

**SP-1**  
**TASK PROPOSAL PART**

**1. Task Proposal**

1.1 Task Proposal ID: 08/CTR-006 Date received in SPA: 2008-10-15

1.2 Task Title: Development of Virtual Reality Tools for Safeguards Training

1.3 Requester / Division / Section: Crete / SGCP / CTR

1.4 Is this a CFE task? No

1.5 Task Category: B

1.6 Is this a joint task for MSSPs? No

1.7 Is multiple acceptance required? No

If 1.6 or 1.7 is yes, indicate the reason:

**2. Project**

2.1 Project ID: SGCP-102 Project Type:

2.2 Project Title: Training

2.3 Project Manager / Division / Section: Crete / SGCP / CTR

**3. Safeguards Requirement Identification**

**3.1 What is needed, why and when:**

The implementation of the safeguards training programme requires time out of Vienna and is very dependent from the availability of nuclear facilities or laboratories, or from the availability of nuclear material for hands on training on measurement equipment and techniques. Furthermore, training possibilities are restricted because of many reasons including safety, security, confidentiality..., so that SG staff can only be trained in a quite limited number of situations.

Virtual reality has the potential to broaden the spectrum of training activities, to strengthen the existing training courses, to minimize time spent by trainees out of Vienna and to make the most from facilities and experts made available by Member States by a better preparation of trainees in Vienna. Virtual reality is also a powerful educational tool since it allows high levels of interactivity. At last but not least, virtual reality can be a powerful support for capturing knowledge and best practices from experienced inspectors.

However, it is clear that virtual reality cannot totally replace tuition in real environment.

It must be underlined that virtual reality can also be use for mock facilities so that Member States and industry do not have to divulge proprietary or State confidential information.

**3.2 How will the task results be used and by whom:**

At this stage, several possibilities can be considered:

1) For SG staffs training:

-Visual observation training course for inspectors, as a prerequisite for complementary access training courses (once a diversion scenario is defined, relevant and consistent "indicators" can be easily added to the computerized facility and site), or for LFUA training course;

-Development of computer based teaching material for safeguards equipment demonstrating how the signal is produced by the nuclear material, processed and analysed through the electronics and the software, and finally presented on a screen. For instance, it would probably be easier to catch the theory of neutron coincidence measurement. It could also be used for remote monitoring system, including the operational setting of a system in a facility under integrated safeguards; and

-On a longer term, for inspectors' mission preparation, to give them a "strong" flavour of the site they are going to verify.

2) For Member States' SSACs training:

-Presentation of mock facilities, for the understanding of the definition of Material Balance Area and Key Measurement Points, with associated safeguards accountancy and control references and reporting procedures.

**3.3 Consequences if task is not performed:**

When SG staffs have to perform more and more tasks due to the changing nature of safeguards, time dedicated to training will not be optimized.

Training section will not be able to timely match existing or emerging training needs covering the very broad range of safeguards-related facilities, systems, components, equipment or situations that an inspector may encounter in the field and needs to be familiar with. (concept of just-in-time learning)

Effective and efficient standards of a training well balanced between traditional and modern teaching methods will not be reached, driving to an unsuitable way of teaching, particularly with regard to new generations of inspectors.

**4. IAEA Proposed Work Outline**

**4.1 Major task stages with timing:**

This task could be considered as an umbrella task.

The first stages would be:

- low-risk feasibility study, including a cost assessment in comparison with current training;
- development of a first mock facility for safeguards training purposes;
- development of computer based training for NDA measurement, compatible, integrated and consistent with the mock facility;
- introduction of these new tools in existing programmes;
- assessment.

**4.2 Support Division(s) / Section(s):** SGCP / CTR

**4.3 End User Division(s) / Section(s):** SG / ALL

**4.4 Estimated duration in months:** 24

**5. Safeguards Approval Process - not displayed**

**6. Acceptance by MSSP(s)**

**6.1 MSSP(s) to which the task is proposed:**  
USA

**Date accepted:**

**Agency Task ID:**