ANM
ANSTO Nuclear Medicine

Reliable & Timely Mo-99 Supply Globally

Mo-99 Topical Meeting
Montreal, September 2017
Jayne Senior
Agenda

1. ANM Project Background

2. ANM Design & Capacity

3. ANM Construction & Commissioning Status
ANM
ANSTO Nuclear Medicine

ANM Project Background
Federal Government and ANSTO joint initiative to design, build and operate to international best standards, a facility to manufacture Mo-99 to meet local and global demand for use in diagnostic imaging.
ANSTO Nuclear Medicine

- Operated as a subsidiary of ANSTO
- One product: Mo-99
- Scalable domestic and worldwide supply
- Full lifecycle consideration
ANSTO Nuclear Medicine Project

TWO PARTS

Mo-99 Facility  
ANM

Synroc Waste Plant  
SyMo
ANSTO Nuclear Medicine Project

TWO PARTS

Mo-99 Plant
- ANM
- 3,500 6 day Ci per week
- LEU fuel & LEU targets
- Base Digestion process
- Proven, reliable technology
- Low emissions (Xe-133)
- Integrated preparation and testing labs

Synroc Waste Plant
- SyMo
- Hot Isostatic Press technology
- 320 cans produced per year
- Integrated with Mo-99 facility
- Treats Intermediate Level Liquid Waste
- Waste volume reduction by 90%
- Immobilised waste form
Integrated Mo-99 Production Cycle

Plate Target → OPAL Irradiation → Plate Transport

Generator Production → Chemical Separation ANM
ANM Mo-99 production process

Plates -> Dissolution -> Filtering and separation -> Purification -> Conditioning -> Mo-99 -> Patient

Waste streams
World best safety features

New production efficiencies throughout
State of art hot cell design
Separate hot cells for each process step
Radiation shielding
In-cell equipment back-up
Best practice hot cell transfer system
Extensive emission control systems
ANM – Capacity and Flexibility

World Demand Profile
9000 6-Day Ci

% Demand

weekend
gerest of week

ANM Supply Profile
3500 6-Day Ci

% Supply

weekend
gerest of week
Capacity Increase Timing
Projection of 6-Day Ci Production/Week

<table>
<thead>
<tr>
<th>Year</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q1</th>
<th>Q2</th>
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</thead>
<tbody>
<tr>
<td>2016</td>
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<td>2017</td>
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<td>2018</td>
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Current Facility:
- 4 Runs x 8 Plates
- 5 Runs x 12 Plates

ANM:
- 10 Runs x 12 Plates
ANM
ANSTO Nuclear Medicine

Construction & Commissioning Status
After......
Front Entrance
Ramp to Front Entrance
Production Cell Face
Hydrogen Cell face
Dissolution Cell Control Panel
Waste Handling Cells
Rear of Hot Cells
Rear of Hot Cells
Basement Gas Tanks
Basement Iodine Filters
QC Intermediate Sample Test Lab
QC Intermediate Sample Test Lab
Process Preparation Room
<table>
<thead>
<tr>
<th>Operation licence submission to ARPANSA</th>
<th>Public consultation</th>
<th>Construction complete</th>
<th>Commissioning underway</th>
<th>Active commissioning and operation</th>
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</thead>
<tbody>
<tr>
<td>APRIL 2017</td>
<td>JUNE 2017</td>
<td>JULY 2017</td>
<td>November 2017</td>
<td>Subject to ARPANSA licence</td>
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**Mo-99 Facility Milestones**

- **Operation licence submission to ARPANSA**: April 2017
- **Public consultation**: June 2017
- **Construction complete**: July 2017
- **Commissioning underway**: November 2017
- **Active commissioning and operation**: Subject to ARPANSA licence
## ANM Commissioning Milestones

<table>
<thead>
<tr>
<th>Design Qualification (DQ)</th>
<th>Instrumentation Qualification (IQ)</th>
<th>Operational Qualification (OQ)</th>
<th>TGA / ARPANSA Licences</th>
<th>Product Qualification (PQ)</th>
<th>Product Validation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>Facility Services Complete</td>
<td>Facility Services Complete</td>
<td>Audits End October/Early November</td>
<td>Low &amp; High Activity Runs Finish 18 November</td>
<td>Supply Customer Validation Samples Start 20 November</td>
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<td></td>
<td>In Cell Process Equipment Commenced</td>
<td>In Cell Process Equipment Finish 26 October</td>
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</tbody>
</table>

- **Product Validation**
  - Supply Customer Validation
  - Samples Start 20 November
Current Operations and ANM Transition

Planned Scale up of ANM + Reduction in Current Operations

Number of runs per week in ANM + (Number of runs per week in B54)
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