

# Operations – current status

**DRAFT**

- DOE OHEP scoping study underway
- Current costs are from Urania team
  - This includes the Urania Operations Basis of Estimate authored by C. James-FNAL
- Current assumed running conditions
  - Overall average production rate – 250 kg/day
  - Operations duration – 180 days
- No capital investments. Assume plant is ready for non-stop operations post-commissioning

# Giacomo spreadsheet

WBS #	Contract / Wbrk	Granted [\$]	Projected Cost [\$]	Spent / Committed [\$]	Quotation [\$]	Estimation [\$]	BoE	Delta [\$]	Paid by	Company	Note
4.01.05	Monthly Operational Cost	NA	\$327,482	\$0	\$97,782	\$229,700	-	NA			Expected to last 1 months
4.01.05.01	Personnel s and Coordinators	NA	\$137,500	\$0	\$0	\$137,500	-	NA			
4.01.05.01.01	Paid personnel					\$125,000	P		DOE	DOE	9 people. \$ 1.5M x year (from J. Orrel)
4.01.05.01.02	Paid supervisors					\$12,500	P		DOE	DOE	\$ 150k x year (from J. Orrel)
4.01.05.02	Utilities		\$145,052	\$0	\$93,852	\$51,200	-				
4.01.05.02.01	Liquid nitrogen					\$51,200	P		DOE	Airgas	
4.01.05.02.02	Electrical power				\$93,852		VQ		DOE	EEA	1 month, 30 days x month
4.01.05.03	Disposal & Wasting		\$1,000			\$1,000	J		DOE		
4.01.05.04	Gravelling and Road Maintenance		\$2,430			\$2,430	VQ		DOE	DOE	\$ 29160 <b>annual y</b>
4.01.05.05	Magnesium Chloride Application		\$1,500			\$1,500	VQ		DOE	DOE	In the range [\$15000-\$18000] <b>annual y</b>
4.01.05.06	Veter	\$1,000				J	DOE				
4.01.05.07	Plant Maintenance	\$33,000				P	DOE	NA	(5% of \$8M) / 12 from Polaris. Polaris Plant is \$ 6M+2M		
4.01.05.08	Site Maintenance	\$5,000				P	DOE	NA	Accidental expenses		
4.01.05.09	Network Connection	\$1,000				J	DOE	Starlink			

# Current breakdown (not in slide order)

- Utilities
  - Electricity
  - Liquid nitrogen
- Personnel
- Maintenance
- Ancillary items

# Utilities – Electricity

(Major cost)

- Electrical power
  - Urania plant (Polaris plant) – 1.6 MWh
  - Ancillary electrical still needs estimate
    - e.g., filling station, air compressor, lighting, HVAC, etc.
- Cost
  - Quote in-hand for the 1.6 MWh - \$93,852/month

# Utilities – Liquid nitrogen

(Major cost)

- Liquid nitrogen
  - Urania plant (Polaris plant) –
  - Ancillary needs (gaseous nitrogen) – 1.3 MMSCF/month
- Cost
  - Quote expected soon
  - Estimate for only LN2 needs \$51,200/month (est.)

# Maintenance

- Urania plant (Polaris plant)
  - Estimate basis is 5% of the cost of the plant - \$33,000/month (est.)
  - Needs to be
- Filling station
  - ?
- Other equipment
  - Air compressor, HVAC, lighting, etc.

# Ancillary items

- Other utilities
  - Water - estimated cost: \$1000/month (est.)
  - Waste/trash – estimated cost: \$1000/month (est.)
  - Hazardous waste disposal (e.g., compressor oil) - ?
  - Network connection – estimated cost: \$1,000/month (est.)
- Road maintenance
  - Urania is expected to contribute to maintaining road
  - Quote from county - \$47,160/year → \$3,930/month

# Personnel

(Major cost)

- Needs development to understand true needs
  - Includes roles and responsibilities
- Costs will depend on where/how staff are hired



# A Urania operations structure – DRAFT (sparking discussion)

- Needs further development
- Defining roles/tasks including R2A2s
- Staff are likely matrixed
  - i.e., people can fill multiple roles
- Keep Production separate from QA/QC
  - Biggest suggestion from info search
- Need an Urania operating/user manual
  - Develop safety controls
  - Training operations/safety

