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INTERNATIONAL ATOMIC ENERGY AGENCY

**OCCUPATIONAL RADIATION PROTECTION APPRAISAL SERVICE
(ORPAS)**

**MISSION TO
THE UNITED ARAB EMIRATES**

1-5 November 2015

OCCUPATIONAL RADIATION PROTECTION APPRAISAL SERVICE
Conducted under IAEA Technical-Co-operation Project on Supporting the Development of
National Nuclear Power Infrastructure for Electricity Generation (UAE2003)

DEPARTMENT OF TECHNICAL CO-
OPERATION
Division for Asia and the Pacific

DEPARTMENT OF NUCLEAR SAFETY AND
SECURITY
Division of Radiation, Transport and Waste Safety

OCCUPATIONAL RADIATION PROTECTION APPRAISAL SERVICE

REPORT TO

THE GOVERNMENT OF THE UNITED ARAB EMIRATES

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The number of recommendations, suggestions and good practices is in no way a measure of the occupational radiation protection status and arrangements of participating organisations in the hosting country.

Comparisons of such numbers between ORPAS reports from different countries should not be attempted.

EXECUTIVE SUMMARY

At the request of the Government of the United Arab Emirates addressed to the International Atomic Energy Agency (IAEA) to conduct an Occupational Radiation Protection Appraisal Services (ORPAS) mission as a follow-up to the recommendations of the Integrated Regulatory Review Service (IRRS) mission, the Agency organised the ORPAS in the United Arab Emirates during 1-5 November 2015 with a Team of six international experts that include a Team Leader and an Agency Coordinator. The Federal Authority for Nuclear Regulation (FANR) acted as the national contact point for the mission.

The purpose of this mission was to appraise the regulatory and practical implementation of the occupational radiation protection arrangements in the UAE. Prior to this mission, a pre-mission was conducted to determine the participating organizations, arrange for a self-assessment by those organizations using the ORPAS questionnaires prepared by the Agency, and to agree upon the scope and dates of the mission. Accordingly, the organizations participated in the ORPAS mission were; the FANR (national regulatory authority), two dosimetry service providers (Ministry of Health, Dubai and Mafraq Hospital, Abu Dhabi), various end-users including nuclear utility ENEC (Emirates Nuclear Energy Corporation), a non-destructive testing company, nuclear well logging company, three hospitals and the General Civil Aviation Authority.

The review compared the UAE's arrangements for occupational radiation protection against the IAEA Safety standards as the international benchmark for protection and safety. The mission was also used to exchange information and experience between the Team members and the UAE counterparts. FANR provided the review team with advance materials that are relevant to the mission including the self-assessment carried out by the participating organizations.

This report provides the main findings, recommendations, and good practices identified during the mission. Detailed findings for individual facilities or service providers are provided in the Appendices.

In general, the UAE's national regulations are consistent with the International Basic Safety Standards (GSR Part 3). However, a set of essential and important recommendations is directed to the national authorities. The Regulatory Authority FANR is recommended to address the following areas to improve the national arrangements for occupational radiation protection.

- Approval of dosimetry services, including details of the type of dosimeters acceptable to the regulatory authority, calibration of dosimeters, performance testing and other relevant aspects,
- Establishment of national dose registry,
- Standardization of training protocols and the accreditation of qualified experts,
- Harmonization of worker health surveillance procedures,
- Strengthening procedures for over exposure investigations, and
- Capacity building for radionuclide intake estimation and dose evaluation.

There is a need for certain improvements in the overall occupational radiation protection arrangements as identified at end user facilities and technical service providers.

The dosimetry service providers should enhance external dosimetry arrangements for calibration, routine testing, performance testing (to be performed at least once a year) and extend the calibration to cover high dose measurements in case of emergency situations and should develop a “Quality Control Manual” as part of future accreditation/approval of services. Manpower resource and their relevant training should be reviewed and further enhanced to improve currently available dosimetry service capacities.

ENEC should complete station documentation and procedures as an essential recommendation. Other areas of concern recommended to ENEC are;

- Implementation of the necessary arrangements for approval or accreditation of the external / internal and Dose Record Keeping Services,
- Review of plans for the internal dosimetry services to ensure it is capable to meet the requirements of normal operation and potential accidents,
- Review the on-site facilities and equipment provisions for managing the radiation protection of emergency workers against the relevant IAEA standards,
- Review and finalisation of the provision of radiation protection instrument services (calibration and type testing) required to support the workplace monitoring arrangements; and
- Implementation of the necessary arrangements for the training and approval or accreditation of Qualified Experts /Radiation Protection Officers.

In the medical facilities, arrangements should be made for improving local responsibility for radiation safety for different types of medical practices within a hospital. Investigation levels and dose constraints should be implemented for personal doses in accordance with the FANR Regulatory Guide - Radiation Safety (FANR-RG-007), and results exceeding these values should be investigated to determine whether or not doses can be further optimized. It is also recommended to set investigation levels above which results should be recorded in workplace monitoring related documentation. Such records should then be periodically reviewed to identify whether or not any systematic variations are occurring. It is recommended to update the Radiation Protection Programmes and relevant documentation of the hospitals to include the dose limit for the lens of eye according to the National Regulation (FANR-REG-24) and to implement in practice.

Overall the arrangement for cosmic exposures in the country meets the relevant international standards and the requirements of International Basic Safety Standards.

The appraisal team identified a number of good practices across various practices and few of them are given below.

- Clear guidance to implement the requirement for the use of investigation levels and dose constraints for optimization of protection in the licensed facilities.
- Periodic maintenance of the TLD readers and its electronic quality control with documentary evidence ensured smooth operation of the equipment to serve its purpose.
- The use of practice specific investigation dose levels for monitoring and controlling worker doses at the end-user level; workers who exceed the investigation levels are referred to a medical review.

- Good arrangements for transport of radioactive sources between storage facility and radiography sites using company car equipped with tracking devices and emergency equipment, and company driver specifically trained for the purpose of transportation.
- The use of collimator as a self-imposed mandatory requirement in the performance of industrial radiography, where is practicable.

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1. INTRODUCTION

BACKGROUND

1.1. The International Atomic Energy Agency (IAEA) is authorized by its Statute to establish or adopt international standards of safety for protection of health and minimization of danger to life and property, and to provide for their application. This has led to the publication, inter alia, of the *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (IAEA GSR Part 3)*. The IAEA has also a statutory responsibility to provide for the application of these international Basic Safety Standards in Member States. To check whether the application of the standards is appropriate, the IAEA carries out appraisal reviews. This document is intended to assist in the appraisal of one area of application of the international safety standards, namely Occupational Radiation Protection.

1.2. To assist Member States in meeting the requirements for Occupational Radiation Protection, the IAEA has published series of Safety Guides which are jointly sponsored by the IAEA and the International Labour Office (ILO). These are the specific publications against which the appraisal described in this document is conducted. The IAEA has also published additional technical information on particular techniques.

CONCEPT OF APPRAISAL

1.3. An evaluation, or appraisal, of occupational radiation protection arrangements following a development and implementation programme, and periodically thereafter, is an effective way to ensure that those arrangements are optimized and effective. An appraisal provides an opportunity for a Member State to have its Occupational Radiation Protection programme independently assessed and evaluated. An independent assessment is often useful to maintain or enhance the effectiveness of the programme and to identify in an objective and unbiased manner the areas where improvements may be required. A secondary benefit is that an independent appraisal allows information on best practices from the host country to be made available to other Member States. It is also the intention that in due course, countries will be able to carry out their own self-assessment, using similar procedures to those described in this document.

SCOPE

1.4. This document is a report of an appraisal team's mission to the United Arab Emirates, primarily to check the regulatory and practical implementation of Occupational Radiation Protection arrangements. It includes some background as to the appraisal methods that were used. Conclusions and recommendations are made for the United Arab Emirates, but the document also includes recommendations to the IAEA with regard to the structure and conducts of future appraisals.

STRUCTURE

1.5. The document consists of four chapters of main text, supported by ten Appendices that mostly provide the detailed findings of the mission and three Annexes.

2. OCCUPATIONAL RADIATION PROTECTION APPRAISAL

KEY OBJECTIVES

2.1. The purpose of the appraisal is to check the regulatory and practical implementation of Occupational Radiation Protection arrangements in the requesting Member State. In other words, the review tries to answer the question “are the arrangements adequate and will they work?” given the national context in which they are applied. An appraisal also aims at identifying specific strengths and best practices that can be shared with other Member States of the IAEA. Finally, an appraisal provides a basis for determining where improvements may be required and for recommending actions to make such improvements.

2.2. In support of the purpose, the key objectives of the appraisal are to:

- provide the United Arab Emirates with an objective assessment of the provisions for occupational radiation protection;
- identify areas where performance should be improved to meet international standards;
- make recommendations on actions to be taken to achieve such improvements; and
- identify the strengths in the host country which are unique and worthy of bringing to the attention of others.

METHODOLOGY AND EVALUATION CRITERIA

2.3. The evaluation criteria applied are based on the performance requirements as set out in the following Safety Requirement and Guides:

- Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (IAEA General Safety Requirements Part 3 No. GSR Part 3, 2014);
- Occupational Radiation Protection (IAEA Safety Standards Series No. RS-G-1.1, 1999);
- Assessment of Occupational Exposure due to Intakes of Radionuclides (IAEA Safety Standards Series No. RS-G-1.2, 1999);
- Assessment of Occupational Exposure due to External Sources of Radiation (IAEA Safety Standards Series No. RS-G-1.3, 1999);
- Occupational Radiation Protection in the Mining and Processing of Ores, (IAEA Safety Standards Series No. RS-G-1.6, 2006);
- The Management System for Technical Services in Radiation Safety (IAEA Safety Standards Series No. GS-G-3.2, 2008).
- Due consideration was also given to the draft Safety Guide on Occupational Radiation Protection - DS453 (to be published, the new Safety Guide will supersede the relevant Occupational Radiation Protection Safety Guides)

EVALUATION OF FINDINGS – STRENGTHS WORTHY OF SPECIAL MERIT

2.4. It is far easier to criticize and point out failures than it is to identify aspects that represent best practice or are particularly good. However, throughout the mission, the appraisal team was careful to identify aspects that are considered to be representative of good practice(s) in particular areas. In this context, good practice was considered to be an approach, methodology or system which, within the framework of the overall Occupational Radiation Protection Programme, was highly likely to achieve the required objective.

EVALUATION OF FINDINGS – WEAKNESSES AND CONSEQUENT RECOMMENDATIONS

2.5. Identified deficiencies were assessed according to their perceived impact on the protection of workers, and recommendations for improvements have been made to the United Arab Emirates.

2.6. The appraisal team considered the actual or potential consequences arising from each identified area of limited effectiveness and have reflected this in the prioritization of the associated recommendations. The following priority categories have been used:

Essential, means the recommendation addresses a serious weakness in the Occupational Radiation Protection Programme.

Important, means until the situation is corrected; occupational radiation protection effectiveness in a certain area is compromised.

Advised, means that the recommendation identifies a relatively minor weakness.

2.7. This system of prioritization goes along with the following guidelines for the suggested timing of the implementation of the recommendations:

Priority	Timing of Implementation
Essential	Should be immediate, certainly without undue delay.
Important	Should be reasonably achieved as soon as possible.
Advised	Implementation enhances effectiveness but may be delayed.

3. APPRAISAL PROCEDURE

THE UAE REQUEST AND RESPONSE

3.1. The United Arab Emirates requested the IAEA's assistance to implement the IRRS mission recommendation which states that "the FANR should consider within two years an IAEA Occupational Radiation Protection Appraisal Service (ORPAS) mission in order, among other goals, to define an action plan for further development of the infrastructure for the monitoring of occupationally exposed workers" (IRRS mission Report, 2011 - Recommendation -S32) and it was conducted through the UAE's national project, titled as Supporting the Development of National Nuclear Power Infrastructure for Electricity Generation (UAE2003).

PREPARATORY VISIT AND OUTCOME

3.2. A preparatory visit to United Arab Emirates was conducted from 31 August to 4 September 2014 by Mr Tasos Zodiates (EDF, UK) expert on behalf of the IAEA and Mr Haridasan P. P., IAEA Division of Radiation, Transport and Waste Safety as the IAEA coordinator for the mission.

3.3. Discussions and visits were made to:

- Federal Authority for Nuclear Regulation (FANR)
- Gulf International Cancer Centre – Abu Dhabi (End User – Radiation Therapy / Nuclear Medicine)
- American Hospital – Dubai (End User – Radiation Imaging & Therapy / Nuclear Medicine)
- Mafraq Hospital – Abu Dhabi (External Dosimetry Services)
- Lonestar Technical and Industrial Services – Abu Dhabi (End User - Industrial Radiography)
- Weatherford International Inc. Technical and Industrial Services – Abu Dhabi (End User – Well Logging)
- Emirates Nuclear Energy Corporation – Abu Dhabi (End User – Nuclear Power)

3.4. The mission objectives and the scope of the appraisal were agreed, given in section 2.1 and in section 3.3 respectively. The duration of the main mission was set at one week, and prior to the main mission, arrangements were made to provide each participating organization in the United Arab Emirates with copies of ORPAS questionnaires that were relevant to their participation. It was intended that participating organizations should complete their questionnaires and return them to the IAEA by May 2015 so that briefing material could be prepared for the ORPAS team members.

AGREED SCOPE

3.5. During the preparatory visit it was agreed that the mission should involve appraisals of the regulatory authority, as well service providers and end-users (i.e. users of radiation). A provisional list of organizations was drawn up and was subject to some modification prior to the mission.

TEAM

3.6. It was decided that the scope and duration of the appraisal required a team of five experts and an IAEA coordinator, comprising of:

- an experienced specialist in occupational radiation protection to act as team leader,
- at least two experienced specialists on ORP in medical applications and individual dosimetry,
- an experienced specialist on ORP in industrial practices, and
- an experienced specialist from the nuclear power industry.

3.7. Accordingly, the IAEA has selected the ORPAS Team for conducting the mission in the UAE.

MISSION PLANNING

3.8. After receiving the relevant information and self-assessment by the counterpart, detailed planning for the mission took place during the period 24 - 28 August 2015, when the team leader visited the IAEA in Vienna. This included:

- detailed discussions with the IAEA coordinator,
- study of a large amount of relevant background information and material,
- creation of a guidance document for team members and for the UAE counterpart (including draft programme for the full mission), and
- compilation of an information package that was sent to team members.

MISSION PROGRAMME

3.9. The draft mission programme required slight amendments and the following programme was followed:

Date & time	Event	Participants
1 November 2015	Initial meeting with the UAE counterparts	ORPAS Team members & FANR representatives (Mr Giuffrida, Ms Al Shehhi)
1 November 2015	Initial team meeting	ORPAS Team members
1 November 2015	Briefing meeting with representatives from the participating organizations	All (See Annex-III)
2-4 November 2015	Site/facility visits, discussion, verification of records and interviews	See Annex-II
4 November 2015	Team meeting, preparation for Exit Briefing	All
5 November 2015	Exit Briefing with representatives from most of the participating organizations	All
5 November 2015	Final team meeting	All

CONDUCT OF VISITS

3.10. It was agreed at the initial team meeting that visits should focus on the compilation of information and data necessary to complete the questionnaire that was relevant to the purpose of the visit. Prior to each visit, the team members had the opportunity to evaluate the pre-mission questionnaires provided by each participating organization. This was valuable in pre-planning aspects of each visit and concentrating on important issues. However, time was a limiting factor for practically all the visits.

3.11. Visits included a tour of each facility in order to obtain a comprehensive understanding of the information being gathered. It was noted that the briefing meeting organized on the first of the mission had provided valuable introduction of the purpose and conduct of the appraisal to the participating organisations and relevant staff.

3.12. During each visit, the opportunity was taken to collect available documentation that would be of value in the subsequent evaluation of the findings. As appropriate to each individual visit, these documents included:

- Regulations and regulatory guidance material, such as codes of practice;
- Procedures for dosimetry laboratories such as calibration protocols;
- Annual or other reviews of occupational exposures;
- Results of performance tests or intercomparisons;
- Quality assurance documentation;
- Examples of optimization or ‘ALARA’ studies;
- Examples of local rules etc.; and
- Investigation reports on overexposures.

REPORTING SCHEDULE

3.13. The following reporting schedule was agreed at the exit meeting:

Action	Completion Date (not later than)
Completed questionnaires, plus summaries of findings for inclusion in the final report, sent to team leader	End of November 2015
Compilation of first draft of report by team leader and circulation to team members for comments	1 December 2015
Comments from team members back to team leader	15 December 2015
Final draft from team leader to IAEA coordinator for editing and internal approval	End of December 2015
Approved report back to team leader for final acceptance	January 2016
Report returned to IAEA by team leader	Immediate
Report sent from the IAEA to counterpart in UAE	End of January 2016
UAE comments by counterpart to IAEA coordinator	15 February 2016
Issue of final report	28 February 2016

4. MISSION IN GENERAL AND MAIN FINDINGS

BRIEFING

3.14. The briefing session was held on Sunday 1 November 2015 and attended by all the organizations that would be involved in the mission (see Annex- III), including:

- Federal Authority for Nuclear Regulation (FANR),
- Lonestar Technical and Industrial Services,
- Weatherford International Inc.,
- Ministry of Health, Dubai,
- Mafraq Hospital,
- American Hospital Dubai,
- Gulf International Cancer Hospital,
- Emirates Nuclear Energy Cooperation (ENEC),
- UAE General Civil Aviation Authority,
- IAEA ORPAS team.

3.15. The ORPAS team held an initial preparatory meeting with the counterpart (FANR) to discuss and agree on the detailed programme of the mission on 1 November 2015. The team members and two senior staff (Director of Radiation Safety Department and Regulated Materials Manager, FANR) were present at the meeting. The plan for the briefing meeting, site visits and teams for individual facility visits were agreed upon. The detailed agreed programme is provided in Annex II.

3.16. Briefing meeting at FANR conference room followed with an initial meeting of representatives from all participating organizations. The meeting was chaired by the ORPAS Mission Team Leader and attended by 37 representatives (List of participants is given in Annex-III). FANR representative and the IAEA officially welcomed all participants followed by a self-introduction of the participants. The meeting consisted of following formal presentations.

- Occupational Radiation Protection Appraisal Service, by Mr B. Okyar (IAEA).
- The Appraisal Review in the UAE, by Mr P.P. Haridasan (Team Leader).

The first presentation by the IAEA coordinator covered information on the Agency's services for Member States in general, the ORPAS process, details and findings of the pre-ORPAS mission, details of the ORPAS Team and information on the draft action plan of FANR prepared in June 2015. After the presentations, each member of the team provided a detailed self-introduction that gave overall adequacy and reputation of the ORPAS team members to the counterpart. The team covered all the technical areas regulatory, industrial, nuclear and medical sectors.

The second presentation by the Team Leader explained the work plan of the entire week and details of the teams delegated for different site visits and other aspects of the mission. These

were followed by questions and an open discussion. The briefing meeting greatly facilitated the mission process.

MEETING WITH THE DIRECTOR GENERAL, FANR

3.17. The Team Leader and the IAEA coordinator had a courtesy visit to Mr Viktorsson (Director General, FANR) with the assistance of national counterpart to introduce the ORPAS mission objectives in general and to provide information on team members, planning for the conduct of the mission and details of the planned site visits. The team leader thanked FANR for its support and for the preparation of mission and facilities made available for site visits during the mission.

APPRAISAL AT THE REGULATORY AUTHORITY, END-USER FACILITIES AND TECHNICAL SERVICE PROVIDERS

3.18. The ORPAS Team conducted the appraisal at the FANR (UAE National Regulator), end-user facilities such as industrial radiography/NDT test operator, Nuclear Well logging operator, three hospitals, two dosimetry service providers and nuclear power project operator. Details of the findings and recommendations of the appraisal conducted at these facilities are provided in Appendices 1 to 10. Major generic recommendations and good practices identified during the mission are given in chapter 4.

MEETING WITH GENERAL CIVIL AVIATION AUTHORITY

3.19. The ORPAS team held discussion with the representative of the General Civil Aviation Authority (GCAA) regarding the implementation of the national regulations to control cosmic ray exposure of the flight crew. Details of the findings and recommendations are provided in Appendix-10.

MEETING WITH EMIRATES NUCLEAR ENERGY COOPERATION

3.20. In the afternoon of the first day, a meeting between the ORPAS team and Emirates Nuclear Energy Cooperation (ENEC) took place during which ENEC representative made a presentation on the Emergency planning and preparedness arrangements. Further discussions took place on the third day during the meeting with ENEC and the conclusions are reported in the corresponding section.

ORPAS MAIN FINDINGS

Recommendations

3.21. In general, the UAE's national regulations are consistent with the International Basic Safety Standards GSR Part 3. However, a set of essential and important recommendations is directed to the national authorities. The Regulatory Authority FANR is recommended to

address the following areas to improve the national arrangements for occupational radiation protection.

- Approval of dosimetry services, including details of the type of dosimeters acceptable to the regulatory authority, calibration of dosimeters, performance testing and other relevant aspects,
- Establishment of national dose registry,
- Standardization of training protocols, the accreditation of qualified experts,
- Harmonization of health surveillance procedures,
- Strengthening procedures for over exposure investigations, and
- Capacity building for radionuclide intake estimation and dose evaluation.

There is a need for certain improvements in the overall occupational radiation protection arrangements as identified at end user facilities and service providers.

The dosimetry service providers should enhance external dosimetry arrangements for calibration, routine testing, performance testing (at least yearly) and extend the calibration to cover high dose measurements in case of emergency situations and should develop a “Quality Control Manual” as part of future accreditation/approval of services. Manpower resource and their relevant training should be reviewed and further enhanced to ensure ongoing dosimetry service.

ENEC should complete station documentation and procedures as an essential recommendation. Other areas of concern recommended to ENEC are; implement the necessary arrangements for the approval or accreditation of the External/Internal and Dose Record Keeping Services, review the plans for the internal dosimetry services to ensure it is capable to meet the requirements of normal operation and potential accidents, review the on-site facilities and equipment provisions for managing the radiation protection of emergency workers against IAEA standards, review and finalise the provision of radiation protection instrument services (calibration & type testing) required to support the workplace monitoring arrangements; and implement the necessary arrangements for the training and approval or accreditation of Qualified Experts /Radiation Protection Officers.

In the medical facilities, arrangements should be made for improving local responsibility for radiation safety for different type of medical practices within a hospital. Investigation levels and dose constraints should be implemented for personal doses in accordance with the FANR Regulatory Guide- Radiation Safety (FANR-RG-007), and results exceeding these values should be investigated to determine whether or not doses are further optimized. It is also recommended to set Investigation Levels above which results should be recorded in workplace monitoring related documentation. Such records should then be periodically reviewed to identify whether or not any systematic variations are occurring. It is recommended to update the Radiation Protection Programmes and relevant documentation of

the hospitals to include the dose limit for the lens of eye according to the National Regulation (FANR-REG-24) and to implement in practice.

The GCAA closely follows the international standards (such as International Civil Aviation Organisation-ICAO) to regulate the practices in the country with good understanding on radiation protection of air crew. Overall the arrangement for cosmic exposures in the country meets the international aviation standards and the international safety requirements. However, the use of reference levels is highly recommended for the regulation and information exchange mechanisms (such as notification to FANR) should be made clear in the regulation.

Good Practices

3.22. Good practices identified during the mission are listed below.

- Clear guidance to implement the requirement for the use of investigation levels and dose constraints for optimization of protection in the licensed facilities.
- Periodic maintenance of the TLD readers and its electronic quality control with documentary evidence ensured smooth operation of the equipment to serve its purpose.
- The use of practice specific investigation dose levels for monitoring and controlling worker doses; workers who exceed the investigation levels (such as 2.5 mSv in industrial radiography practices) are referred to a medical review.
- Good arrangements for transport of sources between storage facility and radiography sites using own car equipped with tracking devices and emergency equipment, and own driver.
- The use of collimator as a self-imposed mandatory requirements in the performance of industrial radiography where is practicable.

3.23. For facility specific detailed recommendations and good practices, please refer Appendices prepared for each of the end-users and service providers.

ANNEX I: IAEA REFERENCE MATERIAL USED FOR THE MISSION

- Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (IAEA General Safety Requirements Part 3 No. GSR Part 3, 2014);
- Occupational Radiation Protection (IAEA Safety Standards Series No. RS-G-1.1, 1999);
- Assessment of Occupational Exposure due to Intakes of Radionuclides (IAEA Safety Standards Series No. RS-G-1.2, 1999);
- Assessment of Occupational Exposure due to External Sources of Radiation (IAEA Safety Standards Series No. RS-G-1.3, 1999);
- The Management System for Technical Services in Radiation Safety (IAEA Safety Standards Series No. GS-G-3.2, 2008);
- Occupational Radiation Protection (IAEA Draft Safety Standards, DS453, 2015).

ANNEX II: MISSION PROGRAMME

Occupational Radiation Protection Appraisals Mission
United Arab Emirates
1 – 5 November 2015

	1 November Sunday	2 November Monday	3 November Tuesday	4 November Wednesday	5 November Friday
09:00	Initial meeting <i>(with UAE counterparts)</i> Briefing meeting 11:00 <i>(with reps. from the participating orgs. And FANR staff)</i>	- Gulf International Cancer Centre (Abu Dhabi) - Lonestar Technical and Industrial Services (Abu Dhabi)	- Radiation Protection Lab-MoH (Dubai) - American Hospital (Dubai) - ENEC (Abu Dhabi)	- Mafraq Hospital (Abu Dhabi) - Weatherford (Abu Dhabi) - FANR	Team Meeting <i>(preparation for the Exit Briefing)</i>
12:30-13:30	Lunch	Lunch	Lunch	Lunch	Lunch
13:30	Civil Aviation Authority – meeting Initial Team Meeting	Cont'd	Cont'd	Cont'd	Exit briefing 12:00
17:00	Cont'd	Cont'd	Cont'd	Cont'd	Final Team Meeting
		Team briefing	Team briefing	Team briefing	

ANNEX III: LIST OF MISSION COUNTERPARTS

1. Mohammad **AREF** Weatherford International Inc.
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