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 extent 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.