Exceptional service in the national interest

SAND2015-7412C

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Examples of US Nuclear Regulatory Commission Regulator-to-Regulator support to Iraq

John R. Cochran

4 September, 2015

U.S. DEPARTMENT OF ENERGY

National Nuclear Security Administration

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Office of International Programs

- **US NRC supports international activities for safe and secure management of nuclear materials**
- **US NRC participates in international working groups and provides assistance to international organizations to develop effective regulatory organizations and enforce rigorous safety standards**
- **US NRC has close working relations with nuclear agencies in more than 35 countries**

Examples of US NRC Regulator-to-Regulator support to Iraq

- **Training in How to License a LLW Storage Facility & Review of Safety Case**
- **Sealed Source Inspector Training**
- **Participation in NRC's RIC**

- **Radioactive Control Technician Training Part 1**
- **Environmental Impact Assessment Workshop**
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How to License a LLW Storage Facility & Review of Safety Case

- **4-day training, December 2014, Vienna**
- **Funded by the US NRC**
- **Presented by Sandia National Laboratories**
- **Hosted by the IAEA**
- **5 regulators and 2 licensees**

Goals:

- **Review Key Concepts of Licensing using IAEA guidance**
- **Review Main Components of a License using IAEA guidance**
- **Reviewed western-style licenses**
- **RPC present licensing program**
- **MoST present safety case for rad storage facility**
- **Discussions between RPC and MoST**

Example - What is Radiation Safety?

- **Radiation safety is sometimes divided into 4 interrelated considerations:**
  1. **Control of radiation exposure to people***
  2. **Control of releases to the environment**
  3. **Restrict likelihood of events leading to loss of control**
  4. **Prepare to mitigate consequences, if control is lost**

*** Radiation exposures to people**

1. **Limiting doses to public - for example, < 0.2 mSv/yr.**
2. **Limiting doses to workers - for example, < 50 mSv/yr.**

Example - What is a License?

- **A license is:**
  - **a legal document**
  - **issued by a licensing authority**
  - **to a licensee**
  - **specifying conditions necessary for radiation safety and**
  - **granting authorization**
  - **to create a nuclear or radioactive facility and/or**
  - **to perform specified activities.**

Example - Why is a license necessary?

- **Nuclear and radiation safety is a national responsibility**
- **National responsibility for radiation safety can be shared with others – with the assurance that others will meet national radiation safety requirements**
- **License is the legal document by-which the national regulatory body authorizes others to create nuclear or radiological facilities and perform certain activities**
- **Concepts from IAEA *Fundamental Safety Principles* (IAEA SF-1)**

Example - What is a Graded Approach?

- **"The resources devoted to safety … have to be commensurate with *the magnitude of the radiation risks*." (From Principle 5 of the IAEA's *Fundamental Safety Principles*)**

- **Devote significant resources to activities and/or wastes with high rad risk**
- **Devote small resources to activities and/or wastes with small rad risk**
- **Facilities should be licensed and inspected using a graded approach**

Example - Typical contents of a license* (1/4)

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(a) A unique licence identification number.

(b) The regulatory authority and the law(s) and regulations under which the license is issued.

(c) The identification of the licensee (organization legally responsible for the licensed installation and/or activities).

(d) A detailed description of the nuclear or radiological installation, its location and its activities.

(e) Maximum inventory

*** From IAEA SSG-12 "Licensing Process for Nuclear Installations"**

Public Participation in Licensing

“Sandia National Laboratory Defends its Toxic and Radioactive Landfill at Pubic Meeting” 18 November, 2014

Example – Review of Western-Style Licenses

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- **In Introduction of Key Concepts , we reviewed 21 items typically found in a license for a radiological facility**
- **The 21 items were a list, without details**
- **To provide details , we will review two western-style licenses, that provide examples of actual text in a license**

1. **License for Waste Control Specialists**
   - **New, large, facility**
   - **Licensed to receive, store, treat and disposal of radioactive waste**
   - **Part 1**
2. **License for Sandia National Laboratories**
   - **Large U.S. national laboratory, ~ 10,000 employees**
   - **Research and development, not large volumes**
   - **Licensed to generate, store and treat hazardous wastes**

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Texas Commission on Environmental Quality

DRAFT Radioactive Material License

Pursuant to the Texas Radiation Control Act, Texas Commission on Environmental Quality, (TCEQ or commission) and Title 30 of the Texas Administrative Code (30 TAC), and in reliance on statements and representations heretofore made by the Licensee, a license is hereby issued authorizing the Licensee to receive, possess, use, store, dispose and transfer radioactive material listed below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations and orders of the Texas Commission on Environmental Quality now or hereafter in effect and to any conditions specified below.

Licensee Customer Number:	CN600616890
Licensee Name:	1. Waste Control Specialists LLC ATTN: Jay Cartwright
Licensee Address:	2. P.O. Box 1129 Andrews, Texas 79714
License Number:	3. R04100
License Expiration Date:	3.A. September 10, 2024
This license is issued in response to an application(s) received dated:	4. Decision by executive director
Amendment Number 27:	4.A. Issued on ***, 2014

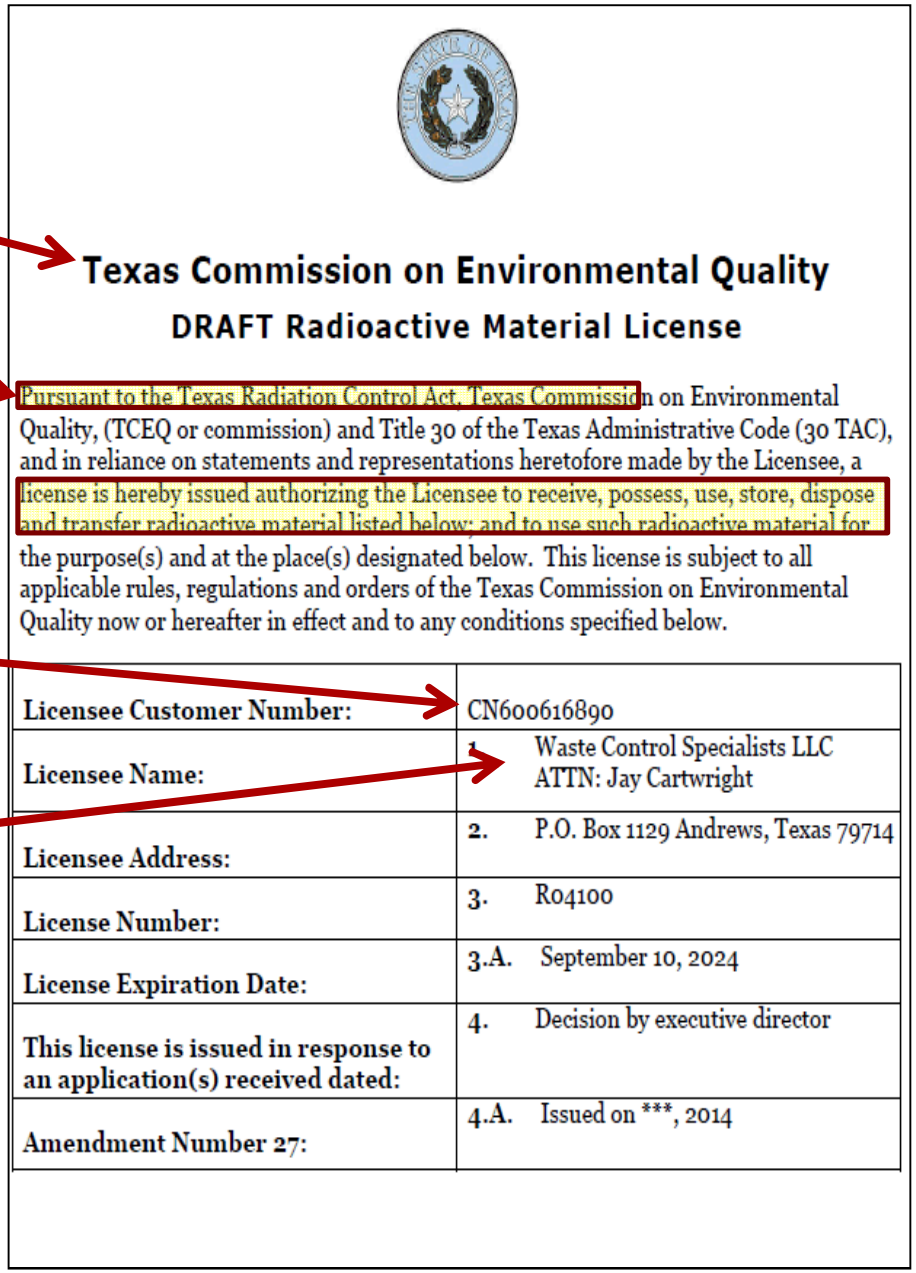
Who is issuing the license

What is their authority

What is the license for

License number

Who is licensed



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US NRC training - *Licensing and Review of the Safety Case for Iraq's New Radioactive Waste Storage Facility*

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Agenda for Inspector Training

- **Training Goal:** To familiarize members of the Iraqi Radioactive Sources Regulatory Authority (IRSRA) with the fundamentals of radioactive source inspections.

- **Training Objectives:**
  - Understand the key radiation safety principles.
  - Identify elements and actions of an effective sealed radioactive source inspection program.
  - Respond appropriately to various unplanned situations involving radioactive sources.

Agenda

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AGENDA – Day 1:

- **LESSON 1: Review of Key Radiation Safety Principles**
- **LESSON 2: Overview of Radiation & Contamination Survey Instruments and Surveys**

AGENDA – Day 2:

- **LESSON 3: Fundamentals of Radioactive Source Inspections**
- **LESSON 4: "Off-Normal" Events and Conditions**

AGENDA – Day 3:

- **LESSON 5: Source Inspection Exercises**

Example - LESSON 2: Overview of Radiation & Contamination Survey Instruments and Surveys

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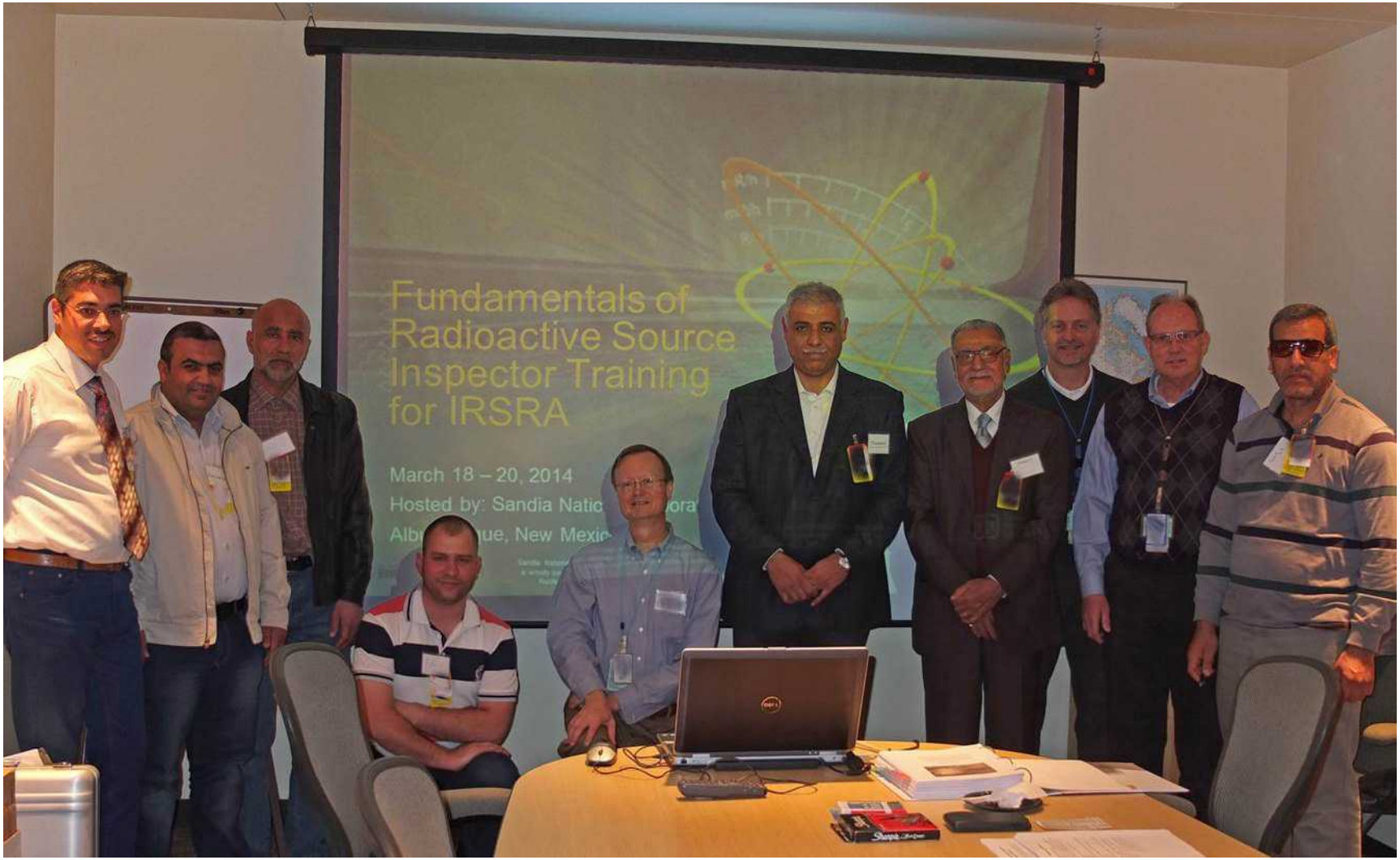
- Upon completion of this lesson, the participant should have a general understanding of the use of monitoring instruments commonly used for conducting radiation and contamination surveys.
- Enabling Objectives:
  - List the factors which affect the selection of portable radiation and contamination survey instruments.
  - Identify desirable features and specifications for typical, portable radiation and contamination survey instruments:
- Practical Activity: Radiation & Contamination Survey Instruments


Fundamentals of
Radioactive Source
Inspector Training
for IRSRA
March 18 – 20, 2014


Oceanside

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Participation in Technical Conferences

- **Opportunity to meet other professionals in same field**
- **Opportunity to hear presentations by others facing similar challenges**
- **Opportunity to meet vendors and see new equipment**
- **Opportunity to highlight successes to peers**

EXAMPLE – funded by US Dept. of State

Radioactive Waste Management and Nuclear Facility Decommissioning Progress in Iraq

Dr. Fouad Al-Musawi*
Dr. Emad S. Shamsaldin,* Hadi Jasim,* and John R. Cochran**

Ministry of Science and Technology, Baghdad, Iraq
***** Sandia National Laboratories, Albuquerque, NM, USA***

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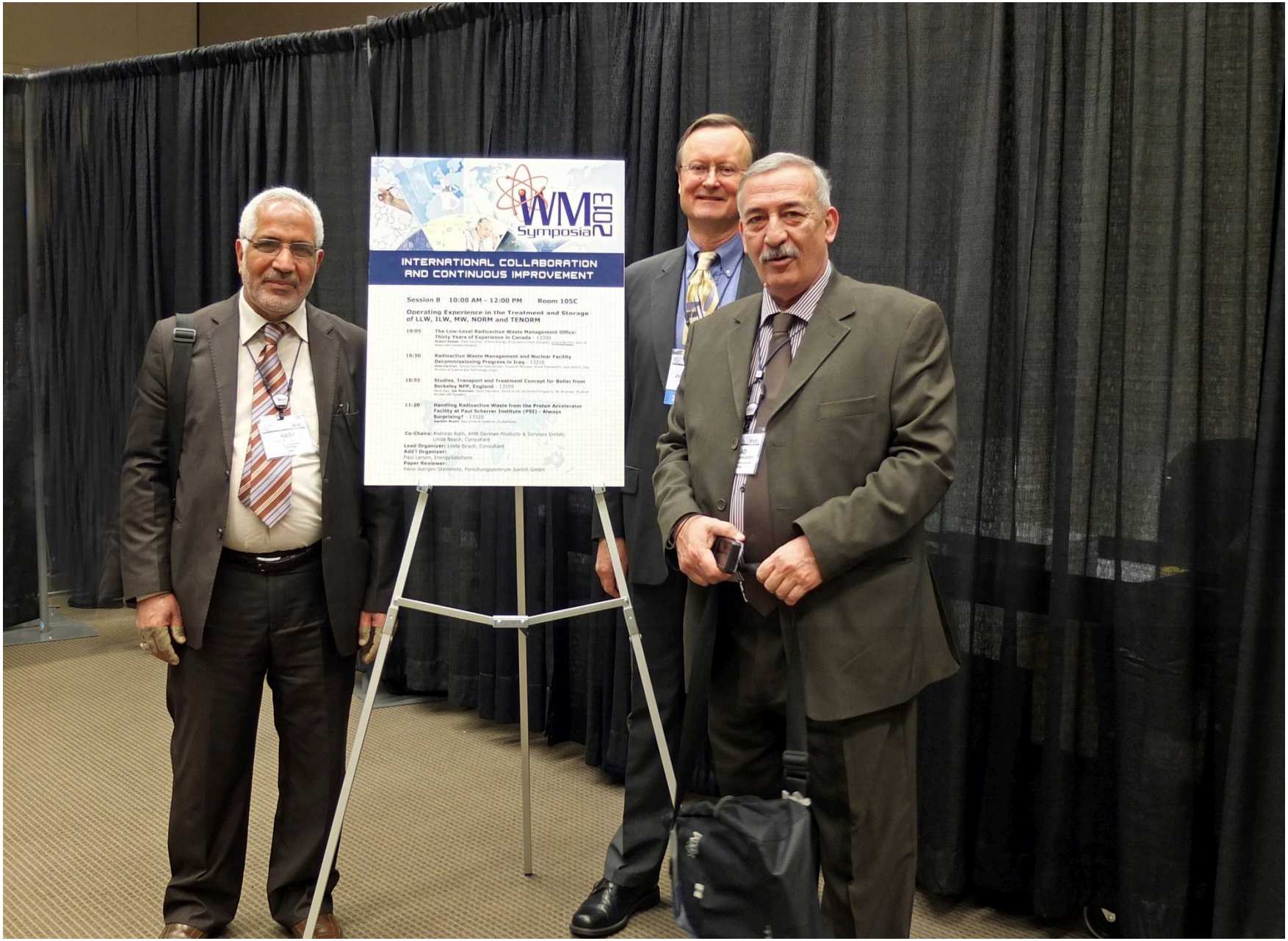
WM Symposia 2013
INTERNATIONAL COLLABORATION AND CONTINUOUS IMPROVEMENT
Session 8 10:00 AM - 12:00 PM Room 105C
Operating Experience in the Treatment and Storage of LLW, ILW, MW, NORM and TENORM
10:05 The Low-Level Radioactive Waste Management Office: Thirty Years of Experience in Canada - 13300
10:30 Radioactive Waste Management and Nuclear Facility Decommissioning Progress in Iraq - 13310
10:55 Studies, Transport and Treatment Concept for Boiler from Berkeley NPP, England - 13309
11:20 Handling Radioactive Waste from the Proton Accelerator Facility at Paul Scherrer Institute (PSI) – Always Surprising? - 13320
Co-Chairs: Andreas Roth, AHR German Products & Services GmbH; Linda Beach, Consultant
Lead Organizer: Linda Beach, Consultant
Add'l Organizer: Paul Larsen, EnergySolutions
Paper Reviewer: Hans-Juergen Steinmetz, Forschungszentrum Juelich GmbH

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Thank You