, 21.8.2 or 21.8.3 above shall forfeit the right to raise the matter at a later date.
- 21.9 In the event that two Candidates or Tenderers have the same scores at any point in the selection process and it is necessary to choose between them (either to proceed to the Tender Phase or to be awarded the DNI Contract), PALLAS shall be permitted to draw lots to determine the winner. Any such drawing of lots shall take place in the presence of a Notary Public.
- 21.10 PALLAS reserves the right to require further information from Candidates to confirm statements made in their responses to the PQQ.
- 21.11 The submission by a Candidate of a response to the PQQ shall constitute the Candidate's acceptance of all provisions of this document and Attachment 1 hereto and the selection procedure adopted by PALLAS.

## 22 Questionnaire

Attachment 1 contains the questions which constitute the PQQ and which should be completed and submitted on the Negometrix System in accordance with the provisions of the PQD.

## A ATTACHMENT 1 : Eligibility and Selection Criteria

This Attachment 1 specifies:

1. the eligibility criteria which must be satisfied by Candidates if they are to qualify for the Tender Phase of the selection process and
2. the selection criteria which will be scored by PALLAS in accordance with paragraph 19 of the PQD if more than four (4) Candidates satisfy all the eligibility criteria.

The questions to be answered by Candidates are set out below and are repeated on the Negometrix System. Answers must be provided against the relevant survey questions on the Negometrix System.

<b>A GENERAL</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
A.1	Self-declaration forms completed and signed by all parties participating in the response to the PQD.	Yes	
A.2	Candidates must acknowledge and accept (1) the use of the EU Negotiated Procedure for the DNI selection process and (2) the conditions set out in Pre-Qualification Document issued by PALLAS on 12 August 2015.	Yes	
A.3	Candidates must stipulate any periods where they would be unavailable to participate in the dialogue referenced in paragraph 3.4 of the Pre-Qualification Document. Candidates must stipulate any periods where they are unavailable in the period between 21 October 2015 and 18 December 2015 and should indicate the reasons for such unavailability.	Information only	
A.4	Where the Candidate is responding under b or c of paragraph 16.3, the Candidate is required to describe how potential interface issues between the Participants will be avoided.	Yes	
A.5	Where the Candidate is a group, each Participant in the group must submit a signed statement confirming that the member will be jointly and severally liable for all of the group's obligations arising from the agreement(s) concluded on the basis of the DNI selection process	Yes	
A.6	The Candidate must provide audited accounts for the last 3 years. Where the Candidate is responding under c of paragraph 16.3, such audited accounts must be provided for all Participants in the response	Yes	
A.7	The Candidate must provide a statement from a Chartered Accountant confirming there is no reason to expect that the continuation of the Candidate is in danger based on the latest accounts and facts known to the accountant. Where the Candidate is responding under c of paragraph 16.3, such statements must be provided for all Participants in the response.	Yes	

Ref	Topic	Eligibility Criteria	Selection Criteria
A.8	The Candidate is required to provide evidence that it holds Professional Indemnity insurance for current projects to a value of €2,500,000 for design work. In the case of responses submitted under c of paragraph 16.3, the Participant nominated to undertake the design of the NI must demonstrate that it holds the said insurance.	Yes	
A.9	Candidates should advise any legal actions or arbitrations instigated against Participants in the last 3 years where the projected value of the action or arbitration exceeded €10,000,000.	Yes	
A.10	Please list any contracts undertaken by Participants in the last 10 years where the contractual relationship was not completed or was terminated for reasons other than convenience. If any contracts are listed, Participants should provide a brief description of the project and the circumstances which prevailed.	Yes	

<b>B REFERENCE PROJECT</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
B.1	<p>Candidates are required to identify a Reference Project which they have undertaken and which covers the design, licensing, construction and commissioning of a nuclear research reactor.</p> <p>Candidates must provide a detailed description of the Reference Project including location, client details, dates and technical description.</p> <p>Indicative length of answer: 2500 words.</p>	Yes	
B.2	<p>Did the Reference Project reach first criticality within the last 20 years (i.e. with criticality between 1 January 1995 and 1 August 2015)?</p> <p>The Candidate must demonstrate that the Reference Project reached first criticality between 1 January 1995 and 1 August 2015.</p> <p>Indicative length of answer: 200 words</p>	Yes	The date of criticality will be scored with maximum marks being awarded to the most recent projects
B.3	<p>Is the thermal power of the Reference Project at least 5MW?</p> <p>Provide information that demonstrates the thermal power of the Reference Project.</p> <p>Indicative length of answer: 200 words</p>	Yes	
B.4	<p>Is the cooling medium of the Reference Project light water (H<sub>2</sub>O)?</p> <p>Provide information that demonstrates the cooling medium of the Reference Project.</p> <p>Indicative length of answer: 200 words</p>	Yes	

Ref	Topic	Eligibility Criteria	Selection Criteria
B.5	<p>What is the number of design full power days per year of the Reference Project?</p> <p>Indicative length of answer: 500 words</p>		<p>The number of design full power days will be scored with maximum marks being awarded to Candidate with the highest number.</p>
B.6	<p>In addition to the responses required under B1 through B5 above, Candidates shall provide evidence of the answers provided under B.1 through B.5 above by providing certificates issued or countersigned by the relevant client or contracting authority.</p>	Yes	

<b>C REFERENCE PROJECT IAEA NS-R-4 COMPLIANCE</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
C.1	<p>Does the Reactor Protection System of the Reference Project have the characteristics as per Design for Reliability NS-R-4: 6.35-6.43? Candidates are rrequired to provide the information and descriptions requested under C1.1 through C1.4 below.</p> <p>The Reactor Protection System is defined as the field sensors, signals conforming and electronic voting system that decides on the need to automatically shutdown the reactor of triggers other safety actions.</p> <p>Indicative length of answer: 200 words</p>	Yes	
C.1.1	<p>Are redundancy and single failure criteria as per section 6.35 – 6.43 of the NS-R-4 applied to the Reactor Protection System of the Reference Project?</p> <p>Provide a description of the design to substantiate the answer and show compliance with the NS-R-4 requirement in section 6.35 – 6.43.</p> <p>Indicative length of answer: 500 words</p>	Yes	
C.1.2	<p>Is diversity as per section 6.35 – 6.43 of the NS-R-4 applied to the Reactor Protection System of the Reference Project?</p> <p>Provide a description of the design to substantiate the answer and show compliance with the NS-R-4 requirement in section 6.35 – 6.43.</p> <p>Indicative length of answer: 500 words</p>	Yes	
C.1.3	<p>Does the Reactor Protection System of the Reference Project comply with the independence criteria of section 6.35 – 6.43 of the NS-R-4?</p> <p>Provide a description of the design to substantiate the answer and show compliance with the NS-R-4 requirement in section 6.35 – 6.43.</p> <p>Indicative length of answer: 500 words</p>	Yes	



Ref	Topic	Eligibility Criteria	Selection Criteria
C.1.4	<p>Does the Reactor Protection System of the Reference Project comply with the Fail-safe design criteria of section 6.35 – 6.43 of the NS-R-4?</p> <p>Provide a description of the design to substantiate the answer and show compliance with the NS-R-4 requirement in section 6.35 – 6.43.</p> <p>Indicative length of answer: 500 words</p>	Yes	
C.2	<p>Does the Reactor Shutdown System of the Reference Project have the characteristics as per NS-R-4: 6.90-6.94?</p> <p>The Reactor Shutdown System includes the neutron absorbers and drivers.</p> <p>Indicative length of answer: 200 words</p>	Yes	
C.2.1	<p>Does the Reference Project have the provision of a second means of shutting down the reactor or has the Reference Project been modified to include a second means of shutting down the reactor?</p> <p>Provide a description of the design to substantiate the answer.</p> <p>Indicative length of answer: 500 words</p>	Yes	
C.2.2	<p>Does the Reactor Shutdown System of the Reference Project comply with the criteria that no single failure in the shutdown system (failure of a single neutron absorber or drive thereof) shall be capable of preventing the system from fulfilling its safety function when required? In other words, remaining neutron absorbers have sufficient shutdown margin available to ensure sub-criticality of the system.</p> <p>Provide a description of the design to substantiate the answer and show compliance with the NS-R-4 requirement in section 6.90-6.94.</p> <p>Indicative length of answer: 500 words</p>	Yes	
C.3	<p>Do the Reactor Core and fuel design of the Reference Project have the characteristics as per NS-R-4: 6.79-6.86?</p> <p>Indicative length of answer: 200 words</p>	Yes	

Ref	Topic	Eligibility Criteria	Selection Criteria
C.3.1	<p>Do the Reactor Core and fuel design of the Reference Project have the provision in the design to monitor the integrity of the fuel as per NS-R-4: 6.79-6.86?</p> <p>Provide a description of the design to substantiate the answer and show compliance with the NS-R-4 requirement in section : 6.79-6.86.</p> <p>Indicative length of answer: 500 words</p>	Yes	
C.3.2	<p>Is the reactor designed so that the fuel damage in Design Basis Accidents would be kept within acceptable limits, as per the requirements of the NS-R-4 sections 6.79-6.86?</p> <p>Provide a description of the design to substantiate the answer and show compliance with the NS-R-4 requirement in section : 6.79-6.86.</p> <p>Indicative length of answer: 500 words</p>	Yes	
C.4	<p>Does the design of the Reference Project comply with NS-R-4: 7.93-7.94 regarding Radiation Protection?</p> <p>Indicative length of answer: 200 words</p>	Yes	
C.4.1	<p>Is the radiation exposures at the Reference Project subject to dose constraints that are set or approved by the regulatory body or another competent authority for the purpose of ensuring that the relevant dose limits are not exceeded?</p> <p>Provide a description to substantiate the answer and show compliance with the NS-R-4 requirement in section 7.93-7.94.</p> <p>Indicative length of answer: 500 words</p>	Yes	

<b>D REFERENCE PROJECT - DESIGN ACTIVITIES</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
D.1	<p>Which design activities were conducted within the Reference Project?</p> <p>Candidates should provide a description of that includes but is not limited to:</p> <ul style="list-style-type: none"> <li>- Describing the design of the Reference Project,</li> <li>- Specifying the number of resources employed to perform design activities for the Reference Project,</li> <li>- Providing the percentage of the design activities carried out by the Candidate,</li> <li>- Presenting the accumulative engineering hours on design activities.</li> </ul> <p>Indicative length of answer: 3000 words</p>		Scoring, highest marks are scored by Candidates that have the highest percentage of design work carried out by the Candidate.

<b>E DESIGN - CURRENT STATUS</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
E.1	<p>Did the Candidate spend at least 150,000 man-hours in total in the period 2012 – 2014 (i.e. average 50,000 man-hours per year) on design activities related to nuclear research reactors?</p> <p>Indicative length of answer: 2500 words</p> <p>Specify the total number of manhours employed in the past three years (2012 – 2014) to perform design activities and provide further detail on the resources available to conduct the following activities:</p> <ul style="list-style-type: none"> <li>- Core design</li> <li>- Fuel design</li> <li>- Utilisation equipment design</li> <li>- I&amp;C design</li> <li>- Mechanical design</li> <li>- Configuration management</li> </ul> <p>Specify current and future work load regarding new designs.</p>	<p>Yes</p> <p>Information only</p> <p>Information only</p>	
E.2	<p>Has the Candidate designed against earthquakes?</p> <p>Provide a description of the most severe earthquake that Candidate has designed for (for any nuclear research reactor).</p> <p>Provide details such as peak ground acceleration and/or richter scale.</p> <p>Indicative length of answer: 1500 words</p>		<p>Scoring, Candidate who designed against most severe earthquake obtains maximum marks</p>
E.3	<p>Has the Candidate designed against aircraft impact?</p> <p>Provide a description of the most severe aircrafts (military, civil, recreational) that Candidate has designed for (for any nuclear research reactor).</p> <p>Provide details such as specific aircraft type and/or load-time diagrams.</p> <p>Indicative length of answer: 1500 words</p>		<p>Scoring, Candidate who designed against most severe aircraft obtains maximum marks</p>

<b>F LICENSING OF REFERENCE PROJECT</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
F.1	<p>Was a Nuclear Licence obtained for the Reference Project?</p> <p>The Candidate must provide a certificate, proof or reference from its client or contracting authority.</p>	Yes	
F.2	<p>Did the Candidate participate in licensing activities for the Reference Project?</p> <p>Provide a description of the licensing activities undertaken by the Candidate. This includes but is not limited to:</p> <ul style="list-style-type: none"> <li>- Preparation of the (Preliminary) Safety Analysis Report</li> <li>- Preparation of the Probobalistic Safety Assessment (levels 1,2,3)</li> </ul> <p>Indicative length of answer: 2500 words</p>	Yes	
F.3	<p>Was the nuclear licence provided by a regulatory authority whereof their regulatory framework is based on IAEA guidelines and standards?</p> <p>Candidates should provide a description of the licences obtained and the applicable framework for the Reference Project</p> <p>Indicative length of answer: 500 words</p>	Yes	

<b>G COMMISSIONING OF REFERENCE PROJECT</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
G.1	<p>Did the Candidate participate in commissioning activities (commissioning planning and execution) of the Reference Project?</p> <p>Provide detail on the commissioning activities conducted within the Reference Project. This includes but is not limited to:</p> <ul style="list-style-type: none"> <li>- Describing commissioning of the Reference Project,</li> <li>- Specifying the number of resources employed to perform commissioning activities for the Reference Project,</li> <li>- Providing the percentage carried work out by the Candidate.</li> </ul> <p>Indicative length of answer: 2500 words</p>	Yes	



<b>H CONSTRUCTION MANAGEMENT</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
H.1	<p>Did the Candidate participate in construction management and/or construction management activities of the Reference Project or any other major project (value over € 100 million)?</p> <p>Provide detail on the construction management activities conducted within the Reference Project or any other major project (value over € 100 million). This includes:</p> <ul style="list-style-type: none"><li>- Describing the construction management activities for the project,</li><li>- Specifying the number of manhours used to perform construction management activities for the project,</li></ul> <p>Indicative length of answer: 1500 words</p>	Yes	Scoring, marks will be allocated to Candidates who participated in construction management activities

<b>I UTILIZATION EQUIPMENT AND FUEL - REFERENCE PROJECT OR ANY OTHER PROJECT</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
I.1	<p>Has the Candidate the capability to design, manufacture and commission at least two of the following types of utilization equipment?</p> <ol style="list-style-type: none"> <li>1. Irradiation rigs for small and bulk quantity productions,</li> <li>2. Molybdenum thimble tubes/ irradiation facilities,</li> <li>3. Pneumatic systems in nuclear facilities,</li> <li>4. Instrumentation and control for monitoring and controlling of irradiation facilities</li> </ol> <p>A description on types needs to be provided.</p> <p>Indicative length of answer: 2500 words</p>	Yes	
I.2	<p>Does the Reference Project use LEU fuel or has the Candidate modified a facility to use LEU fuel?</p> <p>Indicative length of answer: 500 words</p>		Scoring, marks will be allocated to Candidates who uses LEU fuel
I.3	<p>Does the Reference Project use standard MTR fuel (plate type fuel)?</p> <p>A description on types needs to be provided.</p> <p>Indicative length of answer: 500 words</p>		Scoring, marks will be allocated to Candidates who uses plate type fuel
I.4	<p>Does the Reference Project produce or have the Candidate modified a facility to produce the following radioisotopes: Lu<sup>177</sup>, Ho<sup>166</sup>, I<sup>131</sup>, Sr<sup>89</sup>, Xe<sup>133</sup></p> <p>Indicative length of answer: 2500 words</p>		Scoring on types of isotopes produced
I.5	<p>Does the Reference Project produce or have the Candidate modified a facility to produce the following radioisotopes: Ir<sup>192</sup>, Co<sup>60</sup>, Se<sup>75</sup>, Yb<sup>169</sup></p> <p>Indicative length of answer: 2500 words</p>		Scoring on types of isotopes produced
I.6	<p>Does the Reference Project produce or have the Candidate modified a facility to produce Mo<sup>99</sup> based on HEU, MEU or LEU targets?</p> <p>Indicative length of answer: 1500 words</p>		Scoring, Indicative length of answer: points if based on LEU



Ref	Topic	Eligibility Criteria	Selection Criteria
I.7	<p>What is the number of Mo<sup>99</sup> curies produced per 6-7 days irradiation period for the Reference Project or any other project?</p> <p>Indicative length of answer: 1500 words</p>		<p>Scoring on number of curies produced, with maximum marks being awarded to Candidate with highest number of curies produced</p>
I.8	<p>Does the Reference Project perform material testing?</p> <p>A short description on types of material test being performed at Reference Project needs to be provided.</p> <p>Indicative length of answer: 1500 words</p>		<p>Scoring on number of different types of material tests performed</p>

<b>J MANAGEMENT SYSTEMS</b>			
<b>Ref</b>	<b>Topic</b>	<b>Eligibility Criteria</b>	<b>Selection Criteria</b>
J.1	Provide evidence of current ISO-9001, ISO 14001, ISO/OHSAS 18001 certification and/or N-Q-A1 compliance. The certificates shall not be older than 3 years.		Scoring on number of different certificates