Tech Report on the Darwin Mine Metallurgy Reserve Calculations and Development Recommendations

Inyo County

California

This Reserve Data and Supporting

Documentation Reviewed and Commented on By Peter Hahn in

Following Document

Prepared For:

Project Darwin LLC.

By:

Brownstone Mining

Est. 1952

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THE DARWIN MINE

Summary

The Darwin mine consists of 58 patented mining claims in the Coso Mining District, Inyo County California. The mine is owned by Project Darwin LLC., Jack E. Stone of Tonopah, Nevada, Manager.

The mines main workings consists of the 9360 foot long Radiore adit, which connects the two main workings, the Thompson and the Defiance. This Radiore adit is in excellent condition with little timber and near new 40# rail installed in 1976 just before the mine was shut down due to economic conditions.

The two main workings are serviced by vertical winzes collared on the 400 foot level, which is the Radiore adit level. The

Defiance winze goes to the 1300 foot level with levels at 100 foot intervals, also at the Defiance is an incline winze to the 1000 foot level. The Thompson mine has a winze which goes to the 900 foot level with levels at 100 foot intervals. All winzes have hoists in
place and with some service would be operational, this along with 3 150 h.p. ventilation fans in place. There are several access points from the surface to the Radioreadit, these go through old workings and make excellent second exits

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out of the mine for emergency use.

You can see from the several reports that the potential of this mine is
exceptional, with a very large potential deep, as indicated with diamond drill holes. As to what can be mined immediately the 433-435 stope area is ready with enough proven ore to operate a 300 ton per day mill for over a year all by it's self. This ore is above the 400 level making it easy and cheap to mine, no hoisting. The 435, bedded ore body was first located by and mined by West Hills exploration and between them an Monticito Minerals who came after West Hills they mined some 60,000 tons of very good ore from this area, with some of this ore being high enough grade to direct ship. This ore body is still going and was drilled, sampled and assayed extensively by Blue Range under the
guidance of Rob Wetzel and Mike Garvich. This work by Blue Range has proven 80,000 ton of ore along with another 100,000 tons of probable ore, drill logs, maps, assays etc. are on site.

Included with this report is a compilation of all proven and probable ore along with geologically sound targets for further exploration. This includes all shaft sinking, drifting, raising and cross cutting etc. needed to check out extensions of known ore bodies and find new ones.

I spent 10 years as mill superintendent, metallurgist and consultant at the Darwin and Monticito mills. I was responsible for milling thousands of tons of ore at both the Darwin and Monticito mills. While I was at the Darwin mill I was able to improve the overall recovery beyond what Anaconda had obtained by use of improved equipment, some flowsheet changes and extensive lab testing.

I spent some time working on the recovery of the scheelite in the tailings and was able to make a 30% W03 grade concentrate which was not salable at the time. I later worked with Fred Yarco, Monticito Minerals, and we were able to produce a 40% W03 concentrate which was sold to Union Carbide at their Pine Creek mine and mill. Most all of this work is well documented in the Anaconda, West Hills and Monticito reports on site.

About six months ago, at the request of Jack E. Stone, I started reviewing data at the Darwin mine this included daily production reports, mill reports, drill logs, core maps and a vast array of geological reports, assays and maps. During this period I have assayed over 100 samples, done flotation and cyanide leaching tests in the laboratory on site. This later work to develop flow sheets using reagents not available in the 1970's, all of this test work to come up with a mill design that will optimize recovery and concentrate grade.

The ultimate purpose of this report is to show that there is enough proven ore reserves to support the operation for a minimum of two year, this would cover the rebuilding of the infrastructure of the property and get it up and operational.

In order to do this we will be verifying the historic reserves, look at the extensive drilling done by Blue Ridge Mining in 1989, along with the deep drilling done Anaconda in 1982, Quintana's work and drilling from 1985 through 1988, the work done by Cypress Mines in 1991, along with the work done by Monticito Minerals in the 1970's and recently some information has been provided by World Industrial Minerals,

Reports by individuals working for the above mentioned companies would include, Rob Wetzel, Rainier Newberry, Keith Long, Don Strachan and Peter Hahn who has prepared a N143-101 covering the geology, the long range potential of the property, along with all of the history, climate, accessibility etc.

While the metallurgy of Darwin is first hand, and the 433-435, 458, the copper zone and the zinc oxide ore can be looked at and sampled easily, we had to rely on the individuals listed above who were able to work below the 400 level before these areas became inaccessible due to the hoists being inoperable.

The tailings work and the 1981 through 1983 heap leach which treated 80,000 tons of tailings and established metallurgy and quanities. This information was confirmed by the work of the following:

SRK Geotechnical and Mining Engineers

Cimetta Engineering & Construction Company Inc.

Jacobs Engineering

Bateman Uranium Company

Anaconda Research Lab, Tucson, Arizona

The previous oxide floatation work of American Cyanamid Company, Brownstone Mining, circa 1970 Report 9263, and drilling By Blue Range Mining Company. With assay work from:

Florin Labs

Skyline Laboratories

Bondar-Clegg Inc.

Blue Range Engineering

Inspectorate America Corp.

Chemex

And assays performed personally in association with recent laboratory work.

Blanks Standard and Reruns were used in accordance with good practice.

Security was maintained on all samples.

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DARWIN MINE - LOCATION HAP

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PROPOSED DARWIN PILOT PLANT
FLOTATION CIRCUIT

SULPHIDE CONCENTRATE

iE-------------t CL.ROUGH. SCAV.••••••• ~ DANA FLOAT 271

PAX

~---- FROM BALL MILL

SODA ASH, SODIUM SILICATE

QUEBRACHO, OELIC ACID

FUEL OIL
DENVER #12

SULFIDE SECTION

DENVER # 12

SCHEELITE SECTION

SULFIDE
FILTER

FINAL SULFIDE CONCENTRATE

RECl CL ROUGHER SCAVENGER |------~

FINAL
TAILINGS

SCHEELITE CONCENTRATE SCHEELITE
•••• -------..;.---------:~ FILTER

FINAL SCHEELITE
CONCENTRATE

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·PLAN VIEW

PUMP

FINE ORE BIN CLASSIFIER

BALL MILL
SCHEELITE
FLOTATION

\ ~BELT FILTER

SULFIDE FILTER
SCHEELITE FILTER
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TAILINGS PUMP FINAL TAILINGS

PLATFORM

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REAGENT PLATFORM

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ELECTRICAL PANEL VACUUM COMPRESSOR
PUMP

PROFILE THROUGH BALL MILL,

FLOTATION SECTION

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PROPOSED DARWIN PILOT PLANT

PROPOSED DARWIN CONCENTRATION PLANT

This is a verbal description of each process shown in the line flow sheets provided. Crushing and grinding

The crushing section will be designed to crush a days supply of ore in about four hours. We design this way because historically the crushing plant has more wear and tear on it than the rest of the plant and If all crushing is accomplished in about half of the shift the second half can be used for clean up and maintenance.

This plant will have a course ore bin to receive the ore from underground, and be provided with an apron feeder under it to feed the course ore to the jaw crusher. From the jaw crusher the ore will go by conveyor to a screen with 3/8" openings, the undersize, - 3/8", will pass through and drop onto a conveyor which will convey the ore to the fine ore bin. The plus 3/8" ore will be conveyed to a Symons cone crusher where it will be crushed and drop onto the belt going to the screen so that you have a closed circuit with all ore going around until it passes the 3/8" screen.

There will be a magnetic head pulley on the conveyor belt along with a hanging magnet over the belt, this to prevent any tramp iron from getting into the cone crusher which can cause considerable damage. The - 3/8" ore is transported by conveyor to the fine ore bin which will hold at least a days supply.

From the fine ore bin a veri - drive ball mill feeder belt will transport the ore to the ball mill, the veri - drive is used so that you can regulate the tonnage into the ball mill. On the way to the ball mill the feed belt passes over a weightometer which tells you

the tons per hour being delivered to the mill along with a total tonnage for the day. The ball mill will be in closed circuit with a screw classifier, which means that material will go around in a circle until it is the proper size to overflow into the flotation circuit. Copper sulfate will be added at this point to activate the sulfides and make them more amenable to flotation. The classifier overflow, which is the mesh size you want, will be pumped to the bulk sulfide circuit.

This crushing and grinding circuit is a good example of a standard, well known design, nothing fancy or innovative it just works well.

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The bulk sulfide circuit is just that, all sulfides will be floated into one concentrate so that we can get as many sulfides out as possible, this is because sulfides can cause problems in the scheelite flotation circuit. The classifier overflow is transported to a conditioning tank where sutfide flotation reagents, Danafloat 271 and potassium amyl xanthate (PAX), are added to promote the sulfide minerals.

The floatation ready pulp overflows the conditioner into the flotation cells, we will add a frother here and very aggressively go after the sulfides of silver, lead, zinc, copper and iron,

The bulk concentrates will be transferred to the differential flotation circuit where we will separate the sulfides intofour separate concentrates, lead, zinc, copper and iron, the silver, for the most part, will follow the lead and copper. The differential floatation of the sulfide minerals can be difficult, the best scenario would be to sell the bulk concentrates as they are but you really take a beating at the smelter. The smelter will only pay for certain metals and may even penalize you for some metals if above a certain percentage.

The differential flotation will proceed as follows. The reagents coating the sulfides need to be destroyed so that you can start anew and this is accomplished with the use of steam or with chemicals. Once the reagents are are gone we can proceed with a normal differential flotation like we did at Darwin for years. The concentrates flow into a conditioner where zinc sulfate is added to depress the zinc sulfide minerals, along with this a very small amount of cyanide is added to depress the pyrite. If this small amount of cyanide is a problem there are other methods which can be used but they are not as effective as cyanide. After this conditioner the pulp flows into another conditioner where the promoters Danafloat 271 and PAX are added. As the pulp flows into the float cells Flomin 650 frother is added and the lead, copper and most of the silver are floated. This concentrate is then sent to another conditioner and you again destroy the reagents and sodium dichromate is added to depress the lead minerals allowing you to float the copper away from the lead giving a lead concentrate along with a copper concentrate. These concentrates will be filtered, dried and shipped.

The tailings from the lead - copper flotation contains the zinc and pyrite. This pulp has lime added to pH to plus 10, this helps depress the pyrite and the zinc floats better at this pH. Copper sulfate is added to activate the zinc and then Danafloat and PAX are added to promote the zinc, flomin 650 is introduced as the frother and the zinc is floated, these zinc concentrates would need to be cleaned at least once to get a good 55 to 60 % grade concentrate. This concentrate would then be filtered, dried and shipped. The tailings would be your pyrite concentrate which would also be filtered, dried and shipped. Since this was a concentrate originally there would be very little tailings from this and what is left would be combined with the final tailings.

The tailings from the bulk suHide flotation will contain all of the scheelite. The flotation we will use here is a bit different and will be patterned after the work done in patent number 3,915,391. In this work they found that by using much smaller amounts of the oleic acid promoter and conditioning at high speed with hydrosol flocculent and alkanolamine frother for a long period of time, 10 to 15 minutes, they got exceptional results, as much as the mid 90's for recovery and a concentrate grade of 65% W03 .

The bulk sulfide tailings would be conditioned with hydrosol and soda ash at pH of 10. The pulp will then be put into the high speed agitator, oleic acid added and agitated at a minimum of 25 hp hourl ton for a period of time of not less than ten minutes. The fatty acid alkanolamine frother will be added and flotation takes place, cleaning and re-cleaning as many times as deemed necessary. The scheelite concentrates will be sold as is if they are 65 % or better, if not, the concentrates will be chemically turned into synthetic scheelite for sale.

The final tailings will be filtered, the water being retumed and either used in the mill or in the mine. Filter cake will be retumed to the mine and used as mine back fill.

EXPLANATION OF THE FLOWSHEET DRAWINGS FOR THE PROPOSED PROJECT DARWIN FLOTATION PLANT

1. Course ore bin, 25' x 25' bin will hold approximately 600 tons. 2. Apron feeder, 46" long by 36" wide.
3. Jaw crusher, 30" x 42" to crush to - 21/2"
4. Conveyor, 24" wide
5. Vibrating screen, 4' x 12' long double deck, to screen to -3/8" 6. Magnetic head pulley and hanging magnet to keep tramp iron out of the cone crusher.
7. Symons 4' short head cone crusher, set at 3/8".
8. 24" wide conveyor belt.
9. 24" wide conveyor belt.
10. 24' wide conveyor belt.
11. Fine ore bin, 10' diameter by 50' high.
12. Veridrive ball mill feeder, so that feed rate can be changed easily.
13. Weightometer for recording daily mill tonnage.
14. Conveyor set up so that any combination of the 6 mills can be used. 15. 6, 6' diameter by 7' long rubber lined ball mills. The rubber lining cuts down on noise and uses much less power because of much less weight.

16. Launder to catch the ball mill overflow. Launder is set up so that any combination of the 6 mills can be used.

17. Screw classifier, 36" x 24' set at 100 mesh over flow.

18. Galiger 11/2" x 2" vacseal sand pump to pump the slurry to the flotation circuit.

19. Oxide fine ore bin. The oxide ore needs its own recovery system as the water from this flotation is not reusable.

20. Veridrive feed belt for the oxide ball mill.

21. Weightometer to record thru put for the oxide circuit.

22.. Screw classifier, 30" by 15' long

23. Galiger vacseal11/2" x 2" sand pump to pump pulp to the conditioner. 24. 5' x 5' agitated conditioning tank, where Danafloat 271, 0.2 pounds per ton, Flomin 3505, 0.15 pounds per ton are added and conditioned for 5 minutes. as the pulp enters the flotation cells Flomin 650 frothier is added, 0.05 pounds per ton. Testing has shown that modem reagents can replace the use of sodium sulfide which is nice because the water over again where as with sulfidzed water you cannot use the return water this saving considerablely in total water consumption.

25. Bulk sulfide flotation, 8 number 24 Denver Sub- A flotation cells set up 4 roughers and 2 scavengers. The rougher concentrate is sent to the differential flotation circuit, and the scavenger concentrate is sent back to feed end of the ball mill.

26. A 6' x 6' agitation tank that is set up so that live steam can be injected into the pulp so as to destroy the reagent coating the mineral surface to give a clean surface for differential flotation.

27. Conditioning tank where zinc sulfate at 1.5 pound per ton and sodium cyanide at 0.5 pounds per ton are added to depress the zinc and the iron. If this small amount of cyanide becomes a problem there are other ways to depress pyrite but they not as efficient as cyanide.

28. 5' x 5' conditioning tank where Danafloat 271, 0.15 pounds per ton, and Flomin 3505, 0.1 pound per ton are added and conditioned for

7 minutes. As the pulp exits the tank, flomin 650 frothier is added, 0.05 pounds per ton is added.

29. 4 Denver number 24 Sub-A flotation cells are used to float the lead and copper away as a concentrate

leaving the zinc and pyrite in the tailings.

30. 4' x 4' conditioner tank where live steam is used to destroy the reagents on the lead and the copper minerals.

31. 4' x 4' conditioner where sodium dichromate is added, 3 pounds per ton, to depress the galena, conditioning time 5 minutes.

32. As the pulp comes out of the conditioner Flomin 3505 is added, 0.15 pounds per ton along with Flomin 650 frothier to activate the copper and float it. 2,
Denver number 24 Sub- A cells are used for this flotation. A copper concentrate is made and the tailings are the lead concentrate.

33. Copper concentrate filter a 4' diameter 2 leaf disk filter is used for this filtration.

34. The tailings from the lead, copper flotation go into a 5' x 5' conditioning tank where lime is added to pH 10 to depress the pyrite, conditioning time 5 minutes.

35. A 5' x 5' conditioner were copper sulfate, 2.0 pounds per ton is added to activate the zinc, then Flomin 3505, 0.15 pounds per ton, to float the zinc. 36. As the pulp passes to the flotation cells Flomin 650 frothier is added, 0.05 pounds per ton and flotation takes place. 8 number 24 Denver Sub-A cells are used here. 1 cell for cleaner, 4 cells for roughers and 3 cells for scavengers. The rougher concentrates go to the cleaner cell and the scavenger concentrates are retumed to the conditioner (35). The zinc cleaner concentrate is sent to the zinc filter (38).

43-. The zinc tailings are the pyrite concentrate which reports to the pyrite filter (43) 39. The pyrite concentrate from filter (43) are dried in a holo- flite dryer (39), put super sacks and shipped

38. Zinc filter and holo-flite dryer (40). A 4' x 4 leaf disk filter will work here. The zinc concentrate is filtered, dried, placed in super sacks and shipped

37. The lead concentrate is handled like the zinc, A 4' x 4 disk filter is used to filter the lead concentrate, dried with a holo-flite dryer (41), put in supper sacks and shipped.

33. The copper concentrates are filtered in a 4' x 2 disk leaf filter, dried with a holoflite dryer (42) super sacked and shipped

44. The tailings from the bulk sulfide flotation are pumped into a 5' x 5' conditioner where soda ash is added to pH 10, along with hydrosol, 5.0 pounds per ton. and conditioned for 5 minutes.

45. The over flow from (44) passes into a high speed agitator. As the pulp goes into the agitator 0.18

pounds per ton oleic acid is added. The pulp os agitated

IS

for a minimum of 5 minutes, with 25 hp. hrlton energy being added. This is a very important step in this particular scheelite flotation.

46. After high speed agitation the pulp moves into a 5' x 5' conditioner where fatty acid alkanolamine frothier is added, 0.7 pounds per ton, and this is agitated for 5 minutes.

47. A bank of 8 number 24 Denver Sub-A cells are set up 4 roughers, 2 scavengers, 1 cleaner and 1 recleaner cell. The re-cleaner concentrate, the final scheelite concentrate, is pumped to the ammonium para tungstate plant, the scavenger concentrate goes back to the (46) conditioner.

48. The final tailings go to a belt filter for filtering the filtered tailings are then used for mine back fill. The size of the belt filter will be determined by the requirements of the the paste plant.

Water usage in the flotation plant will be in the range of 150 GPM with about 100 GPM being return water, therefore actual fresh make up water will be about 50 GPM.

PROPOSED DARWIN CONCENTRATION
CRUSHING AND GRINDING SECTION

COARSE ORE BIN (1)

+ APRON tEEDER (2)

JAW CRUSHER (3)

(7) (8) CONjEYOR (4)

CONE CONVEYOR ~ CRUSHER ~ MAGNETIC

• + 3/8 INCH '-- HEAD PULLEY (6) CONVEYOR AND

OXIDE FINE ORE BIN (19)

~

FEEOrLl (20)

i ~ WEIGHTOMETER (21)

--..J

OXIDE WATER

AEROFLOAT 242

(9) SCREEN (5) HANGING MAGNET t - 3/8 INCH CONVEYOR (10)

V

FINE ORE BIN (11)

~

VERIDRIVE BALL MILL FEEDER (12)

WEIGHTOMETER + (13)

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Belt Set Up to Feed Any (14)
Combination of Ball Mills

COPPER
SULFATE

300%
CIRCU LATING LOAD

~BM

1 ●BM ~

WATER

~ ~ ~

! t ~~BM (15)

BM BM BM

BALL MILL DISCHARGE
+ 60-70% SOLIDS

+100 MESH

+ 100 LAU;DER (16) i MESH SCREW CLASSIFIER (17) ! ··100 Mesh ,

SAND PUMP (18)

SULFIDE FLOTATION

i > SCREW _ CLASSIFIER (22)

~ -100 MESH

SAND PUMP (23)

~

OXIDE FLOTATION

PROPOSED DARWIN CONCENTRATION PLANT BULK SULFIDE FLOATATION SECTION

FROM GRINDING CIRCUIT

DANAFLOAT 271 ~ CONDITIONER POTASSIUM AMYL XANTHATE
NATURAL pH
(24)

FLOMIN 650 FROTHER
BULK SULFIDE FLOTATION OF
ALL SILVER, LEAD, ZINC, COPPER
MINERALS ALONG WITH THE
IRON SULFIDES, NO CLEANING.
----..;;)... ONE CONCENTRATE PUMPED TO THE SULFIDE DIFFERENTIAL
(25)

STAGE ADDITION OF MORE PROMOTERS AS NEEDED

SCHEELITE FLOATATION SECTION ! ! TAILINGS

FLOATATION SECTION. PULL VERY HARD TO KEEP ALL SULFIDES
FROM REPORTING TO THE

SULFIDE
CONCENTRATE TO DIFFERENTIAL FLOTATION
SCHEELITE FLOTATION

PROPOSED DARWIN CONCENTRATING PLANT
DIFFERENTIAL FLOATATION OF BULK SULFIDE CONCENTRATE

BULK SULFIDE CONCENTRATE

t

DESTROY REAGENTS (26)
BY STEAM

ZINC SULFATE
~

DANA FLOAT 271 !

(27)
CYANIDE
-----~~ CONDITIONER

PAX -----~:> CONDITIONER 650FROTHER +
(28)

~
ZN-PYRITE
LIME J
pH10+-'
TAILS FLOTATION C_O_N_C_. -1 (29) t

PB-CU-AG-CONC.

t

CONDITIONER (34)

CU SULFATE
DANAFLOAT
PAX ----a.j

CONDITIONER (35)
AGITATOR (30)
DESTROY REAGENTS

SODIUM J
DICHROMATE ~

CONDITIONER (31)

(36)
L-650

FLOA~ATION -----1 t FROTHER

TAILINGS CONC.
PYRITE ZINC CONC.
PAX 650 ' l FROTHER ---,

r CU FLOTATION

(32)

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! I

PB-AG CONC. CU-AG CONC.

(43) PYRITE FILTER 1

DRY AND
ZINC Ff TER (38) DRY AND

! DRY ~ AND

PB FILTER (37) CU FILTER (33) DRY AND

SHIP (39)
SHIP (40)
SHIP (41)
SHIP (42)

HYDROSOL
SODA ASH pH 10 OLEIC ACID

PROPOSED DARWIN CONCENTRATION PLANT SCHEELITE FLOTATION

TAILINGS FROM BULK SULFIDE FLOTATION

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i

CONDITIONER (44)

j NEED 25 HP. HR.I TON FOR

HIGH SPEED AGITATOR (45)

MINIMUM OF 5 MINUTES FATTY ACID ALKANOLAMINE FROTHER

CONDITIONER (46)

1

FLOTATION WITH
TAILINGS
CLEANING AND RECLEANING (47) OF THE CONCENTRATE AS NEEDED

II

SCHEELITE CONCENTRATE
TO AMMONIUM PARA TUNGSTATE _ PLANT

(48) 1 BELT FILTER

_________ •....• ~ WATER FOR REUSE IN MILL OR MINE

FILTER CAKE USED AS MINE BACKFILL

FINAL PRODUC'T
AMMONIUM PARA TUNGSTATE

AMMONIUM PARA TUNGSTATE PLANT

A sulfuric acid solution at a pH of 1.0 and a temperature within a range 40 degrees to 90 degrees centigrade, preferably within the range of 50 to 60 degrees centigrade is added to the concentrates in a digester (48) at atmospheric pressure. A complexing agent, calcium phosphate, is added to the acid solution. The strong mineral acid reacts with the calcium phosphate to produce phosphoric acid and this along with a small amount of sodium chloride readily dissolve the scheelite. The output from the digestion stage (48) is sent to a filter (49) which separates solid matter and discharges it as tailings, the clarified solution being supplied to a precipitation stage (50) to which make - up complexing agent may be added. The tungsten values are precipitated by an ammonia salt, ammonium sulfate, the solution and the solids thus formed are delivered with the solution to a second separation stage (51) where solids are separated and delivered to a second digestion stage (52), while the liquid passes to a neutralizing unit where the acid is neutralized by calcium carbonate and passed on to the tailings.

The tungsten values are treated with ammonium hydroxide and a purifying agent to convert them to soluble ammonium tungstate and solid impurities and the slurry then flows to a filter (53) from which the liquid including soluble ammonium tungstate flows to a crystallizer (54), the separated solids being delivered by conveyor to a drier and scrubber (56). The crystallized ammonium para tungstate then passes to a filter - dryer stage (55) where it is dried and discharged by conveyor to packaging.

In order to save any tungsten values dissolved in the filtrate discharged from the filter (55), the filtrate is sent to a precipitation stage where calcium chloride is added to precipitate the tungsten as calcium tungstate which is filtered from the solution at a filter (57). This product may be removed and sold as high purity synthetic schleeite or returned by conveyor to the initial digestion stage (48). The filtrate from the filter (57) is delivered to the dryer - scrubber (56), and the solids from the dryer-scrubber are delivered by conveyor to the digestion stage (48), the liquid being returned from the dryer - scrubber to the precipitation stage.

All the residues except the initial tailings from filter (49) are or may be returned to the digestion circuit (48), with this you can expect extraction and recovery of ammonium para tungstate from the scheelite concentrates to be 96 percent to 99 percent of the available tungsten in the concentrate provided that the calcium tungstate from the filter (57) is returned to the system.

Ore Reserv~ by_level**Thompson** 100 Level

3A

38
400 Level
500 & 600 Level
700 Level
800 Level

900 Level

original assay security and certification standards used today.

Ore Reserves by level

	Tons
	10,000
	500
	7,250
Q~~n~ __ 400 Level	__129,900 38,000
570 Level	17,500
700 Level	12,300
800 Level	11,000
900 Level	
1000 Level	
1100 Level	
1200 Level	
1300 Level	
	33,000
TOTAL	2,400
	__*Z,500*
	500
	7,500
	5,450
	1,650_
	_ §,500
	39,650
	330,600

Note: Ore Reserves are prepared in accordance with N.P.H. standard and are Historic in nature. The author is aware that certain *QAJQC* requirements in the Canadian **NI** 43-101 standards may shift the classification of the reserves, based on the inaccessibility of certain

PROPOSED DRILLING / DRIFTING / SINKING LEVEL AREA DESCRIPTION TARGET Potential tonnage Probable Proven drifting 300 ft 600 674 drift DOH *620/634* Downdip extension of structure mined on 400L 8458 100,000 tons + 30000 Drifting 500 lf. + drilling *500/600* A472 fault PH area 1 T Exploration allong 8458 fissure to anticllal fold N of A472 fault

Drifting 400 lf. 38 PH area 2 T Exploration of NW fault and east limb 3B

Drifting 500 lf. + 400 L PH area 3 T Exploration to west along the 234-229 fissure zone

Cross cut 1000 lf. drift 1000 lf 800 L PH area 4 0 Exploration of 8emon and copper fissures, Oef. 800 L 1 thru 6 PH 10m to 15m MT+

Drift 1000 lf. = Diamond drilling 800 L PH area 5 0 SW exploration of Defiance fissure, Defiance fold west of 570 fault 10%ZN Drill 1000 lf. 800 L PH area 6 0 Exploration to east under porphyry fills along Defiance zone

Block 500 L 560 drift Warea2T 275 ft x 10ft 42.7 Ag 6.0 Pb 1.4 Zn 560 drift 810ck 100,000 tons 62000 Blocked Crosscut from 1300 station320 ft.rs to 1200 in are 15X150x150 1300 L 0 1302 drift Pipe 33,750 tons 1200 L 0 Pipe included above

Drift 421 nw 360 ft cross cut to 446 drift in ore 400 L A433 / 435 stope BrmW Bedded are developed on 3 sides 10x300x600 10Ag 10%Zn 180,000 tons 100000 80:000 Stope

oxide 100x50x1 000 first 30 ft. parallel to shear 20Ag 20%Zn 7'=1

177 stope wedge timber drop to Essex shaft to 400 L 100 L 177 stope OSQ 50,000 tons 6 Ag (10,000 tons 33 Ag) 50,000 tons 40000 10,000

Developed Slush to *slsheet* 400 L 0 off418 drift Strachan and .74 AU 750000 33,00~ Oxide developed 3B13 T481 38 T481 Mo 11.Ag 7. Pb 4.Zn 500 tons 500

3A142 3A 3A142 Ac 4 .Ag 7. Pb7.Zn 500 tons 500

Sulphide developed 38 3814-19 ThAC 15. Ag 2. Pb 6. Zn 2,000 tons 2,000

38 3857 Ac 6. Ag 1. Pb 5. Zn 2,000 tons 2,00~ 400 L 481 Ac 4. Ag 4. Pb 7. Zn 1,000 tons 1,000 800 L 818 Ac 5.Ag7.Pb5.Zn 500 tons 500~

800 L 814 Ac 5. Ag 1. Pb 9. Zn 600 tons 600 800 L 823 Ac 3. Ag 2. Pb 5. Zn 200 tons 200

900 L 901 Ac 3.5 Ag 2. Pb 10. Zn 5,000 tons

5,000

900 L 903 Ac 6. Ag .3 Pb 9. Zn 1,000 tons 1,000

sulphides 3AT 165 and 158 Ac 1.Ag6. Pb 13Zn n:aWops iMined Per BR B444 B433 A442

700 L T 725 and 640 Ac 11. Ag 12. Pb 4. Zn 2,500 tons , 2,500

400 L T A444 A c 19.7 Ag .7 Pb 1.6 Zn 2,500 tons 2,500

800 L 833 and 712 Ac 3. Ag 9, Pb 12. Zn 1,000 tons 38987 1,00~

500 L 0 570-16 and C418 Ac 24. Ag 4. Pb 1. Zn 1,200 tons 1,200

800 L 811 Ac 3. Ag 1 . Pb 14. Zn 10,000 tons 10,000,

.Z 900 L 803 Ac 5. Ag 13. Pb 13. Zn 1,000 tons 1,000~

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900 L 906 Ac 15. Ag 1. Pb 4. Zn 2,000 tons 2,000

900 L 933 Ac 3. Ag 1. Pb 14. Zn 2,000 tons 2,000

1100 L 1104 Ac 3. Ag 1. Pb 13. Zn 200 tons 200

1300 L 1301 Ac 19. Ag 3. Pb 8. Zn 2,000 tons 2,000

Oxide developed 500 L 1100 L 1200 L 1300 L 500 L 570-16 Ac 5. Ag 9. Pb 7 Zn 500 tons 500 1000 L 0 1042 Ac 20. Ag 2. Pb 2. Zn 450 tons 450

1300 L 0 1305 Ac 5. Ag 11. P 5. Zn 1,000 tons 1,000

1200 L 0 1208 Ac 2. Ag 23. Pb 2. Zn 1,500 tons 1,500~

Sulphide developed 500 L 0 570-16 Ac 5. Ag 3. Pb 10. Zn 700 tons 700 700 L 0 713 Ac 10. Ag 6. Pb 7. Zn 7,500 tons 7500

700 L 721 Ac 5. Ag 1. Pb 10. Zn 7,500 tons 7,500

700 L 715 Ac 3.5 Ag. 5 Pb 7. Zn 7,500 tons 7,500

800 L 0 813 Ac 1. Ag 3. Pb 10. Zn 500 tons 500

1000 L 0 1016 Ac 3. Ag 1. Pb 14. Zn 5,000 tons 5,000

1100 L 0 1142 Ac 11. Ag 4. Pb 13. Zn 450 tons 450

1200 L 0 1208 Ac 3. Ag 6. Pb 8. Zn 5,000 tons 5,000

1300 L 0 1305 Ac 3. Ag 3. Pb 8. Zn 2,000 tons 2,000

1300 L 0 1310 Ac 5. Ag 1. Pb 10. Zn 500 tons 500

1300 L 0 1313 Ac 2. Ag 5. Pb 7 . Zn 400 tons 400

3B L T 3B120 BRMW 9 Ag 7 .5 Pb 5 Zn 2750 tons 2,750

1100 L 0 1137 M 5 Ag 3.5 Pb 13.8 Zn 1000 Tons 1,000

900 L 0 973 M 7Ag5.Pb 10.Zn 7500 Tons 7,500

400 B 444 BRMW 9.5Ag5Pb 13Zn 3900 Tons 3,900

400 423rs 8RMW 3.27W 3.5 Ag .08 Pb 3.1 Zn 5000 tons 5,000

400 439 Stope BRMW 13.2 Ag 4.15 P8 4. Zn 30000 tons 30,000

400 TH 405 8RMW 11 Ag .45W 1.4 Pb 7 Zn 4750 tons 4,750

400 A495 8RMW 15 Ag 11 PB 10 Zn 250 tons 250

400 B458 8RMW 5Ag4.7Pb9Zn 2500 tons 2,500;

PROPOSED DRILLING/ DRIFTING/SINKING

1.0,.00.0Jf. Core

5,OQQJf. Drift and Cross Cut

450 Raise

40.0 If. SinkingWin'Ze

LEVELAREA DESCRIPTION TARGET Potentialtonnage Probable P.:,ro::,:v:,::e::,:n_-;;;=-= 1012987L- __ .....::l~~

Tailings & Dumps Supplement

After review of all preliminary metallurgical, analytical, and engineering associated with the successful heap leach of over 80,000 tons of Darwin tails. Daily operational reports, post operational reviews and site remediation documentation.

I have reached the following conclusions regarding the Tailings and Dumps at the Darwin Mine, Darwin, California.

Tails Total 1,606,000 Tons .0038 1.38 1.6% .84%

Dump Total 757,000 Tons .0051 1.06

Expected recovery after processing: 73 %Au, Ag TAILS Au 4,450 ounces

Ag 1,500,000 ounces

(Zn & Pb requires more work to derive a conclusion) Zn N/A Pb N/A

Dumps Au 2,800 ounces

Ag 585,000 ounces

Total Au 5,000 ounces

Total Ag 2,000,000 ounces

NOTE: Work was in progress for zinc recovery.

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UN1TED STATES DEPARTMENT OF THE INTER10R GEOLOGICAL SURVEY

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PROFESSIONAL PAPER 368 PLATE 4

A EXPLA 'ATION

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400 LEVEL

Keeler Canyon (ormation

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Fault, showing dip

Dashed where approximately located

..p..30

Strike and dip of overturned beds

Dip of overturned beds

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Mine workings

Dashed where projected

570 LEVEL

rom map of The Anaconda Co. Published wi h permission of the mine owners

MAP OF PART OF 400 LEVEL AND SECTION OF THE 430 STOPE ORE BODY OF THE DEFIANCE WORKINGS, INYO COUNTY, CALIFORNIA

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DARWIN MINE DEVELOPMENT PLAN

ESSENTIAL SERVICES:

A. Water system (both Municipal and Industrial). Installation of 4.5 miles of schedule 80, 4" pipe, welded joints, with 125 h.p. Gardner Denver pump which is to be rebuilt. New concrete vault with (2) 5 h.p. feeder pumps, feeding a 30,000 gallon tank which will need to be sleeved. Two 20,000 gallon tanks for municipal (potable water) which will be periodically purged to the 95,000 gallon pool. Move 90,000 gallon tank from across the street to the existing rock pad above the portal. Install water service to the rest of the camp, with new septic tanks. A water treatment unit will be installed per Inyo County requirements. Install new drisco pipe to the Defiance and Thompson. A 10,000 gallon surge tank will be at the Thompson. Install fire control measures, sonic nozzles in the main haulage which will minimize water consumption in haulage and maintain industrial hygiene compliance.

The tank at the well site will need to be bullet proof, and a concrete vault to protect the pump and switch gear will need to be installed.

Water service will be installed to the dry, the lab, the dump pocket, blacksmith shop, recreation building, gas building, eight on site houses, and water to an onsite R.V. park.

Complete the water system.

B. Compressed air service: Install rotary screw compressors at the Defiance, Thompson, and Bemon areas underground. Restore two of the Imperial 10 air compressors as back-up units with a closed loop cooling system. Install drisco pipe service to all areas with receivers. We will need to purchase drisco pipe welders.

Air service to the shop, blacksmith shop, lab, dry, recreation building will be established.

C. Re establishes electrical service to the project, which includes 4.5 miles of transmission line to the well with a substation. With a 350 kw substation at the Defiance portal. With 480 volt feeders to the lab, blacksmith shop, dry, lamp room, and dump pocket. An additional 150 kw substation at the Defiance decline, which will service the fan. An underground feed high voltage line moves the power to the

Defiance substation at the Defiance winze.

Five additional power poles will bring the high voltage to the Thompson portal, where a high voltage cable will feed a new 250 kw substation, which will be located at the Thompson winze.

Additional power distribution is to be established to the Thompson winze, replacing the ones which were stolen in 2007.

A primary substation drops the voltage to 480 volt, feeding the camps and the 480 volt and 120 volt transformers.

Sufficient service is available to support a 350 ton per day mill at the site; there are also sufficient water rights. However when the onsite mill is approved, additional substations will be required.

D. The office was originally constructed in 1921 and requires new windows, heating, air conditioning, as well as minor plumbing and flooring. There is a 20' x 25' as well as two 10' x 10' fire proof vaults incorporated in the office for data protection.

Computers, large scanners/plotters, monitors, printers, memory storage will be necessary for the digitizing of the massive amounts of data that exists. This will also allow the relogs to be digitized as well as the budgeted 10,000 lineal feet of core data.

With a modern mine mapping software previous and new results of x-ray fluorescent sampling, fire assays, and ICP work will be digitized.

The updates to the office are necessary to protect the electronics and the estimated $58 million dollars of data currently on site.

E. The lab, the existing building will support a small pilot plant. Fire assay equipment is in place; however an AA machine, x-ray fluorescents, ICP, additional glass ware, and chemicals are needed. This allows for immediate results and grade control assuring that economically feasible ore is shipped.

F. The dry will incorporate necessary showers, lockers, a foremen's' office, and a lamp charging station. The dry will also have a large water heater, heating and air conditioning, first aid station, and emergency response equipment.

G. Blacksmith shop. The shop is for the repair, maintenance, and fabrication of ore cars, drills, locomotives, slushers, and support equipment used in the underground operations. Roof repair HVAC equipment, welding equipment, specialty tools, and a forge will be a necessity. A substantial supply of steel and a rough terrain forklift will be assigned to the shop.

H. Dump Pocket. The dump pocket will be fabricated to transfer ore from the ore cars to the semi trailers that transport the ore. The dump pocket will be expanded to incorporate a primary jaw, and a conveyor stockpiling ore on concrete containment adjacent to the pocket. A scale will ensure compliance with state laws and maximize capacity of all loads shipped. Care will be taken to ensure noise suppression and sonic dust control mitigates any dust problems.

I. The rail will be installed from the Defiance portal to the dump pocket, to the lab, to the blacksmith shop, to the recreation room, and to a new round house charging station, with an overhead crane to assist in swapping fully charged batteries with the discharged batteries used on the locomotives. A diese1 locomotive will be on site for emergency use only, towing disabled battery locomotives to the charging station or the blacksmith shop as necessary .

.T. The recreation room will be converted to the safety meeting room. All group employee interaction and training will take place here. A large projection television for safety film viewing, miners rights information, state and federal postings, and the safety offices will be located here. All MSHA, CAL OSHA Mine and Tunnel, and ATF&E information will be available here, as well as a complete MSDS log, and copies ofthe company's safety manuals. A chain link fence starting south ofthe Managers house garage running downhill turning ninety degrees to the recreation room, then returning south again behind the lower housing area, turning then towards the mine dump will defme the active mining area. Gates and electronic monitoring as well as motion detectors will ensure security within patented property, the newly filed buffer claims, and any optioned patents determined to be of value to the project.
K. Road repair and an encroachment modification on Utah Street will be the primary access to the mine; this is the easiest climb to the portal level. The road will fork with one fork to the safety (recreation room) the other fork is to the upper level where the machine shop, electrical, warehouse with procurement office, main office, four houses for employee use, the manager's house, and the former cafeteria will be rehabbed and utilized in the operation of the mine. There are four houses below the recreation room that will also be rehabbed and rented to employees. The duplexes north of the recreation room will be demolished and a R.V. park will be built to accommodate employees with travel trailers.

L. The initial work underground including cleaning approximate 16,000 lineal feet of track, the rehab and recertification of the hoists, new switch gear, magazines for explosive storage, air doors, fire proofing combustible materials located near a source of ignition. Reconditioning and replacement of ventilation, fans, ducting, pressure washing of ribs and back with fresh white wash in lunch rooms and brake stations. Repair of the stations, tightening of timbers, barring down, and inspection of the existing underground workings including bolted restricted access to areas deemed inaccessible without additional work.

Emergency stations and full MSHA, CAL OSHA compliance and acceptance will be a priority. Adoption of the twenty eight million dollar Bechtel Engineering Safety Program with updates will set the course for safe operations. New drills, locomotive batteries, chute doors with overflow protection and handle extensions and any other necessary improvements will be made.

M. Full metallurgical work up with special emphasis on ammonia para tungstate production. Differential floatation tests have been performed on the sulfide, further work on oxide ore, both floatation, chemical leach, and fractional distillation is needed.

N. Value based engineering and design incorporating good value used equipment with new equipment when required will ensure plant design within budgetary limitations. Designs for a ammonia para tungstate circuit, differential floatation, at both the Darwin site and the Nevada location.

Engineering and reverse engineering of new ore hoisting equipment, Granby cars, and support equipment will be pursued. Working with metallurgical experts plans will be developed for a chemical smelter for minor metal recovery, from oxide ore.

O. Drilling, ten thousand lineal feet of core will prove the deep zinc scams targets developed by Peter Hahn as well as the Newberry copper porphyry, and Wenzel bedded ore bodies. The drilling then shifts to an ongoing program, blocking out ore to 43-101 standards where required. All drill core data will be entered into a mine planning format allowing for development of future targets.

Conclusion: Essential services, establishment of these services will ensure that the initial production at the pilot mill is maximized while simultaneously working to construct the underground mill in the Darwin underground mill site. The permitting is a known equation, this ensures the implementation of higher production and profitability. This program can be successful without the W03, as this is only 23 percent of the value, and the copper level increases as you move away from the W03 areas. The pilot plant will allow refmements to the larger plant. However, with Wolfram agreeing to purchase lower grade concentrates (similar to those achieved in the 1970's), this insures success of this phase of operation, as the construction of a ammonia para tungstate plant, maximizes W03 potential.

As the ammonia para tungstate market is on the rise and the price per pound exceeds $22.00 USD the cost of the circuit is nil compared to the increase of profitability during initial production, this is defmitely worth pursuing. This summary of the plan is not complete, as I am trying to project the first stage only. The development of essential services, the start of permitting, the drilling of targets to increase book

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value, the planning, engineering, and metallurgical work to move forward with a large scale operation while simultaneously maintaining a limited but profitable first stage of production.

The main changes from the previous operations are that during the 1960's and 1970's the placement of the mill underground in a climate controlled atmosphere, avoiding the freezing conditions that caused down time in the past. This will also shorten the haulage of ore, and waste rock. The other major difference is the use of dry compacted tails to back fill and to dispose of these tailings. This not only maintains a "Zero" discharge status, but reduces costs and allows for the use of the tails to construct ground support for the future removal of valuable pillars remaining in the mine.

Mr. Jack Stone
Project Darwin LLC
Darwin, Inyo County, CA

St Martin im Sulmtal, Austria, August 17, 2011

Dear Mr. Stone,

Wolfram Bergbau und HOtten AG (WBH) of Austria is a world-leading manufacturer of tungsten carbide and tungsten powder. The company operates a modern underground mine and a state of the art refinery in Austria. Over the past 35 years, WBH has accumulated a wealth of technical knowledge about mining, beneficiation and down-stream processing of tungsten.

To assure secure long-term supply of raw materials, the company is reviewing supply opportunities world-wide. Following a site visit of Project Darwin by our Mr. S. Schmidt, P.Geo, WBH reiterates its principle interest to purchase tungsten concentrates from the operation should these conform to WBH's specifications.

Project Darwin and its owners Mrs. and Mr. Stone express their interest to produce and sell a tungsten concentrate to WBH, which is in line with WBH's specifications.

WBH would suggest to review the tungsten potential more closely once the suggested pilot plant at Darwin becomes operational. In case that certain basic quality parameters can be fulfilled (fatal flaw test), technical cooperation between WBH and Project Darwin could be envisaged to optimise tungsten recovery and the quality of the concentrates.

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Vice-President

Dr. Burghard Zeiler President

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Email: office@wolfram.at

Hutte + Geschiiftsleitung Refining Plant + Headquarters

Postfach 9

Dear Jack,

I was made aware of the Darwin Project through the USA operation of Sandvik, our parent company. As I understand you had recently a call with Mark Salter of Sandvik Mining & Construction, and you mentioned that you would be (close to) producing the first tungsten cones from your operation.

Let me first briefly introduce our company and myself:

Wolfram Bergbau und HOtten AG (WBH) is an integrated world-leading producer of tungsten and tungsten carbide powders and operates a modern underground mine, recycling and refining operations in Austria. As mentioned above, we are part of the global Sandvik group.

As you are well aware, the tungsten market is dominated by Chinese companies. Our own mining operation supplies only a part of the required feed for the refinery and therefore we are aiming for a broad independent supply of concentrates.

As Project manager - International Mining, I am responsible for the international activities of the company with respect to technical cooperation and technical assessment of "tungsten ore opportunities". I am a Mining Geologist with some 20 years of experience in the international mining industry and ha\e hands-on experience in following mining projects through from Feasibility stage, construction, and production to closure. After three years with SRK Consulting in Cardiff as Principal Mining Geologist, inVQI\ed in audits and project reviews worldwide, I joined Wolfram Bergbau und HOtten AG in Austria in early 2008.

Coming back to your project, I have briefly studied the cornprehenshe information you provide on the Darwin Project's home page - I certainly like the historic reports and the recent photos of the historic underground workings. Darwin looks like a \ery rich project, with various commodities and a long history inVQlving one of the great names of mining in the US. While you mention the interest and negotiations with Chinese traders (something we do not like to hear - they have enough tungsten by themselvesl), it is not entirely clear where the mine development stands at time. To me, it looks as if the project could provide opportunities to start on a much smaller scale than the proposed USD 100M initial capex, having a clearly staged approach.

Anyway, in general, and assuming the concentrates produced match our specs (we are flexible with respect to concentrate grade, but certain trace elements are of importance), WBH could be an interesting partner for you, from simple purchasing to technical cooperation and possible pre financing of certain tungsten-related infrastructure. Needless to say, we haw significant experience with mining and processing of tungsten ores.

I would appreciate very much to learn a bit more about your current thinking and status of the Darwin project development, so we could investiqate possible avenues towards future cooperation. There might also be three-way opportunities between yourself, WBH and Sandvik Mining & Construction.

Looking forward hearing from you soon.

With my wry best regards, Steffen

PS: Our Purchasing Manager and I might try to phone you Monday morning (your time) - let us know whether this is com.enient.

Steffen Schmidt, P. Geo.
Project Manager - International Mining
Wolfram Bergbau und Hutten AG
Bergla 33
A-8543 S1. Martin LS., Austria

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CERTIFICATE OF AUTHOR

Paul Max Skinner, P. E.

I, Paul M. Skinner, Professional Engineer do hereby certify that:

1. I am currently employed as a Professional Mine Engineer, Metallurgical Consultant and Professional Laboratory Technician, as a Sole Proprietor, Brownstone Mining Company. Reserving all rights to

Brownstone Mining Company, with an office at 551 West Bush Street, Lone Pine, California 93545, and receiving mail at P.O. Box 215, Lone Pine, California 93545. My Laboratory facilities are located at 31 Nevada Street, Darwin, California 93522.

2. I graduated with a Bachelor of Science Degree in Mine Engineering in 1960 from the University Of Reno/Mackay School of Mines.

3. I have been a part of the analytical and metallurgical community for over 60 years. operated my own commercial laboratory performing assay and analytical work in accordance with N.H.P. Standards.

4. I have worked on design and construction of numerous crushing, grinding, and process recovery systems. I am President of Brownstone Mining Company, who in the 1960's and 1970's performed mining and milling operations at the Darwin Mine, Darwin, California, for West Hills Exploration, Mexicanous Colorado, and Monticito Minerals. I was personally responsible for achieving new highs in metallurgical recovery, exceeding even Anacondas high marks. I was directly involved in Tungsten recovery and successfully reached a 40 % concentrate level, while working with Monticito.

5. I am familiar with the N143-101 standards, but have not pursued the Q.P. designation. I am however qualified under the U.S. N.P.H. Standards.

6. I am responsible for all aspects of this report, and I have spent the past six months in review of data at the Darwin Mine.

7. My prior involvement is documented above.
8. I consent to Publication of this Report. Signature of Author

Paul M. Skinner