# JACKPOT, NV – BOSTON MINE MODELING AND DRILL HOLE PLANNING

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# **1** INTRODUCTION



3D model of the Boston Mine Area (inclined, looking west) – IP Chargeability draped over DEM showing drillholes (proposed-white) and modeled mineralization surfaces

Geologic modeling was completed in order to aid in the process of drill hole selection for an upcoming drill program on the Boston Mine property located south of Jackpot, NV. Historical reports and data were reviewed and relevant data was compiled and digitized into a digital format for upload into 3D software. Data incorporated into the model included geologic data (surficial/underground mapping and sampling), a reconstruction of the underground working at the Boston Mine, mineralization discussed in historic reports, historic drilling, and geophysics. Notes on the modeling, as well as files generated during the process can be found in the section below. A total of 10 holes (1,000 meters) were planned on the property testing known mineralization associated with the Boston Miner and the Montgomery Tunnel prospect as well as testing IP anomalies identified on the property. The proposed holes are tabulated in the tables below. A detailed table containing additional details as well as a plan map showing drillhole locations and access is attached to this document.

Target	BHID	Easting	Northing	Azimuth	Dip	Target Depth	EOH (m)	Objective
Boston Mine Area	BM-21-01	698824	4630847	210	-45	M - 20 meters; N - 40 meters	75	Drilling under portal where high-grade Au was encounted sub-parallel to bedding. Hole drilled perpendicular to bedding. Passes through modeled plain of orebodies 'M' and 'N'
Boston Mine Area	BM-21-02	698844	4630827	267	-60	M - 35 meters; N - 60 meters	115	Drilling sub perpendicular to modeled mineralization, oblique undercut of BM21-01 and intercepting model 'N' above 190' level where high grade ore was described in historic reports within the workings.
Boston Mine Area	BM-21-03	698827	4630822	217	-55	M? - 15 meters; N - 40 meters	100	Targeting down dip extension of high-grade ore described in historic reports (shaft @ 90 foot level)
Boston Mine Area	BM-21-04	698840	4630789	275	-45	N - 45 meters	100	Southern extension of 'N' zone under cut north of shaft and in line with channel samples (4' 8.25ppm Au) and axis of IP anomaly.
Montgomery	MT-21-01	698685	4630973	190	-45	45 or 70 meters	100	Testing IP anomaly north of Montgomery Tunnel and passing directly under tunnel (test both north dipping model sub parallel to bedding and sub vertical model)
Montgomery	MT-21-02	698651	4630974	185	-45	40 meters	100	West stepout on MT-21-01 intersecting both modeles and IP axis.
IP Anomaly	BMIP-21-01	698866	4630696	175	-45	35	88	Testing Stong IP anomaly S of Mine Area (West)
IP Anomaly	BMIP-21-02	698917	4630731	175	-45	35	85	Testing Stong IP anomaly S of Mine Area (East).
IP Anomaly	BMIP-21-03	698719	4630802	152	-45	50	100	Testing IP anomaly west of mine area. IP anomaly appears to trend along bedding. CuOx float on west portion of anomaly.
IP Anomaly	BMIP-21-04	698878	4630781	201	-45	40	120	Testing Boston Mine IP anomaly along trend to the north. Hole could be extended to ~200m to pass through IP anomaly leading up to strong IP anomaly to south

# **2** BOSTON MINE AREA

### **MODELING AND INTERPRETATION**

Historic accounts (Hanks report) describe the mineralization encountered on the property. Hanks' description of the mineralization indicates two bodies which crop out at the surface identified as orebody 'M' and 'N' as well as lower grade mineralization exposed at the surface to the west and southwest. The image below shows the locations of mineralization described by Hanks, CuOx showings, mine workings, geology, and colored IP chargeability.



3d modeling of the mineralization indicates that mineralization associated with the two 'orebodies' are generally striking at approximately 160-170 degrees and dipping between 65-75 degrees to the east. The mineralization models produced provide reasonable correlation between mineralization described in the historical reporting as well as with mineralization observed from surface studies and past drilling.

The modeling indicates that the surface mineralization of orebody M correlates with the high-grade mineralization encountered within the adit and initial workings. Orebody N appears to correlate with high-grade mineralization encountered within the shaft at the ~90' level as well as high-grade mineralization described in the Hanks report as being located along north extent of the north drift on the 190' level.

The image below (plan) shows the modeled mineralization 'planes' of orebodies M and N with modeled underground workings, drillholes colored to Cu assay (ppm) followed by an inclined image (looking NW) showing the same features and location of high-grade ore described by Hanks located in mine workings. Note that not all drill holes contain Cu assays.





It should also be noted that mineralization within the adit entrance and initial workings was identified as being continuous throughout the workings and of very high-grade. The orientation of this mineralization is roughly NE-SW

which appears to be parallel to bedding in the limestone, indicating that bedding is likely a secondary control on mineralization and may play a role in the concentration of higher-grade material. This orientation was taken into account during the drill hole planning.



The orientation of the bedding throughout the Boston Mine area also shows good correlation with the IP chargeability anomaly associated the immediate mine area and extending to the southeast. Cu Oxide exposures and channel samples with modest to high-grade gold values also appear correlative to this orientation. Follow-up drilling should be conducted along this trend between surface exposures of mineralization and the known mineralization associated with the mine.

## PROPOSED DRILLING

A total of 8 Holes are proposed in the Boston Mine area testing mineralization associated with the known mineralization ("BM" series - 4 holes) and adjacent IP anomalies ("BMIP" series - 4 Holes).



### **Boston Mine (BM Series)**

#### BM-21-01

The hole is drilled perpendicular to bedding orientations directly under the portal where high-grade mineralization was encountered during mining (mineralized plane M) and intersecting mineralized plane N below the 90' level west of the mine workings.



#### BM-21-02

The hole is drilled perpendicular to the mineralized planes and targets the down-dip extension of the "M" zone directly under the 'stoped out' portion of the upper level at the bottom of the decline. The hole passes through the "N" zone slightly above the assumed northern terminus of the 190' level where accounts of high-grade mineralization were described in on both the 90' and 190' levels. Both intercepts pierce the mineralized planes approx. 65' from the intercepts in BM-21-02.



The hole is drilled perpendicular to bedding and targets accounts of high-grade mineralization encountered in shaft at or around the 90' level. The hole is outside of the modeled plane of the M zone but could intercept mineralization associated with this zone at the top of the zone if the mineralization persists.



### BM-21-04

The hole is drilled perpendicular to the trend of mineralization in the "N" zone. The hole targets this mineralization below the 90' level. The hole is also designed to test the axis of the IP anomaly associated with the Boston mine mineralization and is drilled under the 'cut' located south of the shaft and north of high-grade mineralization from a channel sample (4' of 8.23 ppm Au and 5' of 2.54 ppm Au) identified in a trench further south.



#### **Boston Mine IP Anomalies (BMIP Series)**

4 holes have been proposed to test IP anomalies in the Boston Mine area.



**BMIP-21-01 and 02** are proposed to test the strongest portions or the high intensity chargeability anomaly south of the mine which have not been drill tested to date. Depending on the results of the first hole, the second hole could be adjusted or excluded from the program.

**BMIP-21-03** tests a chargeability anomaly west of the mine which contains a CuOx occurrence on the western extent of the anomaly. The location of the hole was picked to be located on the patented claim to avoid additional permitting requirements and targets the strongest portion of the anomaly. A single hole was previously drilled on the anomaly, however, the hole appeared to collared on top of the anomaly and drilled to the south indicating that the hole may have overcut mineralization.

**BMIP-21-04** is testing the main IP axis associated with the Boston Mine mineralization and the necessity of drilling this hole may be dependent on the results of BM-21-04 drilled just south of the mine and also testing the IP anomaly. The hole could also be extended to further test the SW portion of the anomaly and CuOx mineralization identified in trenches.

# **3** DRILL HOLE PLANNING – MONTGOMERY TUNNEL PROSPECT

### **MODELING AND INTERPRETATION**



Data is limited in the Montgomery Tunnel area and two models were constructed based on the location of previous workings including the location of the tunnel, adjacent pit and drill hole intercepts from CON 5 (5' @ 26 ppm Au) and MS-06 – (5' @ 3.26 ppm Au). The actual location of CON-5 is unknown as there were discrepancies between the location from company maps and what appears to be the likely drill site location found during a site visit in May, 2021.

The two mineralization trends indicate either:

- 1. A shallowly north-dipping, west-east striking zone which provides good agreement between the IP anomaly, tunnel, adjacent pit and MS-06 and which also appears semi-conformable to bedding (purple zone on map below).
- 2. A sub-vertical trending zone that strikes NW-SE that cuts the IP anomaly obliquely and agrees with widespread occurrences of CuOx and overall trends towards the Boston Mine Area.

### DRILLHOLE PLANNING

Two holes (MT-21-01 and 02) were planned which test both models described above as well as the axis of the IP anomaly. The first hole is also drilled directly under the Montgomery tunnel. Depending on the results of the initial hole, the second hole should be re-evaluated. As both holes are planned as being drilled at 45 degree angles, an undercut of either or both holes could be considered.

Access to both holes will require ~225' of road building and slopes in the area may cause difficulty. Access needs to be confirmed on the ground.





# 4 GEOLOGIC MODELING NOTES AND MODELING FILES

### Digital Elevation Model (middlestack\_east\_dem.dm and middlestack\_west\_dem.dm)

- A DEM pointfile was downloaded from the public domain and clipped to the Jackpot Project area (East area includes the Boston Mine Area and West includes the Western Skarn area)
- Point files were input into Datamine to create a DEM wireframe surface.

### • Imagery (georeferenced imagery files to overlay on DEM surfaces)

- GLE-Geology Image2.tif
  - GLE bedrock geology map with surface samples, strikes and dips, and select drill hole locations
- IP Chargeability.tif
  - Colored image of IP Chargeability
  - IP Resistivity.tif

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- Colored image of IP Resistivity
- Boston Mine Area Ortho 1.tif
  - High resolution ortho image over Boston Mine Area
    - Used for detailed location of trenches, roads, trails, etc
- NV\_Tijuana\_John\_Peak\_20180808\_TMorth\_geo1.tif
  - Georeferenced USGS ortho image covering Boston Mine Area
- $\circ \quad \text{NV}\_\text{Middle}\_\text{Stack}\_\text{Mountain}\_\text{20180808}\_\text{TMorth}\_\text{geo1.tif}$ 
  - Georeferenced USGS or tho image covering Boston Mine Area

### • Drill Hole File (jackpotddh\_20210606.dm)

- Desurveyed drillhole file containing lithology, mineralization, and alteration data for all historic data including the BM, CON, and MS series holes (40 holes total). All data was compiled into the following base files for input into Datamine for desurveying:
  - **Collars\_txt** containing the following fields:
    - Compulsory Fields:
      - BHID Drill hole name
      - X,Y,Z data
      - X and Y data were not readily available for all drillholes and were obtained from georeferenced company maps.
      - Z data an x,y point file was created and input into datamine containing the collar locations. Points were projected to the available DTM covering the Project area and the updated elevations were included in the collar file.
    - Ancillary Fields:
      - EOH End of hole in feet and meters
      - Dip\_P planned dip of drillhole from company logs
      - Az\_P planned azimuth of drillhole from company logs
      - $\circ$   $\,$  Company name of exploration company that drilled the hole
      - HoleType Core or RC
      - Hole\_Dia diameter of drill hole
  - Surveys\_txt
    - Compulsory fields:
      - BHID Drill hole name
      - At Depth of survey reading
      - BRG Bearing of drill hole
      - DIP Dip of drill hole (positive dip downwards)
    - Note: Onle the BM series hole contained downhole survey data. The remaining holes were desurveyed using the planned drill hole attitudes as found in the company logs
  - Assays\_txt
    - Compulsory Fields:
      - o BHID Drill Hole Name
      - FROM Sample from in Meters
      - TO Sample to in Meters
      - LENGTH Length of Sample
    - Ancillary Fields
      - o SAMPLE Sample ID
      - AU\_PPM
      - AG\_PPM
      - CU PPM
      - CU\_PCT
      - MO\_PPM
      - o BA\_PPM
      - o BI\_PPM
      - W\_PPM
      - MG PCT
      - FE\_PCT

- Note: only BM series holes contained multi element data in digital form. Other series (Au, Ag, Cu where available) were entered manually into the assay database
- Geology\_txt
  - Compulsory Fields:
    - o BHID Drill hole name
    - FROM Lithology from in meters
    - TO Lithology to in meters
    - LENGTH Lithology interval length in meters
  - Ancillary Fields:
    - LITH\_C Lithology class (sed, meta, igneous)
    - ROCK Logged lithology
    - FEOX Iron Oxide (YES if noted in Log)
    - FEOX\_PCT Iron oxide percent (CON holes only)
    - SIL Silica Alteration (YES if noted in log)
    - SIL)\_PCT Percentage of Silica alteration (Con holes only)
    - SULF Sulfides (YES if noted in Logs)
    - SULF\_INT Intensity of sulfides present (min, mod, strong)
    - CUOX Copper Oxides (Yes if noted in Logs)
    - CUOX\_INT intensity of copper oxides present (min, mod, strong)

### • Point Data

- 20210630\_Surfacesamples\_2.dm
  - Surface samples digitized from GLE geo map and projected to DEM surface
  - Attributed as follows:
    - XPT, YPT, ZPT Easting, Northing, and Elevation (projected to DEM) of samples
    - Name Sample ID
    - SMPL\_TYP Grab or Channel
    - AU\_PPM
    - AG\_PPM
    - CU\_PPM
    - CU\_PCT

### o Line Data

- Historic Workings
  - Boston Area Trenches.dm
    - Trench locations as digitized from ortho imagery (projected to DEM)
  - Boston Mine Shaft Strings.dm
    - Vertical Strings digitized from DTM surface (at handheld GPS location) to 190' below DTM surface
  - Boston Mine Upper Level-Ramp-Samples.dm
    - Digitized model of the upper level of the Boston Mine from georeferenced map of the workings (adjusted to Handheld location of the portal and shaft)
    - Elevation data was adjusted to account for the 30 degree decline located just past the portal entrance.
    - NOTE: There is uncertainty to the location of the workings at the Boston Mine. Most accounts discuss a vertical shaft sunk 190' feet from surface with workings at the 90' and 190' levels. Using descriptions of the workings from historical accounts the modeling indicates that he workings which were thought to be at the 90' level plot at or around 40-50' from the top of the shaft (see image

below, inclined looking SW, which shows the digitized workings as well as lines at the 90 and 190' levels as measured from the top of the shaft. There is one account from the 1930's that discusses a 33' level with a map identical in shape to the more recent maps that were identified as the 90' level. This could be due to discrepancies between elevation data as these measurements are taken from the DTM model.



- Drillholes
  - Planned Drillholes 2021 Final.dm
    - Proposed drillhole string file
- Geology
  - Boston Area CuOx Locations Pink-float.dm
    - Location of CuOx at surface from historic maps (including underground workings) and from 2021 GLE Site Visit (projected to DEM)
    - COLOUR = 2 (in place) or COLOUR = 17 (float)
  - Boston Mine Upper Level Sampling.dm
    - Channel Samples digitized from georeferenced Mine Workings Map with sample locations. Adjusted to digitized location of mine workings.
      - Attributed as Follows:
        - SampleID Sample name
        - Length\_F Length of channel in Feet
        - AU\_PPM
        - AG\_PPPM
        - CU\_PPM
  - Boston Mine Bedrock Geology.dm
    - Bedrock Geology digitized from GLE Bedrock Map (projected to DTM Surface)
    - Also includes faults from underground geology map
    - COLOUR Field used to code lithologies:
      - 16 Limestone
      - 29 Quartzite
      - 17 Granodiorite

- 25 Aplite Dike
- 55 Feldspar Porphyry Dike
- 15 Fault
- NOTE: Calc Silicates which lie between Limestone and Quartzite not digitized
- Strikes.dm
  - Digitization of the strike orientation and dip directions from GLE bedrock map and underground geology map.
- Mineralization Planes.dm
  - o Line data for modeled mineralization planes used for drillhole planning
    - Also includes surface file with same name
- Mineralization Described in Historic Reports.dm
  - Line data for mineralization located within the Boston Mine workings described in historic reports
    - Also includes surface file with same name
- Orebodies at surface.dm
  - Digitized surface exposures of mineralization at surface (from Hanks report)
  - Projected to DEM