Occurrence Details

Occurrence Number: 105M 084
Occurrence Name: Onek
Occurrence Type: Hard-rock
Status: Deposit
Date printed: 8/5/2025 6:35:06 PM

General Information

Primary Commodities: gold, lead, silver, zinc
Secondary Commodities: indium
Deposit Type(s): Vein Polymetallic Ag-Pb-Zn+/-Au
Location(s): 63°54'47.99" N - -135°17'23.96" W
NTS Mapsheet(s): 105M14
Location Comments: Approximate centre of historical workings.
Hand Samples Available: No
Last Reviewed:

Capsule

WORK HISTORY

The Onek property currently consists of 32 surveyed quartz mining leases and 5 unsurveyed quartz mining claims. The historic underground workings and numerous open pits cover 6 quartz mining leases; the Rando (55022) staked in Nov/22, the Fisher (12876) staked in 1919, the Lone Star staked in Sep/19, the Galena Farm (13032) staked in May/20, the Upton (14002) staked in Jun/21 and the Onek (61596) staked in May/51.

The Onek Mining Company Ltd was organized in 1922 to explore the core claims via a number of open cuts and shallow underground workings accessed through 2 shafts. Exploration appears to have been discontinued by the end of 1922. Between 1950 and 1952, United Keno Hill Mines Ltd reopened the shafts and drove an adit in from the northwest to drift along the vein strike at the 122 m level (400 ft.) for about 396 m (1,300 ft.) driving raises up into the historic workings along the way.

The mine was revisited in the early 1960s with limited success due to manpower shortages and poor ground conditions. All mining ceased in 1965 and then restarted in the late 1980s when a 20-40 m deep open pit was developed over the length of the majority of the Onek workings around the historical shafts. Historical production from the Onek deposit is estimated at 86,470 tonnes grading 466.3 g/t silver, 5.5% lead, 3.4% zinc.

In 1996 D. Tenney, Chief Geologist, for United Keno Hill Mines prepared a series of "Historical Estimates" for all of United Keno's deposits. In 2000 United Keno Hill Mines declared bankruptcy resulting in the Onek property and United Keno's other various claim holdings remaining tied up in bankruptcy court proceedings due to the pre-existing environmental clean-up costs associated with the property.

In 2004 Pricewaterhouse Coopers Inc the court-appointed receiver and receiver-manager of the Keno Hill properties advised the Federal and Territorial governments that United Keno Hill Mines former properties could likely be sold if the pre-existing environmental clean-up costs could be separated from the property. The governments held an open season for bids and in June 2005 Alexco Resource Corporation was selected as the preferred purchaser of the mining assets.

Alexco Resource Corp entered negotiations with the Federal and Territorial governments and in Feb/2006 finalized a purchase agreement. As part of the agreement Alexco assigned its interests in the purchase agreement to its wholly owned subsidiary, Elsa Reclamation and Development Company Ltd. In addition to purchasing all of the assets of United Keno Hill Mines Ltd and UKH Minerals Limited, the subsidiary entered into Sub-Agreement with Alexco, the Federal and Yukon governments in respect of the pre-existing environmental condition and the environmental care and maintenance and reclamation of the United Keno Hill Mines site. As part of the Sub-Agreement, the Federal Government indemnified Elsa Reclamation and Development Company Ltd and Alexco for all liabilities arising directly or indirectly as a result of the pre-existing condition of United Keno Hill Mines various properties. In a separate agreement the Yukon Government hired Elsa Reclamation and Development as a paid contractor to assume responsibility for the environmental care and maintenance of the properties. On February 15, 2006 the Supreme Court of the Yukon Territory granted a vesting order approving the sale of assets to Alexco and its subsidiary Elsa Reclamation and Development Company Ltd.

Following acquisition of United Keno Hill Mines' properties, Alexco began a program of scanning and digitizing all historic documents related to the various historic mines and exploration properties. The company used the resulting database to build 3-D models reflecting the geology, mineralization, structure, grade and configuration of known mineralization.

Alexco explored the Onek property with diamond drill programs in 2007 (13 holes – 2,803m), 2008 (29 holes – 5,127 m), 2010 (25 holes – 2,913 m) and 2011 (12 holes – 1,138 m). In Jul/2011 the company released a NI 43-101 Compliant Technical Report which included an initial mineral resource estimate for the Onek deposit. Based on calculations prepared by SRK Consulting (Canada) Inc, The Onek deposit hosts an Indicated Resource measuring 585,000 tonnes grading 194 g/t silver, 0.65 g/t gold, 1.23% lead and 13.74% zinc. Inferred resources were estimated at 236,000 tonnes grading 203 g/t silver, 0.43 g/t gold, 1.05% lead and 11.52% zinc. The resource estimates were calculated using a cut-off equal to a Net Smelter Return (NSR) of $185.00/tonne. The NSR was based on commodity price parameters set by Alexco.

Following release of the mineral resource estimate, Alexco immediately embarked on preliminary mine planning and metallurgical testing. Planning work continued into 2012 and included engineering studies related to bringing the deposit into production. The company also carried out access development to the Onek deposit. In Jan/2013 Alexco was granted a Quartz Mining License by the Yukon Government. Pending final engineering studies and the issuance of an amended Water License, Alexco anticipates producing ore from the Onek deposit in the second quarter of 2013.

GEOLOGY

The Onek property is situated within the Keno Hill mining district in central Yukon. The property encompasses the town of Keno City, Yukon although the actual mineralized vein lies approximately 1 km east of the town and 1 km from Alexco's Keno Hill District ore processing mill near Keno City. Mineralization at the Onek deposit is confined to the Mississippian Central Quartzite also known as the Keno Hill Quartzite. This quartzite is about 700 m thick and is structurally overlain by phyllite and sericite schist of the Late Proterozoic-Early Cambrian Hyland Group, and underlain by graphitic schist, phyllite and sericite schist of the Devonian-Mississippian Earn Group. The sequence is cut by greenstone sills which consist predominantly of meta-diorite and have yielded a U-Pb age of 232.2 ± 1.5 Ma (Triassic).

The Onek vein system comprises at least three individual vein faults occurring within a broad northeast striking, southeast dipping structural zone. Vein 1 is the dominant structure and contains the majority of the mineralization that was partially mined in the historical Onek mine workings. Vein 2 is located approximately two to twelve metres in the hanging wall of Vein 1 and occasionally merges into Vein 1, while Vein 1FW is a small sparsely-mineralized splay in the footwall of Vein 1. The vein faults are characterized by brittle fractured or milled zones,

locally containing massive sulphide vein material, consisting of sphalerite, galena and siderite along with minor pyrite, arsenopyrite and quartz. Mineralized breccia zones are also present, consisting of wall rock fragments and siderite-sulphide cement. These zones are often surrounded by brittle fracture zones cemented by siderite and minor sphalerite stringers. Unlike other deposits in the district, the Onek deposit is zinc dominated but is strongly zoned with more silver rich mineralization in the upper areas of the deposit and zinc rich mineralization in the lower zones. The Onek deposit extends approximately 600 m along strike and remains open to the southwest and to the northeast.

Historical production from the Onek deposit is estimated at 86,470 tonnes grading 466.3 g/t silver, 5.5% lead, 3.4% zinc. All mining at United Keno Hill Mines ceased in Jan/89; however the company managed to keep operating in various forms until 2000 when environment liabilities drove the company into bankruptcy. At the time of bankruptcy the Onek deposit hosted a Non-Compliant "Historical Estimate" of 77,799 tonnes grading 433 g/t silver, 4.71% lead, 16.41% zinc and 0.34 g/t gold. The estimate includes proven, probable and inferred mineralization.

Exploration carried out in 2006 by Alexco was aimed at verifying historical resources. Alexco scanned and digitized nearly 70 years of paper maps and other documents and assembled them into a coherent database. Diamond drilling carried out in 2007 was designed to verify the presence of mineralization at the historic working of the Onek mine and to explore for mineralization below the deepest workings of the mine. The drilling program intersected high grade zinc mineralization with silver in numerous holes. The 2008 diamond drill program extended the down dip depth and the strike length of the deposit to approximately 400 m. The 2010 and 2011 drilling programs were designed to test the upper, more silver-rich mineral resource at the deposit.

Assaying conducted in 2010 confirmed that anomalous indium mineralization is commonly associated with the Onek zinc-silver zones. Reassaying of mineralized pulp samples from previous drilling conducted in 2007 and 2008 showed that 25 out of 36 drill holes contained significant indium grades based on a minimum of 1.0 m of at least 50 ppm indium.

The July/2011 Technical Report reviewed Alexco's exploration work and outlined the various steps undertaken to calculate the initial resource estimate for the deposit. The consulting engineer was satisfied by the steps Alexco had taken to date to bring the deposit into production. The resource estimate was broken down by the three vein sections:

Zone	Class	Tonnes	Silver g/t	Lead %	Zinc %	Gold g/t
Vein 1	Indicated	536,000	195	1.25	14.27	0.67
	Inferred	200,000	193	0.65	12.55	0.45
Vein 1 FW	Inferred	16,000	318	5.17	4.82	0.43
Vein 2	Indicated	49,000	175	1.00	7.91	0.38
	Inferred	20,000	208	1.61	6.66	0.25
Total	Indicated	585,000	194	1.23	13.74	0.65
	Inferred	236,000	203	1.05	11.52	0.43

Cut-off = Net Smelter Return of C$ 185.00/t, Prices and Recoveries = Silver US$ 18.50/oz, recovery 96%, Lead US$ 0.90/lb, recovery 97%, Zinc US$0.95/lb, recovery 88%, Gold US$1,100.00/oz, recovery 72%.

The report did not include any metallurgical test work and assumed the ore could be processed by the mill Alexco was using to process ore from its neighbouring Bellekeno operations (Minfile Occurrence #105M 082) located approximately 2 km away. The report also included mineral resource calculations for all ore located above and below the 930 m level of the deposit.

Alexco has not publicly released the results of its engineering and metallurgical studies. However the company's 2012 Annual Financial statement, reports the work was undertaken in 2012 and the company hopes to receive a Water License amendment in the second quarter of 2013 allowing it to begin to mining and processing ore from the Onek deposit.

Work History

Date	Work Type	Comment
12/13/2013	Studies	
12/13/2012	Lab Work/Physical Studies	
12/13/2012	Studies	Engineering studies.
12/13/2012	Development, Underground	Access development.
12/13/2011	Drilling	12 holes; 1,138 m
12/13/2011	Lab Work/Physical Studies	
12/13/2011	Studies	Technical report with Initial Mineral Resource figures.
12/13/2010	Drilling	25 holes; 2,913 m
12/13/2008	Drilling	29 holes; 5,127 m
12/13/2006	Airphotography	
12/13/2006	Airphotography	
12/13/2006	Studies	Alexco digitized all records, created wire frames for all mineralized areas.
12/13/2006	Airborne Geophysics	
12/13/2006	Airborne Geophysics	
12/13/2006	Pre-existing Data	
12/13/2006	Remote Sensing	

12/13/1999	Geochemistry	
12/13/1999	Geochemistry	
12/13/1999	Other	
12/13/1997	Drilling	13 holes; 2,803 m
12/13/1996	Studies	Historical estimate calculated for deposit, not NI 43-101 compliant.
12/13/1952	Development, Underground	Reopened workings, drove an adit in from northwest.
12/13/1951	Development, Underground	Reopened workings, drove an adit in from northwest.
12/13/1950	Development, Underground	Reopened workings, drove an adit in from northwest.
12/13/1922	Development, Underground	Dug shafts, tunnels and adits. Work completed by end of year.

Assessment Reports that overlap occurrence

Report Number	Year	Title	Worktypes	Holes Drilled	Meters Drilled
096732	2014	Assessment Report Describing Metallurgical Test Pits, Metallurgical Auger Drilling, Geotechnical Auger Drilling, Geotechnical Study, Environmental Baseline Studies, Heritage Evaluation, and Water Quality and Climate Monitoring Surveys	Auger - Drilling, Water - Geochemistry, Metallurgical Tests - Lab Work/Physical Studies, Environmental Assessment/Impact - Studies, Geotechnical - Studies, Heritage/Archeological - Studies	9	96.77
094943	2006	2006 Geological, Aerial Photography and Orthophoto Assessment Report on the Keno Hill Property	Electromagnetic - Airborne Geophysics, Magnetic - Airborne Geophysics, Interpretation - Airphotography, Orthophoto - Airphotography, Digitizing Data - Pre-existing Data, Photogrammetry - Remote Sensing		
090564	1979	Geological, Geochemical, and Geophysical Report	Rock - Geochemistry, Silt - Geochemistry, Soil - Geochemistry, Bedrock Mapping - Geology, EM - Ground Geophysics, Seismic - Ground Geophysics, Research/Summarize - Pre-existing Data		

Related References

Number	Title	Page(s)	Reference Type	Document Type
YEG2007_OV	Yukon Exploration and Geology Overview 2007	17, 37.	Yukon Geological Survey	Annual Report
YEG2008_OV	Yukon Exploration and Geology Overview 2008	17, 31.	Yukon Geological Survey	Annual Report
YEG2011_OV	Yukon Exploration and Geology Overview 2011	22-23.	Yukon Geological Survey	Annual Report
YEG2012_OV	Yukon Exploration and Geology Overview 2012	30.	Yukon Geological Survey	Annual Report
GM1997-1	Bedrock geology of Mayo map area, central Yukon (NTS 105M)		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Geoscience Map (Geological - Bedrock)
7	Geology of the Mayo Map Area, Yukon Territory (NTS 105M)		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Bulletin
GM1996-5	Geological map of Keno Hill area, Yukon (105M/14)		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Geoscience Map (Geological - Bedrock)
1989-3	Yukon Gold-Silver File Description of Occurrences		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Open File (Geological - Bedrock)
6	Geology of the McQuesten River Region, Northern McQuesten and Mayo Map Areas, Yukon Territory (115P/14, 15, 16; 105M/13, 14)		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Bulletin
99-058	Summary Report YMIP Grant #99-058 - 1999 Prospecting and Geochemical Surveys on the Highland Lake, Little Salmon Lake, and Keno Hill Areas		Yukon Government: Energy, Mines and Resources	YMEP Report

Resource/Reserve

Year	Zone	Type	Commodity	Grade	Tonnage	Amount	Reported Amount	43-101 Compliant	Cut-off
2019	Onek (Underground)	Indicated	zinc	11.9 %	700,200	83323800	Yes	Yes	Unknown
2019	Onek (Underground)	Indicated	lead	1.2 %	700,200	8402400	Yes	Yes	Unknown
2019	Onek (Underground)	Inferred	silver	118 g/t	285,100	33641800	Yes	Yes	Unknown

2019	Onek (Underground)	Inferred	gold	.4 g/t	285,100	114040	Yes	Yes	Unknown
2019	Onek (Underground)	Inferred	lead	1.2 %	285,100	3421200	Yes	Yes	Unknown
2019	Onek (Underground)	Inferred	zinc	8.3 %	285,100	23633300	Yes	Yes	Unknown
2019	Onek (Underground)	Indicated	silver	191 g/t	700,200	133738200	Yes	Yes	Unknown
2019	Onek (Underground)	Indicated	gold	.6 g/t	700,200	420120	Yes	Yes	Unknown