SPECIFICATION FOR

UK SBS PR19065 - THE APPROVED DOSIMETRY SERVICE FOR UKRI-STFC

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Annex A Specification Document – Services / Supplies & Services

Introduction

ISIS is a world-leading centre for research in the physical and life sciences at UK Research and Innovation (UKRI), Science and Technology Facilities Council (STFC), Rutherford Appleton Laboratory (RAL) near Oxford. ISIS is an intense pulsed neutron source providing beams of neutrons and muons to enable scientists to study the structure and properties of matter for the benefit of Science and Engineering in the UK and abroad. Our suite of neutron and muon instruments gives unique insights into the properties of materials on the atomic scale.

We support a national and international community of more than 3000 scientists for research into subjects ranging from clean energy and the environment, pharmaceuticals and health care, through to nanotechnology and materials engineering, catalysis and polymers, and on to fundamental studies of materials.

Aims & Objectives

RAL currently employs approximately 580 members of staff who require quarterly or monthly dosimeters, of whom 65 are classified as radiation workers. It also provides 'ad-hoc' dosimetry for up to 700 laboratory users per month, the majority of these being researchers using the ISIS Spallation Neutron Facility.

RAL also requires approximately up to 10 environmental perimeter dosimeters per 3 months and approximately 100 area dosimeters per month. In addition, environmental and experimental dosimetry services are required.

An Approved Dosimetry Service is required for the radiological safety programme at RAL.

Requirement

a. Legal Service

The service provided by the Approved Dosimetry Service (ADS) is required by law under the Ionising Radiations Regulations 2017, regulation 36:

1. The Executive (or such other person as may from time to time be specified in writing by the Executive) may, by a certificate in writing, approve (in accordance with such criteria as may from time to time be specified by the Executive) a suitable dosimetry service for such of the purposes of these Regulations as are specified in the certificate.

2. A certificate made pursuant to paragraph (1) may be made subject to conditions and may be revoked in writing at any time.

3. The Executive (or such other person as may from time to time be specified in writing by the Executive) may at such suitable periods as it considers appropriate carry out a re-assessment of any approval granted pursuant to paragraph (1).

b. Legislator Requirements.

1. The Bidder shall follow with all certificates of approval from the HSE as an ADS; for external dose assessment (whole body beta / X-ray and Gamma / neutron and extremity), including dose record keeping and co-ordination and special accident dosimetry under IRR17 and REPPIR2019.

2. The Bidder shall provide up to three references that comply with the requirements of having a similar scope and value to this procurement are still running or have been completed in the last five years (works) and three years (goods / services).

3. The Bidder shall provide evidence of contingency and ability to provide results / service in the event of equipment failure, to assure that the service will be given monthly.

Taking into account that RAL uses up to 1400 dosimeter's per month, of all 4 model types, which are:

- Neutron whole body.
- Beta / X-ray and Gamma – whole body.
- Beta / X-ray and Gamma – extremities.
- Beta / X-ray and Gamma – environment.

c. <u>Technical capacity</u>

The Bidder shall supply, on a monthly basis, the following quantities:

1. Neutron: 80 per month.
2. Beta / X-ray and Gamma Whole Body dosimeters: 780 per month and 600 per quarter.
3. Neutron / Beta / X-ray and Gamma Area: 100 per month.
4. Beta / X-ray and Gamma Extremities: 10 per month finger and 10 per month eye.
5. Beta / X-ray and Gamma Environmental: 10 per month.
6. For Transit / Deploy Control dosimeters: as appropriate to be provided for background subtraction.
   A minimum of one each of the following;
   Neutron / Beta / X-ray and Gamma – whole body.
   Beta / X-ray and Gamma – whole body.
   Beta / X-ray and Gamma Extremities.
   Beta / X-ray and Gamma Environmental.

d. <u>Dosimeter Specification.</u>

1. Neutron energy range
   The Neutron dosimeter, which RAL uses must be capable of detecting neutrons, from thermal, up to, or greater than 10 MeV.

2. X-rays and Gamma energy range
   The X-ray and Gamma dosimeter, which RAL uses must be capable of detecting X-rays and Gamma radiation from 5 keV, up to 10 MeV.

3. Beta energy range
   Beta dosimeter, which RAL uses must be capable of detecting Beta particles, from 150 keV to 2 MeV.

4. Minimum dose detected
   RAL requires a minimum detected dose of 10 µSv for X-ray and Gamma, and 200 µSv for neutron.

5. Maximum dose detected
   RAL requires accuracy to within + - 50% in dose results, up to 10 Sv X-ray / Gamma / Beta and 250

mSv for neutron.

6. Dose measure accuracy
   For any of the dosimeter models, RAL requires the measure accuracy to within + - 50% in field conditions, this is not dependent on energy spectra calibrations in the field.

7. Measured quantities
   For whole body and area detectors, RAL requires Hp (0.07) and Hp (10).
   For environmental detectors, RAL requires H*(10).

8. Electromagnetic influence
   For any of the dosimeter models, RAL requires the dosimeters not be influenced by any magnetic or radio frequency electromagnetic fields.

9. Electronic dosimeter
   In the case that the bidder offers an electronic device as WHOLE BODY dosimeter, the bidder must be able to provide evidences that the Whole Body dosimeter is intrinsically safe.

10. Dosimeters wearing method
    For any of the dosimeters models, RAL requires the size, the shape and the method of attachment of the dosimeter to be suitable for wearing (e.g. secure, unobtrusive to work being carried out), on a variety of work clothing; to encourage correct wearing by those who are not regular dosimeter wearers, i.e. visiting scientist and contractors.

11. Environmental response
    For any of the dosimeters models, RAL requires a dosimetry response, to environmental temperatures and moisture variations, must be below, less than +- 50% under temperatures ranging from -10C to +40C, with relative humidity up to 90%.

e. <u>Administration and Customer Service</u>

1. Dosimeters packaging

   For the following dosimeters models:
   Neutron Whole Body.
   Beta / X-ray and Gamma Whole Body & Area.
   Beta / X-ray and Gamma Extremities.

   RAL requires that the Bidder shall package the dosimeters with the named participants in envelopes, they are individually addressed to the wearer (delivery addresses within The Rutherford Appleton Laboratory, would be provided for each wearer).

   For whole body dosimeters, that have not been named, shall be identified in numerical order and packaged in numerical bundles.

2. Software and internet tools
   The bidder shall provide on-line user software, giving the dosimetry reports to be easily downloaded monthly from their internet site (into an Excel format), and notifying RAL by e-mail. Dosimetry reports must be made available within 21 days.
3. Annual Summaries
   RAL requires that the bidder shall provide annual, individual summaries of doses in electronic form.

4. Early warning

RAL requires that the bidder, in the event of notional dose reporting and exceedances of set levels, will promptly inform RAL.

5. Customer service
   RAL requires that the bidder will provide technical and service advice, within 6 – 48 hours, during UK working hours, for all the dosimeters models.

6. Worker radiation Passbook
   RAL requires that the bidder will provide up to 20 (twenty) outside workers radiation Passbooks, per year, with associated record services.

7. Internal and external dosimetry records
   RAL requires that the bidder will accept, record and store individual internal and external dosimetry data from other HSE approved internal and external dosimetry services. This data will be added to the total dose for individuals.

Timetable

The Contracting Authority is seeking to award a contract to a supplier to provide an Approved Dosimetry Services for an initial 3 year contractual period with the option to extend for a fourth year (3+1).