Task Proposal (SP-1)

1. **Task Proposal**

1.1. Task Proposal ID:	15/IFC-002
1.2. Task Title:	Junior Professional Officer - Statistical Data Evaluator
1.3. Requestor / Division / Section:	SUMANASENA-WANIGASEKERA Aiona / SGIM / IFC
1.4. Task Proposal Type:	JPO Task
1.5. Task Category:	D (Information Processing and Management)

1.6. Reason (if task is either a joint task or desires multiple acceptance)

Please fill in

2. **Project**

2.1. Project ID and Title:	SGIM-008 - Statistical Analysis
2.2. Project Manager / Division / Section:	Norman Claude_France / SGIM / IFC

3. **Safeguards Requirement Identification**

3.1. Background

Within the Department of Safeguards' Division of Information Management (SGIM), the Section for Nuclear Fuel Cycle Information Analysis (SGIM-IFC) contributes to the all-source information analysis necessary for the IAEA to produce credible conclusions concerning the compliance of States with their safeguards obligations. SGIM-IFC has the specific responsibility for collecting, storing and analysing the information acquired from safeguards inspectors' verification activities, e.g. non-destructive assay (NDA) and destructive analysis (DA) sample results and environmental sample (ES) results.

3.2. What is Needed and When

Given the steady increase of workload that the Section is facing since a few years due to extensive contributions to State Evaluation Reports, its consistent involvement in the statistical aspects of safeguards implementation, and especially in light of the need for additional evaluation in relation to the gradual implementation of the State-level concept, the help of a Junior Professional Officer is needed to provide assistance in the improvement of existing and the development of new effective statistical and probabilistic methodologies.

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

In the absence of additional professional human resources, some tasks of great interest for Operations Divisions will have to be declined or postponed on account of higher priority requests. Also, given the present workload versus human resources situation, it is not possible for professionals in the Section to dedicate time to the development of new state-of-the art statistical analysis tools that would be more adapted to the evolving Safeguards concepts and would increase the Section's

efficiency and the Department's detection capabilities.

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

The task results will be used by the Statistical Analysis Team, for the methodology underlying the design and evaluation of random verification schemes and detection probability calculations, the preparation of material balance evaluations and State flow analysis evaluations, the analysis of State declared data and verification data supporting the annual departmental Safeguards Implementation Report and the team's contribution to annual State Evaluations.

4. Proposed Sub Tasks

- Participation in the development of methodologies supporting random verification schemes and the evaluation thereof in terms of quantifying detection probabilities and meeting technical objectives and verification goals.
- Support in the preparation of material balance and nuclear material flow evaluations.

5. Proposed Work Outline

5.1. Estimated Duration (months):	12
5.2. Status Report Frequency:	**Once every** 3 month
5.3. Supporting Divisions(s) / Section(s):	SGIM / IFC
5.4. End User Divisions(s) / Section(s):	SGCP / CCA, SGIM / IFC, SGOA / OA1, SGOA / OA2, SGOA / OA3, SGOB / OB1, SGOB / OB2, SGOB / OB3, SGOB / OB4, SGOC / OC1, SGOC / OC2, SGOC / OC3, SGOC / OC4

5.5. Proposed Work Phases

Phase Number: 1

Phase Title: Produce Work Plan

Description

Training on statistical methodologies for safeguards.
Work Plan will be produced with the JPO.

Start Month after acceptance: 1 **End Month:** 2

Carried out in sub tasks:

Phase Number: 2

Phase Title: Implementation of Work Plan

Description

Participation in the design of random verification schemes and of methodologies for the evaluation of their results and the estimation of their detection probability in the context of State Level Approaches (SLA) and support to the preparation of material balance evaluations and State flow analysis evaluations.

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

Carried out in sub tasks:

6. Safeguards Approval Process

6.1. Suggested to MSSPs: USA

6.2. Reason for suggestion of MSSPs

A JPO provided by the USSP is requested because the highly specialized expertise required for the work required can currently only be found in US universities and national laboratories.

7. Attached Documents

N/A

IAEA
International Atomic Energy Agency

Job Description for Professional Posts

Position and Grade:	Statistical Data Evaluator (P1/P2)
Organizational Unit:	Section for Nuclear Fuel Cycle Information Analysis Division of Information Management Department of Safegaurds
Duty Station:	Vienna
Type/Duration of Appointment:	1 year

Organizational Setting

The Department of Safeguards is the organizational hub for the implementation of IAEA safeguards. The IAEA implements nuclear verification activities for more than 160 States in accordance with their safeguards agreements. The safeguards activities are undertaken within a dynamic and technically challenging environment including advanced nuclear fuel cycle facilities and complemented by the political diversity of the countries.

The Division of Information Management (SGIM) comprises of four sections and provides the Department of Safeguards with services of data processing, secure information distribution, information analysis and knowledge generation necessary to draw independent, impartial and credible safeguards conclusions.

Within SGIM, the Section for Nuclear Fuel Cycle Information Analysis (IFC) contributes to the all-source information analysis necessary for the Agency to produce credible conclusions concerning the compliance of States with their safeguards obligations. IDS has the specific responsibility of collecting, storing and analysing the information obtained by safeguards inspectors during the verification activities, e.g. Non Destructive Assay (NDA) and Destructive Assay (DA) sample results and Environmental Sample (ES) results)

Main Purpose

The Nuclear Fuel Cycle Anaysis Section supports the Agency's verification mission by contributing to the State Evaluation Process within the Department of Safeguards and by providing analytical reports to the Operations Divisions in support of safeguards verification. The Section also develops improved statistical evaluation methodologies and is in charge of the design of associated evaluation software.

Role

The Junior Professional Officer will work with a team of safeguards analysts specialised in the evaluation of quantitative and qualitative safeguards data. Her/his role will be to take part in the treatment and analysis of State declared and inspectors' verification data, as well as to assist in the development of evlauation methodologies.

Partnerships

While the Junior Professional Officer will work primarily with staff members within the Section, it is expected that the Junior Professional Officer will also develop partnerships with staff in other Sections and Divisions in order to investigate inconsistencies, discrepancies or anomalies, ensure adequate follow-up, discuss safeguards conclusions and, if necessary, deliver presentations.

Functions / Key Results Expected

- Participates in the development of methodologies supporting random verification schemes and the evaluation thereof in terms of quantifying detection probabilities and meeting technical objectives and verification goals.
- Supports the preparation of material balance and nuclear material flow evaluations.
- Assists in the development and improvement of statistical analysis methodologies
- Assist in the production of presentations and documents for conferences and training courses

Knowledge, Skills and Abilities

- Experience of the statistical analysis of nuclear data including quantitative measurement data used by safeguards inspectors. Good understanding of safeguards concepts and of the purpose of safeguards verification activities. Familiarity with computer software such as Microsoft Office, in particular EXCEL spreadsheets and with dedicated statistical software (e.g. SAS). Good communication and writing skills including the ability to draw clear and concise written conclusions from complex analyses. Excellent team spirit. Flexibility and ability to respond rapidly to new requirements and assignments.

Education, Experience and Language Skills

- University degree in Mathematics, Statistics, Physics, Chemistry, Engineering combined with relevant experience in the nuclear field.
- One year of experience in the statistical analysis of measurement data.]
- Fluency in English essential, including demonstrated ability to abstract reports and draft summary documents. Knowledge of other official Agency languages desirable.

Internal Human Resources use only:	
Effective Date:	
Occupational Group(s):	
Post Number:	