UNFC-2009 Evaluator Competency Requirements

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Competent Person for resource management

- All major international resource classification schemes mentions the role of a Competent Person (s)
- These are usually meant for listed companies for the purpose of public reporting
- Competent Persons in most cases are self-declared
- Some countries have self-declaration and a due process for verification (e.g. Indonesia)
- Government (Ministries and organizations) do not have Competent Person requirements (e.g. Geoscience Australia and USGS)
- Non-listed companies do not need a Competent Person to sign off reports
- Company internal resource management functions do not need a Competent Person
- But it can’t be argued that competency is essential for everyone engaged in resource management functions
Some examples (1)

• **CRIRSCO**
  
  – A Competent Person is a minerals industry professional (NRO to insert appropriate membership class and organisation including Recognised Professional Organisations) with enforceable disciplinary processes including the powers to suspend or expel a member.
  
  – A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person is undertaking.

• **SPE - Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information**
  
  – *A Reserves Estimator would normally be considered to be qualified if he or she (i) has a minimum of 3 years’ practical experience in petroleum engineering or petroleum production geology, with at least 1 full year of such experience being in the estimation and evaluation of Reserves Information; and (ii) either (A) has obtained, from a college or university of recognized stature, a bachelor’s or advanced degree in petroleum engineering, geology, or other discipline of engineering or physical science or (B) has received, and is maintaining in good standing, a registered or certified professional engineer’s license or a registered or certified professional geologist’s license, or the equivalent thereof, from an appropriate governmental authority or a recognized self-regulating professional organization.*
Some examples (2)

- A Reserves Auditor would normally be considered to be qualified if he or she (i) has a minimum of 10 years’ practical experience in petroleum engineering or petroleum production geology, with at least 5 years of such experience being in responsible charge of the estimation and evaluation of Reserves Information; and (ii) either (A) has obtained, from a college or university of recognized stature, a bachelor’s or advanced degree in petroleum engineering, geology, or other discipline of engineering or physical science or (B) has received, and is maintaining in good standing, a registered or certified professional engineer’s license or a registered or certified professional geologist’s license, or the equivalent thereof, from an appropriate governmental authority or professional organization.

- SEC
  - Preparer/auditor qualifications - A description of the company’s internal controls for its reserves estimation and the qualifications of the technical person primarily responsible for overseeing the preparation of the reserves estimates or reserves audit.

- UNFC-2009 Generic Specification (M)
  - Evaluators must possess an appropriate level of expertise and relevant experience in the estimation of quantities associated with the type of deposit under evaluation. More detailed specifications can be found in relevant commodity-specific systems that have been aligned with UNFC-2009.
Some examples (3)

- Draft Geothermal Energy Resources Specifications, 2016
  - As a minimum, an Evaluator shall have qualifications of, or equivalent to, a four-year tertiary course in geoscience, science or engineering and at least five years’ experience relevant to the type of Geothermal Energy Source being evaluated.
Classification, reporting and management

- UNFC-2009 provide the basis for economic evaluation and decision-making.
- This requires the independent judgement of a competent person (s) on different aspects:
  - Estimation or supervision of estimation
  - Judgement in respect of the technical and economic factors likely to influence the Project
  - View on assumptions of future market conditions
  - Consider the materiality of any unresolved matter that is dependent on a third party on which extraction is contingent
  - Evaluation of a project
  - Responsibility for results
  - Responsibility for value estimates
  - Classification
  - Audit
  - Public reporting
Capability: the golden triangle

- Geological Knowledge
  - Exploration
  - Laboratory investigations
  - Estimation of quantities

- Techno-Economic
  - Scoping
  - Concept design
  - Pre feasibility
  - Feasibility
  - Bankable...

- Socio-environmental – ESIA
  - Risk assessment/ safety case
  - Social-environmental Management Plan
  - Regulatory

Adapted from Julian Hilton
Competence is key

Competence is acquired, developed and maintained through a programme of regular training

• **Competency**: Skills, knowledge, experience needed for a) reliability and b) excellence in a given domain – U recovery

• **Targets**: Work force based on a Graded model – five (+) levels of expertise, from novice (1) to expert (5)

Footnote: ‘Building competence’ comprises training and assessing the qualification of new personnel and retraining existing personnel in order to develop and maintain appropriate levels of competence. Competence means the ability to apply knowledge, skills and attitudes so as to perform a job in an effective and efficient manner and to an established standard.
The 5 tier competency pyramid

1. **NOVICE**: Induction/Fundamentals
2. **ADVANCED BEGINNER**: Can work under supervision
3. **COMPETENT**: Can work unsupervised
4. **PROFICIENT**: Can supervise
5. **EXPERT**
Sample Competency Framework

<table>
<thead>
<tr>
<th>Level</th>
<th>Generic</th>
<th>Operational</th>
<th>Radiation Safety LOP/</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Novice</td>
<td>• Works to taught rules or plans</td>
<td>• Works directly with radiation sources or contaminated objects</td>
<td>• Must be taught basic radiation safety principles, e.g. ALARA</td>
<td>Requires constant supervision</td>
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<td></td>
<td>• Little situational discrimination (e.g. between safe/unsafe behaviours)</td>
<td>• May perform routine radiation surveys or sampling, unsupervised</td>
<td>• Must be taught radiation safety principles in more detail, e.g. radioactivity and radiation, biological effects, dose and risk, limits, use of survey equipment and personal dosimeters</td>
<td>Task-specific</td>
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<td>• No comparative judgment</td>
<td>• May be specifically assigned to work in higher exposure situations</td>
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<td>Works largely unsupervised</td>
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<td>2. Advanced</td>
<td>• Follows guidelines for work aligned to key task attributes or aspects</td>
<td>• May supervise teams working in exposure situations</td>
<td>• Must be taught to supervise a team working in a radiation environment</td>
<td>Supervises, within SOP scope</td>
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<td>Beginner</td>
<td>• Some situational discrimination (e.g. safe/unsafe)</td>
<td>• May participate in drafting Radiation Work Permits</td>
<td>• Must be taught to recognize and characterize an exposure situation</td>
<td>Interpersonal – such as communications (oral and written) and teamwork</td>
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<td></td>
<td>• All attributes and aspects are treated separately and given equal importance</td>
<td>• May participate in planning for decontamination, decommissioning, or waste disposal activities, including QA/QC</td>
<td>• Must be taught how to assess dose and manage time, distance and shielding to keep doses ALARA</td>
<td>Contextual – demonstrates capacity to work within the wider operating or process environment</td>
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<td>3. Competent</td>
<td>• Multi-tasking – can also prioritise</td>
<td>• Will be placed in charge of health physics duties for a site or company to include:</td>
<td>• Must be taught radiological waste management</td>
<td>Reporting - outputs</td>
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<td>• Contextualises routine actions in terms of longer-term goals</td>
<td>o site characterization and monitoring,</td>
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<td></td>
<td>• Methodical planning, limited adaptability</td>
<td>o personnel monitoring,</td>
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<td>• Differentiates standardised and routine procedures from exceptions</td>
<td>o shipping,</td>
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<td>• Can diagnose and remedy routine faults</td>
<td>o reporting</td>
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<td>• Follows all safety procedures; anticipates and prevents risks</td>
<td>o regulatory compliance</td>
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<td>4. Proficient</td>
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<td>• May construct and direct corporate initiatives involving handling of sources</td>
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<td>• Understands situations holistically</td>
<td>• May author corporate policies, procedures and best practices, and associated training materials</td>
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<td>• Knows quickly what is most important in a situation; reacts instinctively safely</td>
<td>• Can adapt existing or developing new policies and procedures for contingent or unforeseen events, with associated training programmes</td>
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<td>• Perceives deviations from the normal pattern and is adaptive</td>
<td>• Strategic planning and foresight including what-if modelling and scenario development</td>
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<td>• Practised at decision-making</td>
<td>• Can develop innovative strategies for radiation protection</td>
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<td>• Uses maxims for guidance, whose meaning varies according to situational need, and can direct others</td>
<td>• Participates in technical dialogue with standard-setting or regulatory agencies</td>
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<td>5. Expert</td>
<td>• No longer relies on rules, guidelines or maxims</td>
<td>• Develops the corporate vision on how radioactive material or radiation-generating equipment is used, avoided, or otherwise managed</td>
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<td>• Intuitive grasp of situations based on deep tacit understanding</td>
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<td>• Defines performance and safety outcome measures; can spot emerging trends</td>
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<td>• Analytic approaches used only in novel situations or when problems occur</td>
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<td>• Vision of what is possible</td>
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<td>• Can adapt existing or developing new policies and procedures for contingent or unforeseen events, with associated training programmes</td>
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Implementation Plan: Milestone Driven

Competency-based Training

Operational Milestones

Special Mining Licence

Construction Start

Mining/Milling Start

Yellowcake Shipment

Mine Closure

Handback to URT

Regulatory Readiness and Capability

Julian Hilton
Guideline note on competency framework

- Definition of the competent person (s)
- Functions
  - Not only for reporting, but all management functions
- Indicators for competency (skills and qualifications)
- Guidance aspects on administration with in different jurisdictions or regulatory frameworks
- Non-mandatory guidance – Advisory
- Complementary to current practices
  - CRIRSCO Template
  - PRMS
  - Renewable Energy Specifications.
Thank you!