

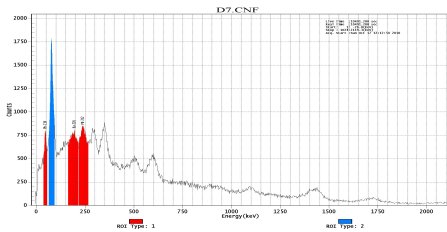
NORM Survey & Training at an Oil & Gas Field in the Middle East

normtec have successfully undertaken a NORM legacy survey at Sharjah in the UAE. Training was also provided for local staff to facilitate future management of NORM.



Oil and gas are extracted from beneath the bedrock and Naturally Occurring Radioactive Material (NORM) accumulates where temperature or pressures change or where there is a disturbance to laminar flow. 'Tubulars', pumps, surface valves and vessels, are particularly susceptible to scale deposition. Characterisation includes:

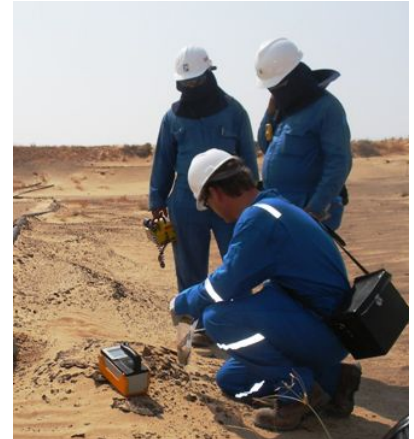
1. Radioactive isotopes:
 - These comprise U/Th radionuclides with Ra-226 predominating.
 - However, In gas plants and some oil wells Pb-210 and Po-210 occur
2. Hard scale or plated deposits
3. Hydrocarbon contamination
4. Heavy Metals such as As& Hg



At the plant, Gas from 48 wells is separated into sales products, including condensate, natural gas, propane and butane fractions. Normtec was commissioned to survey and map NORM radiation and contamination at the facility. The extent and level of NORM was identified throughout the process plant and propane system.

In addition NORM deposits were found at several lakes and pits used for evaporation of fluids.

Our work, undertaken by two experienced Radiation Protection Supervisors (RPS) supported by an accredited Advisor, included the following tasks.



- Defining the scope of work and budget
- Providing all instrumentation including
 - a Specialist NORM probe
 - a portable gamma spectrometer
- Providing 2 experienced RPS on Site
- Sampling and Analysis of solids and produced water
- Mapping contaminated plant and areas
- Radon monitoring of the workplace
- Issue a comprehensive report with:
 - Detailed survey reports
 - Discussion & Recommendations for future management of NORM
 - Company & Regulatory compliance
- A 'powerpoint' presentation of data and impact of NORM
- Training, of six local staff as potential RPS including practical monitor use, by normtec and an accredited RPA (**Rite Advice**)

normtec regularly use specialist probes and protocols to identify, quantify and characterise NORM.

