

## Task Proposal (SP-1)

### 1. Task Proposal

- 1.1. Task Proposal ID:** 15/TSI-003
- 1.2. Task Title:** Expert - Seals Engineer
- 1.3. Requestor / Division / Section:** WISHARD Bernard / SGTS / TSI
- 1.4. Task Proposal Type:** CFE Task
- 1.5. Task Category:** A (Measurement Methods and Techniques)
- 1.6. Reason (if task is either a joint task or desires multiple acceptance)**  
N/A

### 2. Project

- 2.1. Project ID and Title:** SGTS-002 - Techniques and Instruments for Sealing and Containment Verification
- 2.2. Project Manager / Division / Section:** WISHARD Bernard / SGTS / TSI

### 3. Safeguards Requirement Identification

#### 3.1. Background

The fundamental driver for the containment is the authorization of system that decrease Inspector effort and also enhance joint-use arrangements. The Seals Team requires support to start phased implementation of newly developed containment systems. The Cost Free Expert (CFE) provides support on the major containment projects transitioning from development to implementation.

#### 3.2. What is Needed and When

The focus would be on major developments like the glass seal, which is a potential replacement for outdated metal seal. Additionally, support is needed for the Active Optical Loop Seals (AOLS), which is a replacement for the Electronic Optical Sealing System (EOSS). Both of these projects have been approved for final field trial in 2016 by Safeguards Equipment Committee and have high probabilities of becoming approved for safeguards use. The CFE would support field trials as well as all implementation needs in order to fully integrate the systems. Additionally, Seals is challenged in meeting the Department's demand for the Laser Surface Mapping technology (LMCV) and the Ultrasonic Optical Sealing Bolts (UOSB) both of which are recently authorized for safeguards use.

#### 3.3. Why is the task needed and consequences if task is not performed

New containment systems are critical to Seals decreasing the effort of Inspectors in ever growing verification of containment (efficiency). Without additional support for new systems implementation will likely be delayed. Such delays can result in containment security that is less than optimal (effectiveness decrease). The results are Inspectors may be required to perform seal verification rather than investigations of undeclared activities

**3.4. How will the task results be used and by whom**

The successful results of this task will be used by all three SGOs to decrease inspector effort and improve enhanced cooperation with facilities and national authorities. It is anticipated that the glass seal alone could save hundreds of hours of Inspector effort when fully implemented.

**4. Proposed Sub Tasks**

**5. Proposed Work Outline**

- 5.1. Estimated Duration (months):** 36
- 5.2. Status Report Frequency:** Once every 12 month
- 5.3. Supporting Divisions(s) / Section(s):** SG / All, SGOA / OA1, SGOA / OA2, SGOA / OA3, SGOA / OAC, SGOA / OAT, SGOB / OB1, SGOB / OB2, SGOB / OB3, SGOB / OB4, SGOB / OBC, SGOC / OC1, SGOC / OC2, SGOC / OC3, SGOC / OC4, SGOC / OCC
- 5.4. End User Divisions(s) / Section(s):** SG / All, SGOA / OA1, SGOA / OA2, SGOA / OA3, SGOA / OAC, SGOA / OAT, SGOB / OB1, SGOB / OB2, SGOB / OB3, SGOB / OB4, SGOB / OBC, SGOC / OC1, SGOC / OC2, SGOC / OC3, SGOC / OC4, SGOC / OCC

**5.5. Proposed Work Phases**

**Phase Number:** 1  
**Phase Title:** Produce Work Plan

**Description**

To produce a Work Plan with Task Officer based on the following Work Phases.

**Start Month after acceptance:** 1      **End Month:** 1

**Carried out in sub tasks:**

**Phase Number:** 2

**Phase Title:** Field test

**Description**

2016: Assist with field testing of containment systems described above.

2017: Finalize changes, prepare support document for authorization, and develop procedures of containment systems

Member States jointly use containment technology to decrease cost and efforts. Additionally, Member State Support Programmes (MSSPs) are used by the Seal Team to engineer and develop systems. The CFE must coordinate with Member State Authorities and Support programs to ensure the fully integration with enhanced cooperation and implementation.

**Start Month after acceptance:** 1                      **End Month:** 12

**Carried out in sub tasks:** Subtask 1: Finalize developments and field-testing

**Phase Number:** 3

**Phase Title:** User support

**Description**

2018: Assist in the full implementation on a facility basis

**Start Month after acceptance:** 25                      **End Month:** 36

**Carried out in sub tasks:** Subtask 1: Finalize developments and field-testing

**6. Safeguards Approval Process**

**6.1. Suggested to MSSPs:** USA

**6.2. Reason for suggestion of MSSPs**

The USSP has traditionally provided a CFE for containment. Though not the only MSSP with this capability the US has a very strong technical basis due to their need for securing nuclear materials under arms control and nonproliferation agreements.

**7. Attached Documents**

Job Description

# Job Description for Professional Posts

<b>Position and Grade:</b>	Seals Engineer (P3)
<b>Organizational Unit:</b>	SGTSI Safeguards Department
<b>Duty Station:</b>	Vienna
<b>Type/Duration of Appointment:</b>	CFE

## Organizational Setting

The Sealing Team provides containment, engineering and security services to the Safeguards Department in support of all safeguard instruments and approaches. The CFE would report directly to the Seals Team Leader.

## Main Purpose

The Containment Engineer leads developments, tests, evaluations, and implementation of passive and active containment systems for IAEA safeguards purposes. The Containment Engineer is 1) a substantive contributor and specialist for the design, development, and construction of containment solutions needed for the protection of nuclear materials and security critical components. 2) an expert in the application and knowledge of computer aided design tools, modelling designs for various extreme conditions, the rapid prototyping of designs, and the final fabrication of mechanical and electrical components. 3) a team player who ensures unattended safeguard systems, currently in service or under development, meet the IAEA's requirements and standards for confidentiality, authenticity, and availability.

## Role

The Containment Engineer is: (1) an engineer responsible for all design, development, and construction of containment solutions needed for maintaining continuity of knowledge of nuclear materials and protecting critical security components; (2) an expert in the application and knowledge of computer aided design tools, modelling designs for various extreme conditions, the rapid prototyping of designs, and the final fabrication of mechanical and electrical components; (3) a technical writer of documentation for all mechanical and electrical designs.

## Partnerships

The Containment Engineer establishes relationships internally with staff throughout the Division and SGO. He/she also builds and maintains relationships with many external stakeholders: Member State Support Programmes, R&D laboratories, commercial partners, facility operators and State Authorities in order to gather and evaluate requirements and to present them to the team along with viable solutions.

## Functions / Key Results Expected

- Plan, implement, and assume responsibility for assigned developments and routine tasks requested by the Divisions of Operation.
- Liaise with R&D specialists in the Member States for the systems development.
- Participate in the planning, acquisition, distribution, maintenance and support of the systems supporting the needs of the Operation Divisions. Provide full lifecycle support for assigned systems
- Perform or coordinate the testing and evaluation of system performance in development, repair and/or maintenance.

## Knowledge, Skills and Abilities

- Communication: Communicates orally and in writing in a clear, concise and impartial manner. Takes time to listen to and understand the perspectives of others and proposes solutions.
- Achieving Results: Takes initiative in setting realistic outputs, clarifying roles, responsibilities and expected results in the context of the division/department's programme. Evaluates own results realistically, drawing conclusions from lessons learned.
- Teamwork: Actively contributes to achieving team results. Displays cultural awareness and sensitivity and supports team decisions.

## Experience

- At least 7 years of relevant work experience in design and development in the area of security systems.
- University degree in Engineering or equivalent experience.
- Computer Aided modelling and simulation, finite element analysis, strength of materials, flow simulation, stress and strain and tolerance analysis
- Electrical Printed Circuit board design and layout
- Experience in safeguards implementation, is an asset.
- Strong background and experience in designing and prototyping electromechanical systems.
- Work experience with international organizations.
- Fluency in English required. German or Russian or Spanish desirable.

<b>Internal Human Resources use only:</b>	
Effective Date:	
Occupational Group(s):	
Post Number:	