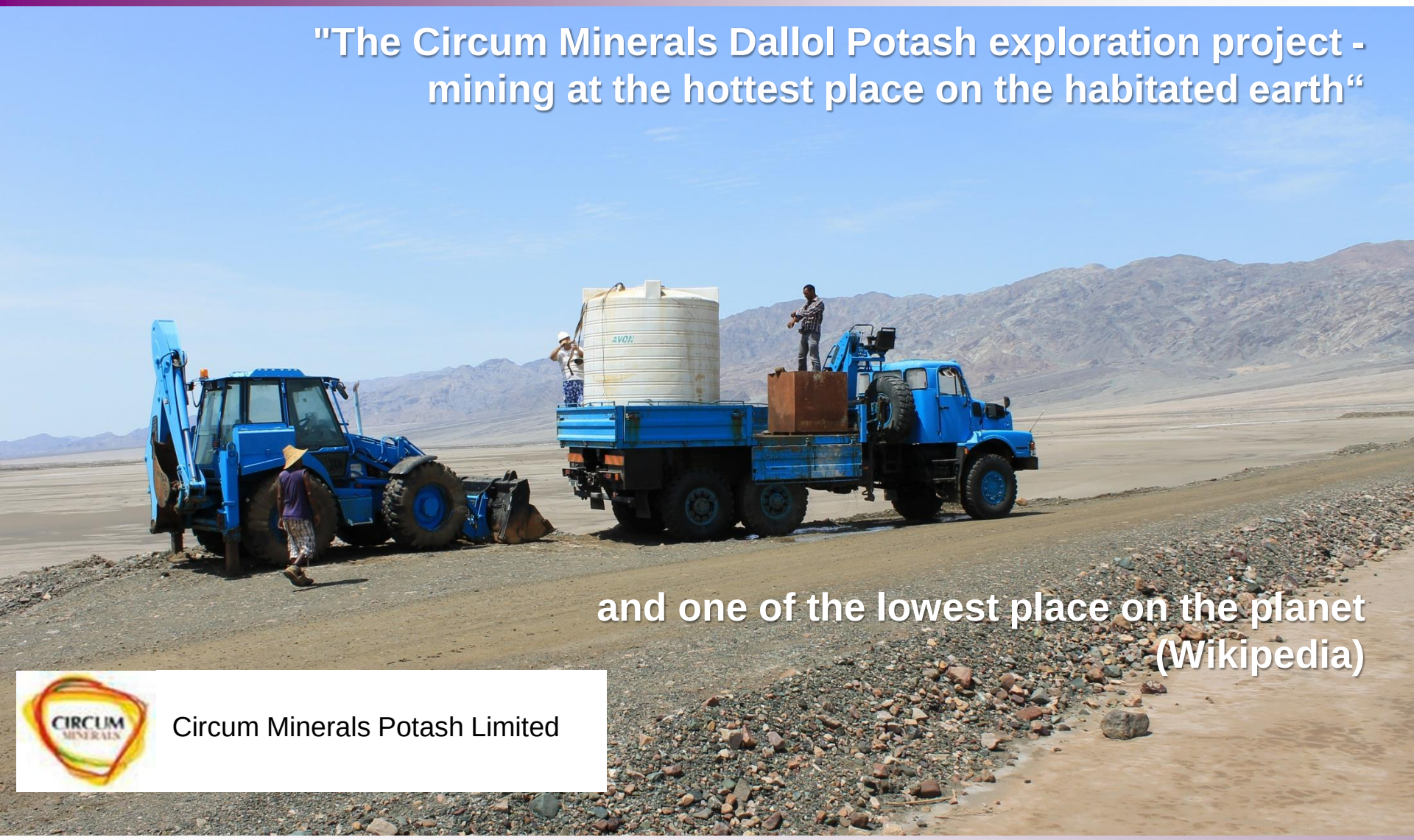
"The Circum Minerals Dallol Potash exploration project - mining at the hottest place on the habitated earth“



and one of the lowest place on the planet (Wikipedia)

Circum Minerals Potash Limited

K-UTEC SALT TECHNOLOGIES

Miningforum 18th June – 19th June 2015 Kassel

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The Circum Minerals Dallol Potash exploration project

CONTENT

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The Circum Minerals Dallol Potash exploration project

INTRODUCTION

- Circum Minerals Limited, incorporated in 2011, has acquired the rights to explore within a potentially significant potash deposit in the Danakil Depression of Ethiopia.
- The results of an extensive exploration drilling program undertaken by Circum during 2013 and 2014 and results from previous drilling conducted in 2011 and 2012 as well as chemical assays of the drill cores and results from downhole and surface geophysical measurements have been incorporated into a resource model.
- This was used to estimate the mineral resource and facilitate preliminary mining and also processing studies.
- In conjunction with Circum's geological and technical team, K-UTEC has developed a number of potential exploitation scenarios for this resource which includes a preliminary estimation of capital and operating costs within a Detailed-Feasibility Study.
- The subsequent modelling of cash flow has facilitated a preliminary economic assessment.

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PROPERTY DESCRIPTION AND LOCATION

Used Coordinate system:
UTM 37 P (Adindan Datum)

Accessibility:

- from Mekelle via Berahale and Hamed Ela
- in general, the use of off-road vehicles is recommended

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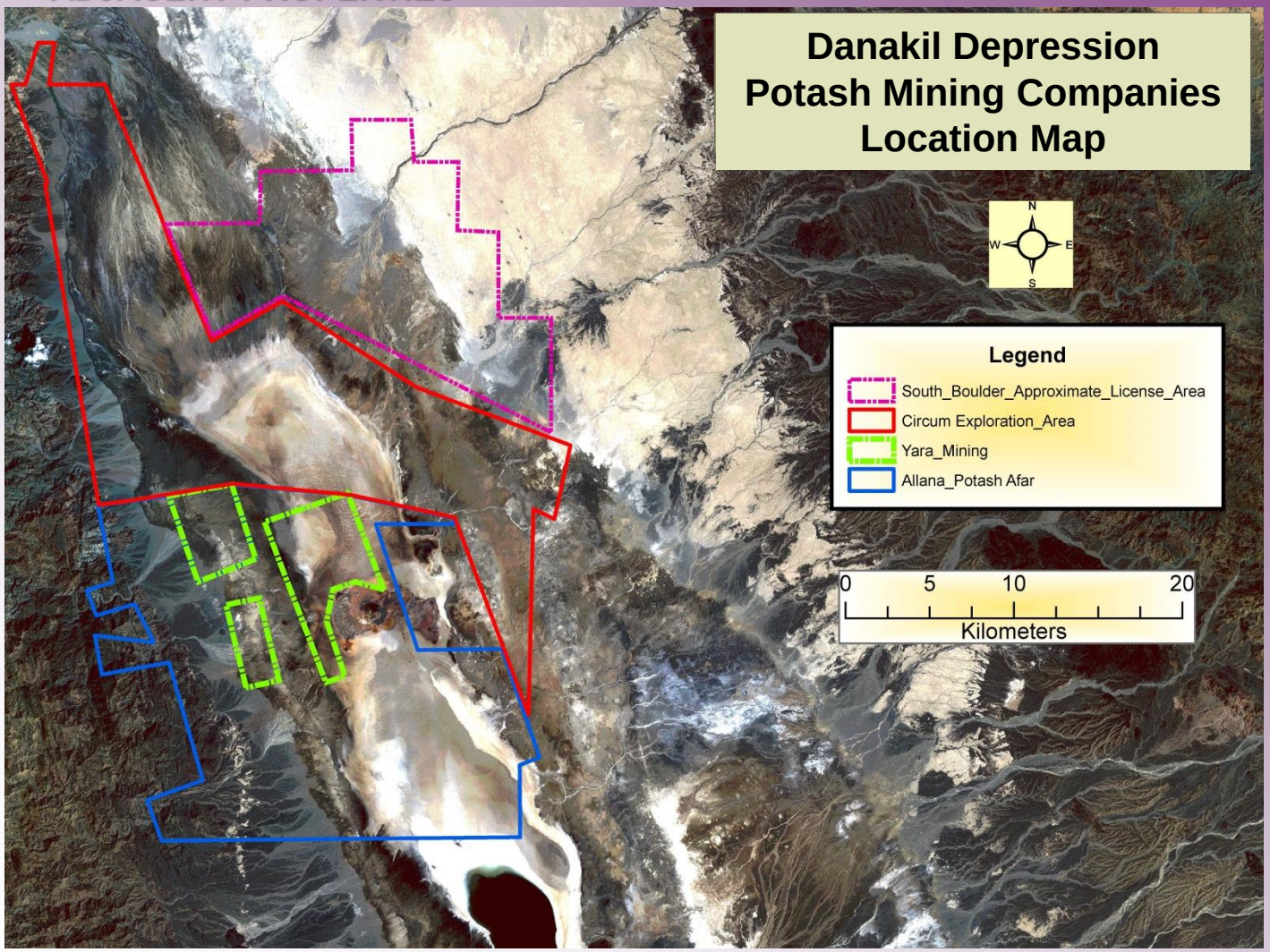
ADJACENT PROPERTIES



Satellite image showing the location of the lease and the adjacent properties.

Circum Licence area 365 km^2

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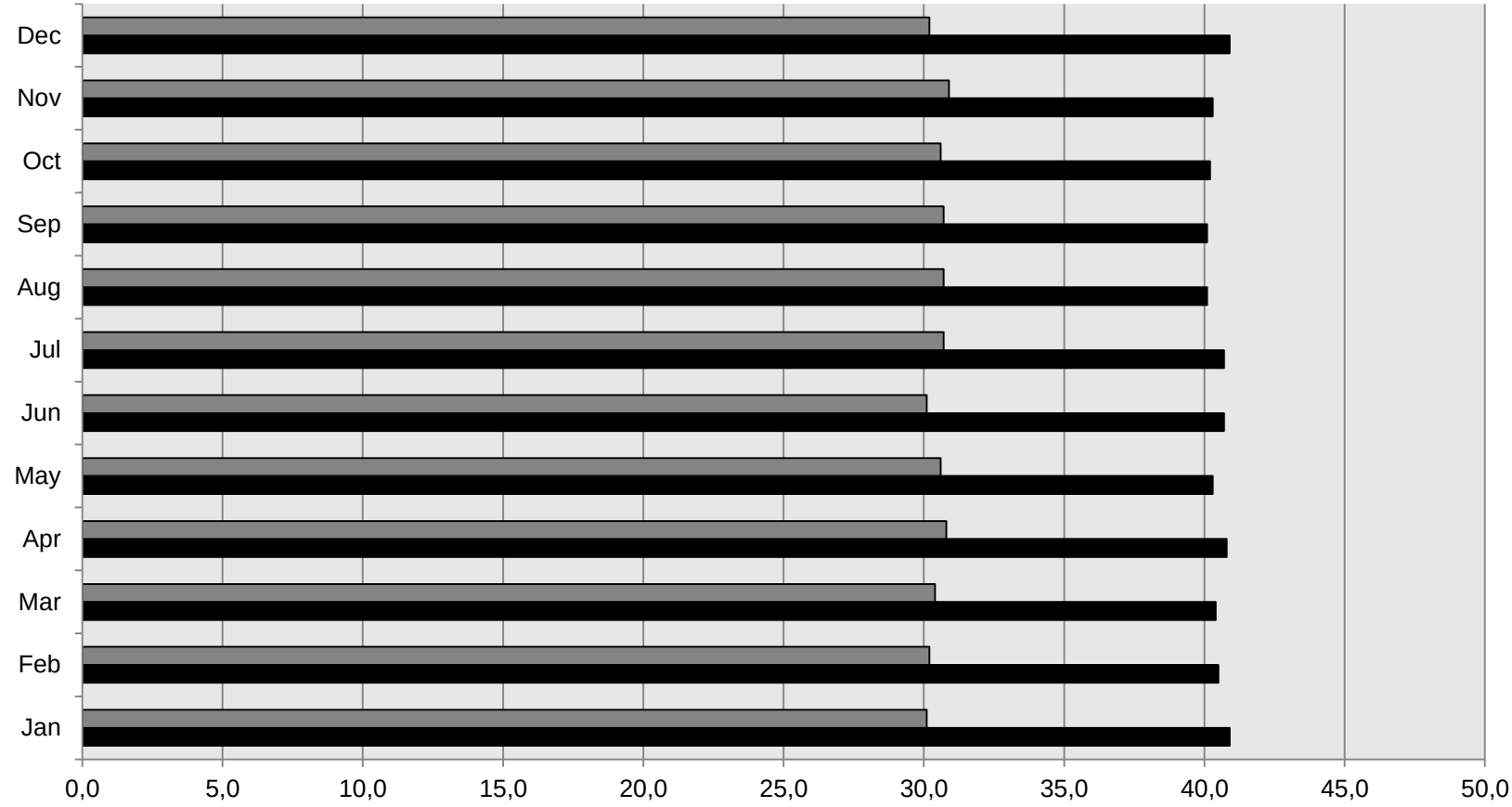
CLIMATE

Temperature



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average low °C	30,1	30,2	30,4	30,8	30,6	30,1	30,7	30,7	30,7	30,6	30,9	30,2
Average high °C	40,9	40,5	40,4	40,8	40,3	40,7	40,7	40,1	40,1	40,2	40,3	40,9

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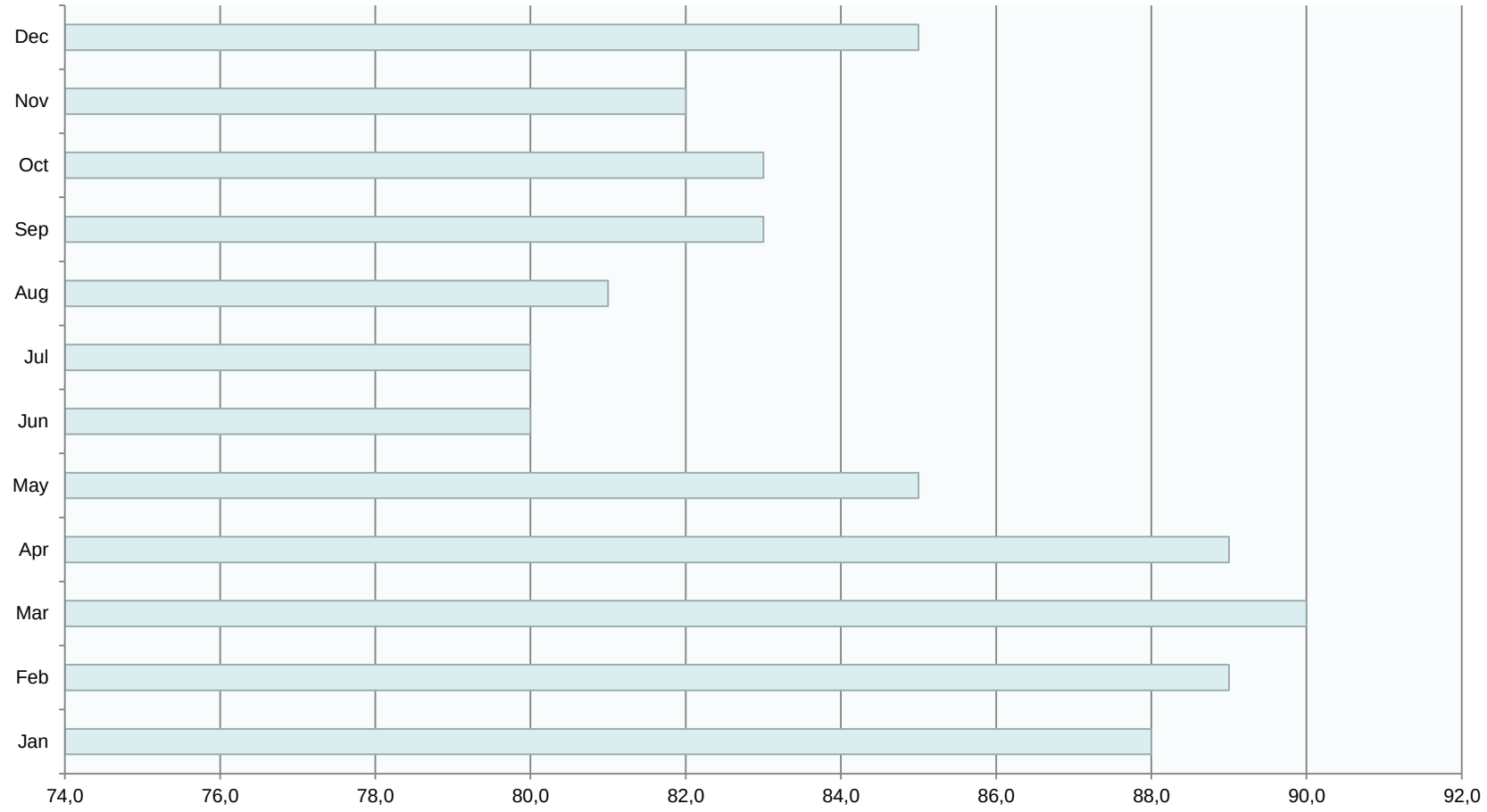
CLIMATE

Humidity



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
% humidity	88,0	89,0	90,0	89,0	85,0	80,0	80,0	81,0	83,0	83,0	82,0	85,0

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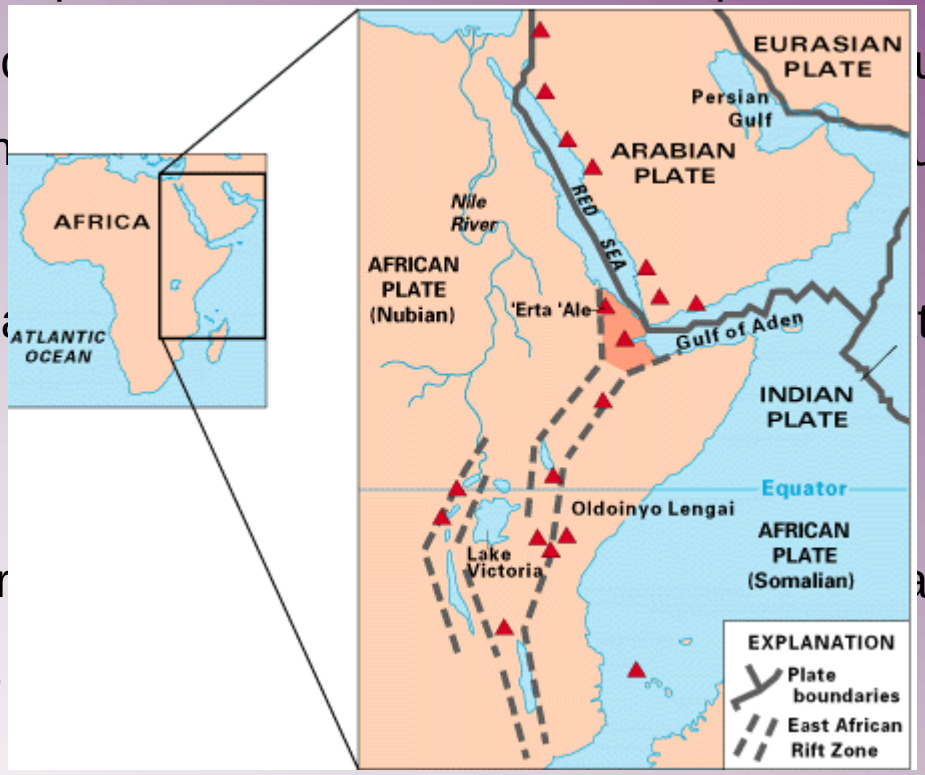
PHYSIOGRAPHY

- The Danakil Depression is both a morphologic and tectonic, NNW-SSE trending graben, developed during the extension of the Great Rift Valley.
- The Great Rift Valley, which extends from Lebanon to Mozambique, is the result of the separation of the African tectonic plate from the Arabian tectonic plate.
- Rift-related volcanic activity has oc… …uding the Danakil Depression, in which th… …us hot springs of Dallol are located.
- The basalt flows on which Camp Ba… …tinct volcano Maraho.
- The lease area is characterised by …
- The bulk of the drill holes have a gr… …and 122 mbsl, reflecting a relatively flat …



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PHYSIOGRAPHY

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The Circum Minerals Dallol Potash exploration project

PHYSIOGRAPHY

- The Danakil De
  graben, develo
- The Great Rift
  the separation
- Rift-related vol
  the Danakil De
  springs of Dall
- The basalt flows on which Camp Bada is situated, are results of the nearby extinct volcano Maraho.
- The lease area is characterised by elevations between 62 mbsl and 128 mbsl.
- The bulk of the drill holes have a ground level elevation of between 110 mbsl and 122 mbsl, reflecting a relatively flat topography

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INFRASTRUCTURE

- Property is fairly isolated, sparsely inhabited and poorly developed in terms of roads
- Since 2010/2011: track to Bada was upgraded to a road (mobilization of equipment to build Bada camp)
- No railway access to the Property
- Private owned Airstrip located 50 km SW of Bada camp (permission to use the strip for sample shipment, personnel transport and medical evacuations)
- Water for use from a borehole
- Electricity provided by generators
- Internet and mobile phone services are present
- Technical services provided by in-house technicians

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HISTORY

- Since 1906 potash explorations in the region
- 1912 first potash concession to an Italian mining Engineer Pastori
- Followed by a number of exploration programs i.e. by

  Sacie Company,

  Ralph Parson (including a shaft sinking and mine excavation),

  Salzdetfurth AG,

  Ethiopian Potash Company etc.

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GEOLOGICAL SETTING OF THE DEPOSIT

- Tertiary potash formation
- The evaporation sequences deposited during the Neogene
- Overlaying sediments are Marls, gypsum and clays
- On the surface: young salts with fluviatile and eolian sands

The Potash Sequence of the deposit is divided into five layers, each dominated by a different composite of minerals:

- SYL (Sylvinite),
- UCAR (Upper Carnallitite),
- BCT (Bischofitite),
- LCAR (Lower Carnallitite),
- KAI (Kainitite).

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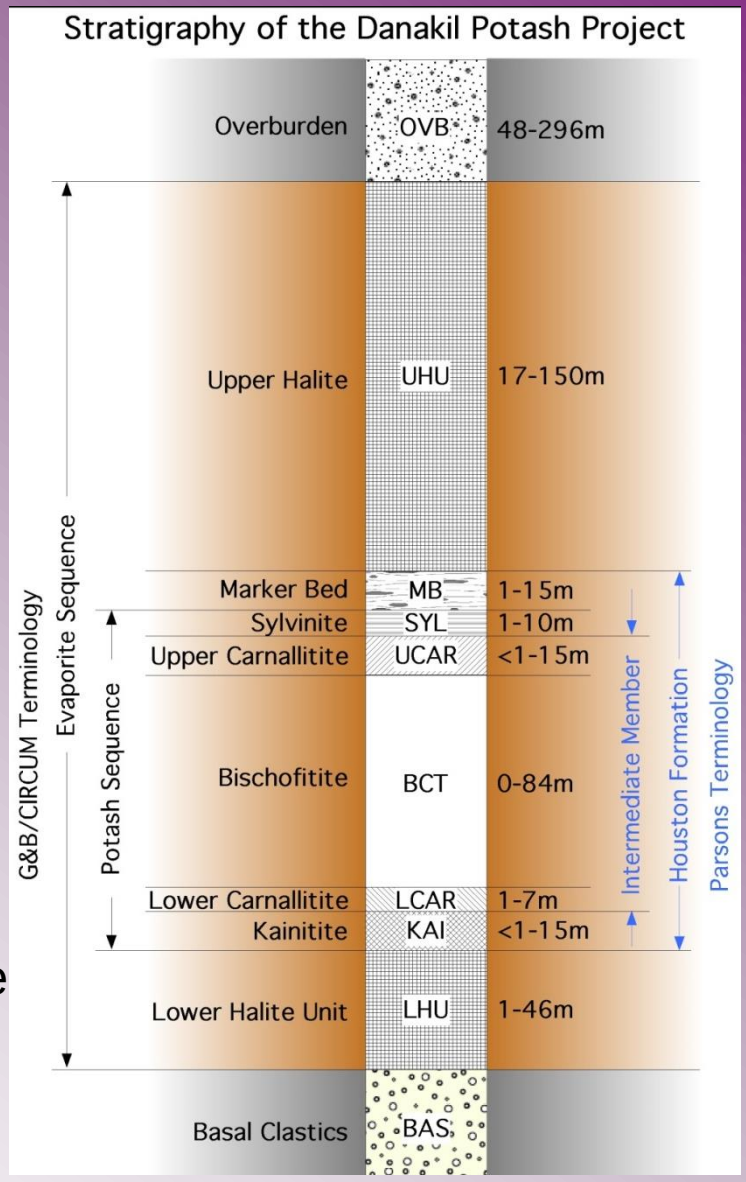
GEOLOGICAL SETTING OF THE DEPOSIT

- Sylvinite: comprised of a Sylvite rich rock with Halite and Anhydrite; with subordinate amounts of Carnallite, Kainite and banded Kieserite.
- Upper Carnallitite: dominated by Carnallite, interbedded Kieserite, Halite and subordinate amounts of Sylvite, Anhydrite and Kainite.
- Bischofitite: consists mostly of Bischofite, irregular interbedded Carnallite; Kieserite and Sylvite laminations can occur.
- Lower Carnallitite: dominated by Carnallite, Kieserite and Kainite, lesser amounts of Sylvite and insoluble materials,
- Kainitite: dominated by Kainite with Halite, subordinate amounts of Kieserite, Carnallite and insoluble materials.



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DEPOSIT TYPE

The Danakil Potash Deposit contains 3 main potash bearing minerals:

- Sylvite, chemical formula KCl
- Carnallite, chemical formula $KMgCl_3 \times 6\ H_2O$
- Kainite, chemical formula $KMg(SO_4)Cl \times 2.75\ H_2O$

In principle, these three minerals can be used for the production of MOP as well as SOP. The mineral Kieserite ($MgSO_4 \times H_2O$), which is favorable for SOP production is also present in the deposit.

The present potash deposit is originally a bedded sedimentary rock. In the sedimentation phases a number of single evaporation sequences mixed with hydrothermal lifting and sinking occurred.

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MINERALIZATION

Average Compositions:

- Sylvinite Unit: up to 50% Sylvite, up to 40% halite rich rock, halite layers within the Sylvinite compositionally e.g.: halite (40%), Sylvite (20%), Anhydrite (30%) and clay (10%),
- Upper Carnallitite Unit: Carnallite (50% to 70%), kieserite (up to 5%), Sylvite (up to 35%), anhydrite (up to 20%), kainite (mostly in traces an up to 5%) and clay,
- Bischofitite Unit: Bischofite up to 80%, intercalations of Carnallite, Kieserite laminations and Sylvite,
- Lower Carnallitite Unit: Carnallite (up to 60%), amounts of Kainite (up to 30%), Kieserite and Sylvite (ranges from 10% to 60%),
- Kainitite Unit: massive Kainite (up to 80%), Halite (up to 30%) and subordinate amounts of Carnallite and narrow partings and interlayers of clay (up to 10%).

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MINERALIZATION

Formation	Stratigraphic Unit	Minimum Thickness (m)	Maximum Thickness (m)	Average Thickness (m)
OVB	OVB	48.10	296.50	194.78
UHU	UHU	17.0 (0.0)	150.20	63.44
Potash Sequence	MB	1.50	15.1	7.05
	SYL	1.22 (0.0)	11.25	5.56
	UCAR	0.30 (0.0)	6.42	1.38
	BCT	0.28 (0.0)	84.30	41.43
	LCAR	1.2 (0.0)	10.60	4.40
	KAI	0.8 (0.0)	11.80	8.47
LHU	LHU	1.00 (0.0)	46.00	18.38
BAC	BAC	-	-	-

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DRILLING EXPLORATION

Casings:

- CSK 146 mm auxiliary conductor pipe approx. 10m in the Overburden
- PQ/HW 114 mm conductor pipe up to Top Upper Halite/Marker Beds
- HQ 76 mm core barrel up to TD

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CORING AND SAMPLING

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SAMPLE PREPARATION, ANALYSIS AND SECURITY

Parameter	Method	Description
Sample Preparation I	-	Crushing of the salt sample to a grain size of approximately 1 mm to 2 mm by a jaw crusher Mixing of the free flowing salt sample and drawing of a representative aliquot of approximately 100 g using the method of cross mixing sample quarters and reduction of mass
Sample Preparation II	-	Milling of the crushed representative sample to a grain size of approximately 50 µm (90 %)
Total water content (moisture and crystallization water)	Gravimetry	Loss of the salt sample on drying at 400 °C in a laboratory furnace after Sample Preparations I and II
Solving (soluble digestion)	-	5 g of sample (Sample Preparation II) is dissolved in 300 ml boiling deionised water (100 °C), filtered for insoluble content and filled up to 500 ml, which is the solution for all other tests
Insoluble	Gravimetry	As for 'Solving' The remaining insoluble content is held back by a filter, dried and weighed
Chloride	DIN 38405-1	Automatic potentiometric titration with a silver nitrate solution
Sulphate	DIN EN ISO 11885	Calculated from the sulphur content, determined by Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) in a dilution of the solved sample
Sodium, Potassium, Magnesium and Calcium	DIN EN ISO 11885	Determined by ICP-OES in dilutions of the solved sample

SAMPLE PREPARATION, ANALYSIS AND SECURITY

Parameter	Method	Description
Sample Preparation I	-	Crushing of the salt sample to a grain size of approximately 1 mm to 2 mm by a jaw crusher Mixing of the free flowing salt sample and drawing of a representative aliquot of approximately 100 g using the method of cross mixing sample quarters and reduction of mass

During the four years of this exploration programme, two separate and independent chemical laboratories were used (K-UTEC and Saskatchewan Research Council (SRC)) for Re-check Sample analyses.

Chloride	DIN 38405-1	Automatic potentiometric titration with a silver nitrate solution
Sulphate	DIN EN ISO 11885	Calculated from the sulphur content, determined by Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) in a dilution of the solved sample
Sodium, Potassium, Magnesium and Calcium	DIN EN ISO 11885	Determined by ICP-OES in dilutions of the solved sample

GEOPHYSICAL LOGGING

A downhole geophysical logging campaign was completed for most of the holes drilled in 2013 and 2014 which include a selection of holes re-opened for logging purposes from previous drilling.

The geophysical logs measured a combination of :

- Natural Gamma (NG),
- Caliper (CAL),
- Sonic (RX1) Seismic p-wave velocity (VP).

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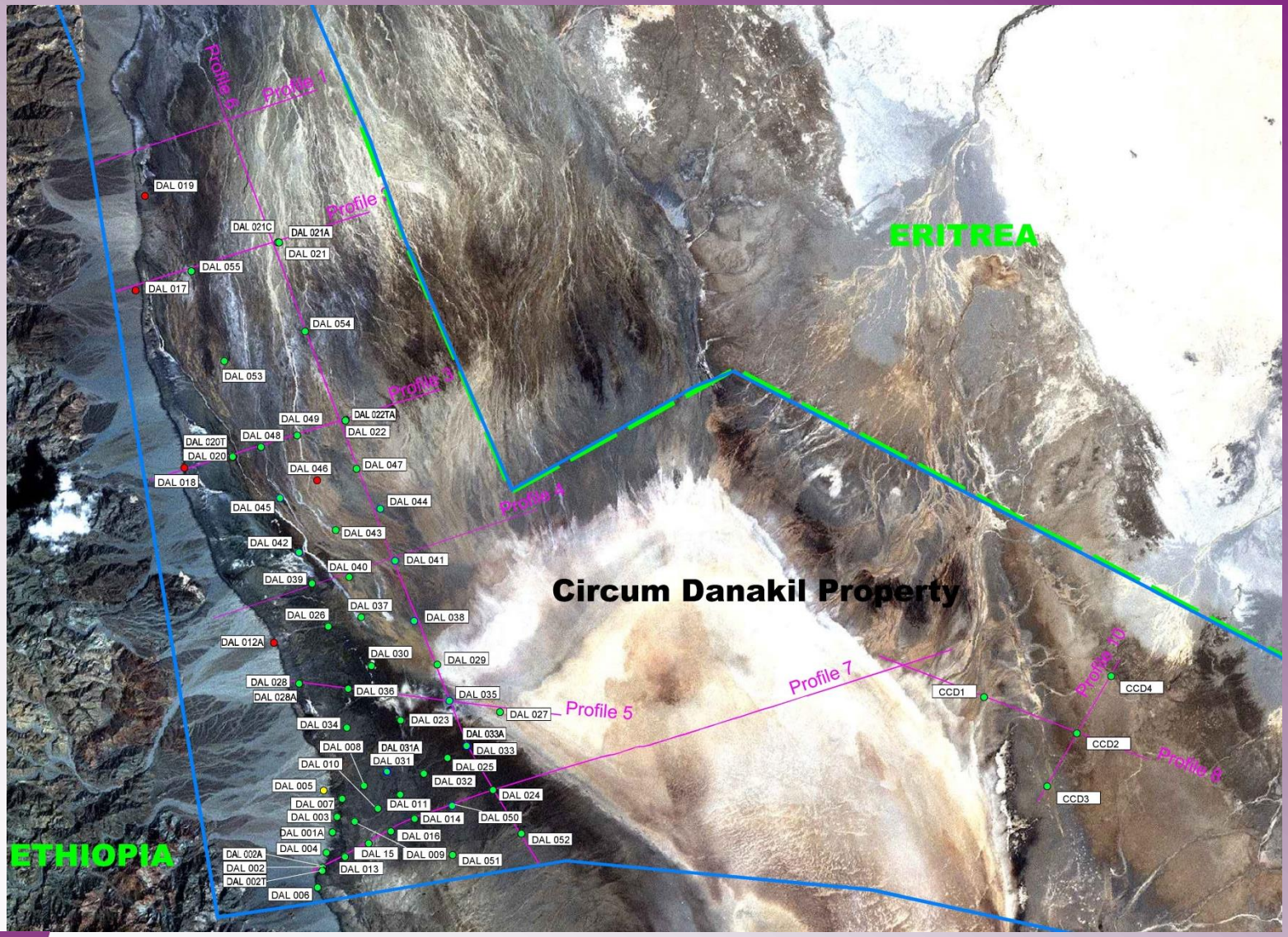
2D SEISMIC



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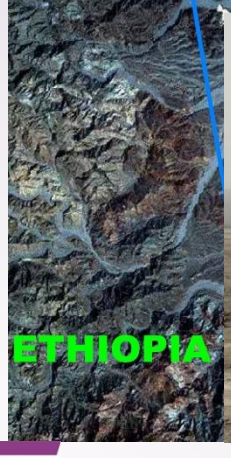

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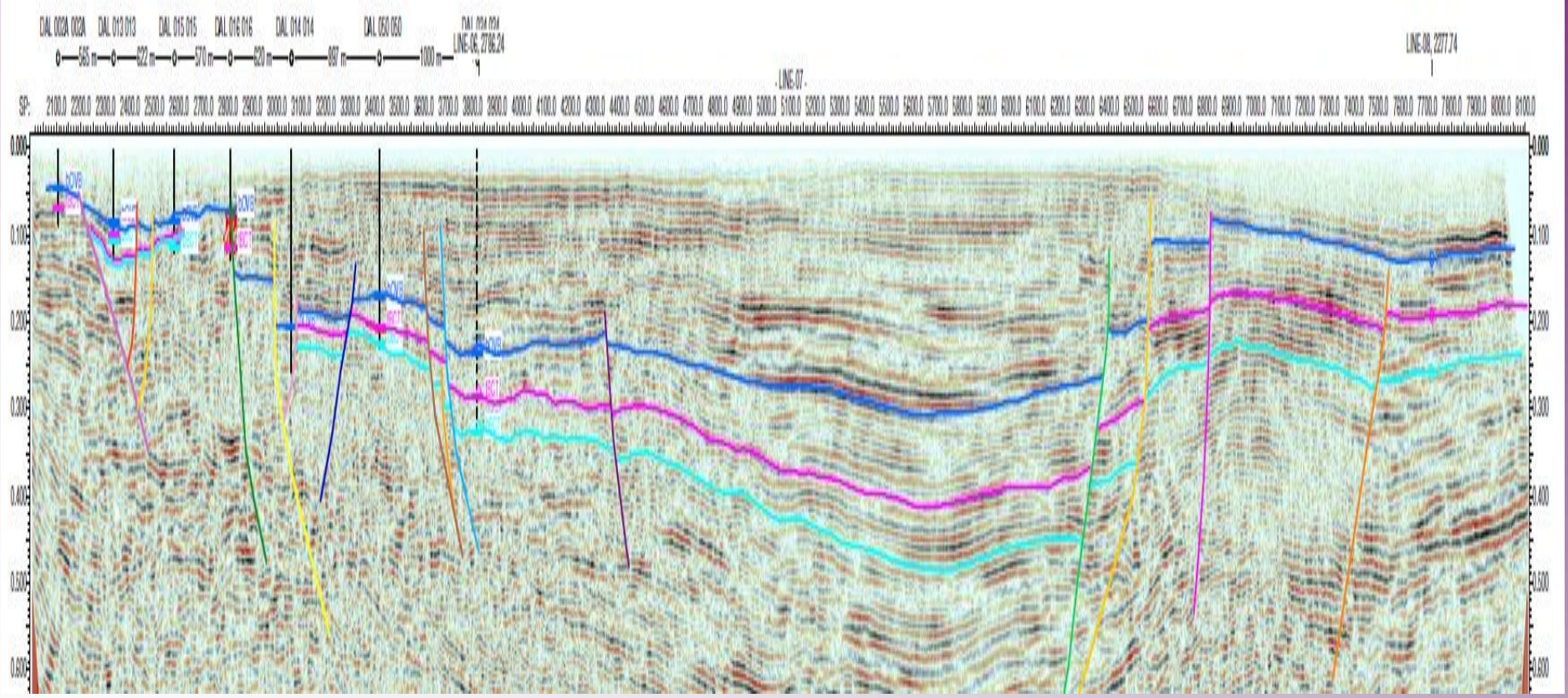

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MINERAL RESOURCE ESTIMATE

- Measured resources occur in a radius of 500 m of an investigated drillhole,
- Indicated resources occur in a radius of 1000 m of an investigated drillhole, minus any measured resources in this area.
- Inferred resources occur in a radius of 2000 m of an investigated drillhole, minus any measured and indicated resources in this area.

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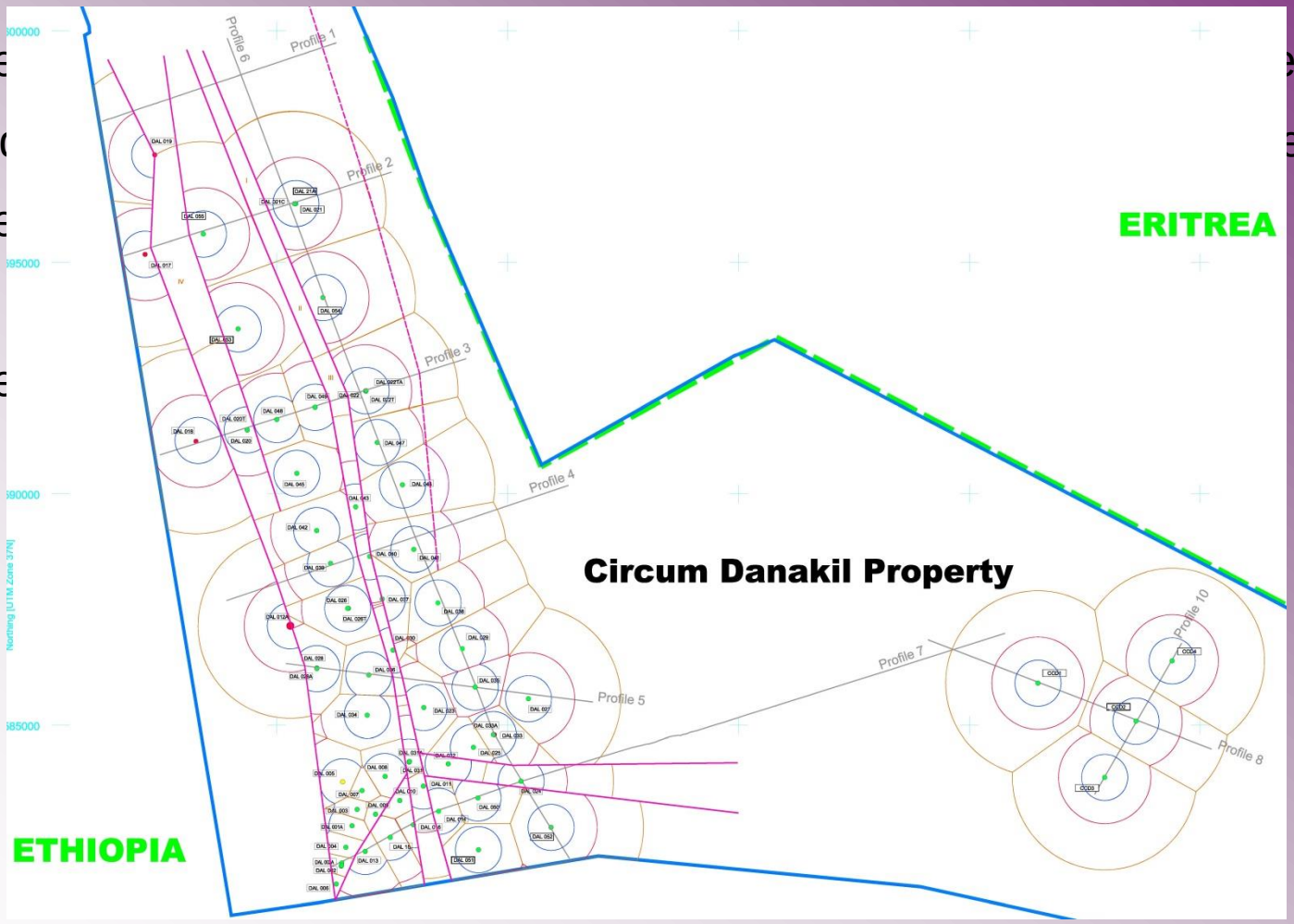
MINERAL RESOURCE ESTIMATE

- Measure e,
- Indicate e, minus any measure
- Inferred minus any measure



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MINERAL RESOURCE ESTIMATE

Measured + Indicated Category				
Area West and Colluli	Sylvinite	Upper Carnallite	Lower Carnallite	Kainite
Resource Tonnage [Mio t]	758,485	180,295	671,550	1.233,765
Resource Tonnage [Mio t]	938,780		1.905,315	
Resource Tonnage [Mio t]	**2.844,095**			
Geological Resource KCl [Mio t]	191,269	32,294	83,637	219,893
Geological Resource KCl [Mio t]	223,562		303,530	
Geological Resource KCl [Mio t]	**527,092**			

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MINERAL RESOURCE ESTIMATE

Inferred Category				
Area West and Colluli	Sylvinite	Upper Carnallite	Lower Carnallite	Kainite
Resource Tonnage [Mio t]	457,856	120,087	631,179	1031,035
Resource Tonnage [Mio t]	577,943		1.662,21	
Resource Tonnage [Mio t]	**2.240,157**			
Geological Resource KCl [Mio t]	106,663	22,596	67,579	193,850
Geological Resource KCl [Mio t]	129,259		261,429	
Geological Resource KCl [Mio t]	**390,688**			

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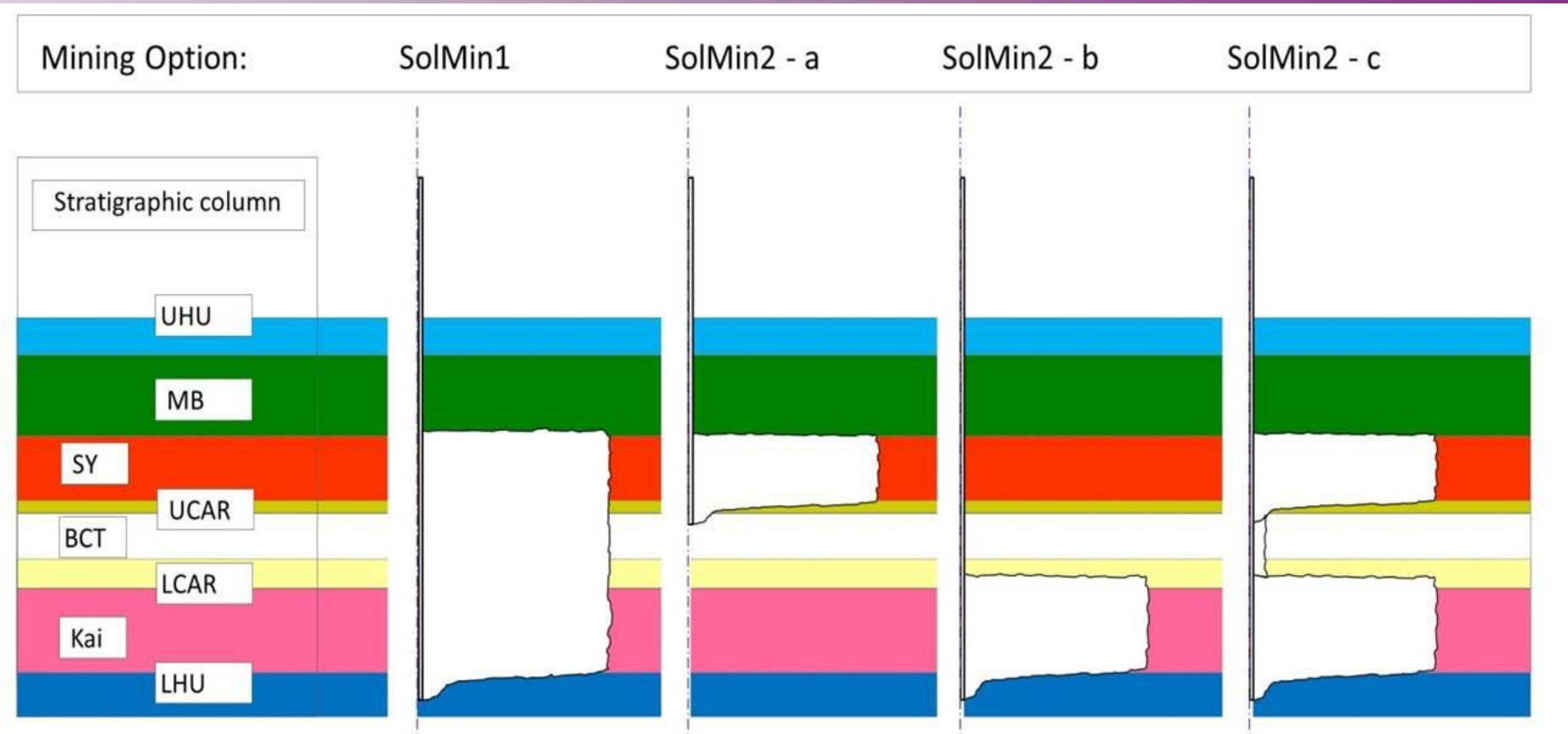
MINING DESIGN



*** Status of K-UTEC NI 43-101 Report from March 2014**

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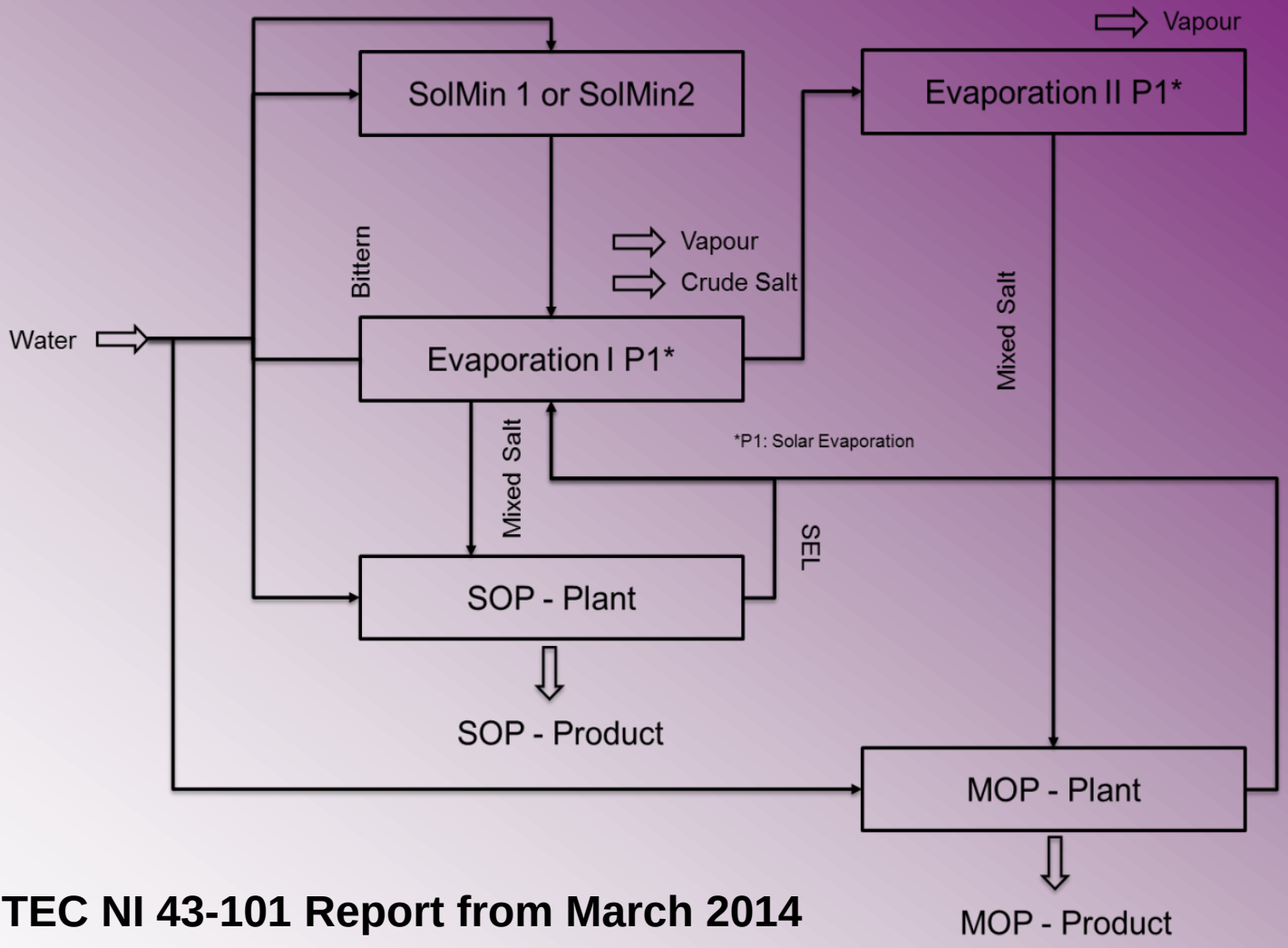
PROCESSING



*** Status of K-UTEC NI 43-101 Report from March 2014**

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CONCLUSION

The current NI 43-101 compliant Mineral Resource Estimate, which has tested about 35% of the license area to a depth of 400 meters, consists of 2.8 billion tonnes of Measured and Indicated material grading, on average, 18.5% potassium chloride (the average of the Sylvinite layer, Upper and Lower Carnallite layers and the lower Kainitite layer) and 2.2 billion tonnes of Inferred material grading on average 17.4% potassium chloride. The geologic estimate of the endowment of the remaining 65% of the project area is an additional 7-9 billion tonnes to a depth of approximately 800 metres.

The first phase of the project, which is targeting start of production in the second half of 2018, will look to produce 2.75 million tonnes per annum of potash (Mtpa); consisting of 2mtpa muriate of potash (MOP) and 750,000 tonnes per annum of sulphate of potash (SOP).

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