MINING
AND
MINERALS
IDAHO
1994
Fig. 19. West-east longitudinal section of the Chester vein with areas in black defining greater than 200 foot/ounce silver. Note the strong westerly raking series of pipes.
MAP OF BASEMENT STRUCTURES AND ASSOCIATED GOLD MINERALIZATION: IDAHO-ALMADEN MINE

Stinking Water Target

North Ore Zone

D Pit

Main Fault

C Pit

Main Ore Zone

A Pit

B Pit

Cove Creek Target

KEY

Au Mineralization (grade x thickness at a $100/g/t$ cut-off)

- Red: >10.0 g/t
- Orange: 5.0 - 9.9 g/t
- Yellow: 1.0 - 4.9 g/t

- Drilled, inferred boundary
- Drill inferred boundary

Basement Structures

Fold axis
Cross Section of
Sunshine Mine
locating Silverline,
Polaris, and 101
Vein Target areas.
Geologic Map of Idaho
IDAHO GEOLOGICAL SURVEY 75th ANNIVERSARY
Notes for Regional Developments Talk, Northwest Mining Association Convention, Friday, December 2, 1994, Spokane, WA: Area Reports, 9:50am - 10

Tray 1 -- Scenery and Mine Photos (audience right)
Tray 2 -- LOCATION MAPS (audience left)

AA. MINING AND MINERALS IN IDAHO, 1994

1. ICS Logo. Good Morning. Welcome to the Idaho Geological Survey's summary of the year's minerals action in Idaho. Due to the extra short time constraints this year, I will barely cover the highlights, and there were lots of them this year.

BB. COEUR D'ALENE MAP (World-class Ag district, Wed.'s talks)

2. Sunshine mine long section, Chester Vein. This long section of the Chester vein in the Sunshine mine is from a recent article by Wavra, Bond, and Reid in Economic Geology. The famous silver mine operated all year, boosted by silver prices over $5. Sunshine Mining and Refining Company, as it is now called, showed its first 1st quarter profit in 10 years. Miners received their first pay raise in 6 years. Over 350 million ounces Ag from tetrahedrite veins.

3. Hecla Lucky Friday. Hecla Mining Company lost in court when a jury decided that Hecla unjustly canceled a lease four years ago and the company owed $20 million to now-defunct Star-phoenix Mining. Case is under appeal. A hoist accident in August closed the Lucky Friday's famous Silver Shaft for a couple of months, but didn't derail plans for a $4.7 million exploration effort on the Gold Hunter orebody. Twenty new miners were hired to drive 6000 feet of tunnel from the 4100 level of the Friday. A 22,000 feet drilling program is planned to evaluate the new (1991) discovery, thought to host 10 million ounces of silver.

4. Hecla 100 millionth ounce cube. The mood was joyous at a party in September to celebrate the production of the Lucky Friday's 100 millionth ounce of silver. This cube, 23 feet on a side, represents those 100 million ounces of silver metal. The mine has been in operation for 50 years. (Other mines in Idaho's Silver Valley remained closed, but the higher silver prices are keeping the miners hopeful.)

CC. PHOSPHATE District MAP (Idaho's 2nd world class district)

5. FMC and Simplot Plants, Pocatello. Both FMC's elemental phosphorus plant (in back) and Simplot's phosphoric acid fertilizer plant in Pocatello were busy producing phosphate products. Nearly 1000 persons work in the two plants. Simplot's Smoky Canyon mine near the Wyoming border had an uneventful year, digging out 2.5 million tons of phosphate ore to slurry to Pocatello. FMC's Dry Valley mine had an excellent first year of full production, shipping 1.4 million tons of
ore, and receiving a 1993 MSHA Sentinel of Safety Award.

6. **NuWest Plant, Conda (Nu-West).** NuWest Industries, Inc., operates this fertilizer plant at Conda. This year they got their 1.8 million tons of ore feed from Rhone-Poulenc's Rasmussen Ridge mine under a 7-year agreement signed last year. Fertilizer prices were up this year, and NuWest's 250 employees set six production records. Rhone-Poulenc also mined ore to ship to their own elemental phosphorous plant in Silver Bow, Montana, and bought $13 million of new mining equipment to expand output at the Rasmussen Ridge deposit.

7. **Monsanto Enoch Valley mine.** Monsanto operated its Enoch Valley mine and an elemental phophorus plant at Conda at full capacity. The company has become known for it's excellent and innovative environmental practices.

8. **Land Board Award to Monsanto and Mike Vice.** Monsanto manager Dave Farnsworth and environmental coordinator, Mike Vice (on right), show off the Idaho Land Board's Environmental Awards. The company is an active community participant, sponsoring bike paths and educational mine tours. They developed better ways to plant aspen seedlings by nurturing them with mycorrhizae (soil bacteria), they grow cattails on reclaimed wetlands, and implement numerous other best management practices. Monsanto was also recognized by the Wildlife Habitat Council.

**DD. INDUSTRIAL ROCKS MINERALS**
A very quick look at a few of the state's many industrials.

9. **Chemical Lime plant conveyor.** Chemstar Lime changed its name to Chemical Lime. The quarry and plant at Bancroft in southeastern Idaho produce 600 tons a day of lime for use in steel fluxing, pH control, and other uses. They also received a state environmental award, particularly for installing deer passes under the conveyor belt.

10. **Emerald Creek Garnet, washing plant.** In north Idaho, Emerald Creek Garnet had another good year, extracting and processing some 30,000 tons of placer garnets for use in abrasives and cutting equipment. 45 people work at the long-term operation near Fernwood.

11. **Three Rivers Stone, pallets.** Three Rivers Stone expanded production at their quarry near Clayton in central Idaho. The company shipped slabbled quartzite for use as flagstone and facing stone. 20,000 square feet of it went to a single home in Beverly Hills.

Other industrial mineral operations around the state included Hess Pumice in Malad, Ash Grove Cement at Inkom, Idaho Travertine's stone cutting facility in Idaho Falls. Unimin Corporation mined silica sand at a pit near Emmett. They also bought AIMCOR's Idaho operations, including the Ben-Jel clay mine at Castle Creek

**EE. ACTIVE MINES MAP, 1994**
(There were lots of highlights at the state’s metal mines and exploration programs this year.)

12. **Thompson Creek mine, pit or yarder.** A streamlined Thompson Creek molybdenum mine reopened in March near Challis. Sold by Cyprus last
year to new owner Steven Mooney. The new operation employs 150 people, less than half the number previously, but they still process about 30,000 tons of ore through the mill. Costs are down considerably and moly prices are up. The mine has an annual payroll of $7.8 million. (Here they are using a logging yarder to remove landslide debris from the highwall.)

13. **Pegasus Black Pine mine, air view.** In southeastern Idaho, Pegasus Gold Corporation's Black Pine mine will produce about 60,000 ounces of gold this year. In February, the company received permits to expand to three new pit areas, C, D, and E. Exploration drilling results elsewhere were disappointing. Company took $17.4 million write-off. Plagued by lower grades and drought,

14. **Kinross DeLamar mine, Glensilver pit.** Kinross Gold mines 1.2 million tons of gold-silver ore a year from the DeLamar mine in Owyhee County. Exploration drilling added 800,000 tons to the reserve, revised Operating Plan were completed for the Stone Cabin mine. The cultural mitigation plan is the only hurdle left for the proposed operation on Florida Mountain. A decision by the BLM should be out by next spring. Ore would be treated at an expanded DeLamar mill.

15. **USAC Yellowjacket mine.** U.S. Antimony operates the Yellowjacket open-pit gold mine in Lemhi County, producing 250 ounces monthly. The ore goes through a 80tpd flotation circuit and the concentrates shipped to Trail, B.C. The mine may go underground in the future.

16. **Rescue mine and mill, Warren.** CSC Mining didn't worry about the forest fires this summer near Warren. They just mined underground at the Rescue gold mine. The 120tpd gravity mill, installed last year, worked well and the company shipped two truckloads of concentrates to the East Helena smelter.

The biggest news this year was two new mines in development, Grouse Creek and Beartrack.

17. **Hecla Grouse Creek, crusher site.** Hecla Mining Company's Grouse Creek mine was under construction in Custer County. Hecla owns 80% of the project, having sold a 20% interest to Great Lakes Minerals, Inc., for $35 million early this year. Announced reserves then were 15.1 million tons grading 0.055 opt gold and 1.1 oz./ton silver. Completed by this fall were the tailings impoundment, crusher site, administration building and mill, as well as the Jordan Creek wetlands mitigation project. Workforce for the mine is 180 persons.

18. **Hecla Grouse mill cyanide tanks.** Grinding and processing operations started up October 25. The 6000 tpd mill incorporates gravity separation, cyanide vat leach, and carbon-in-pulp circuits. Mining commenced at the Sunbeam pit and the underground declines into the roots of the Grouse Creek orebody. Geologists were busy with 65,000 feet of core and RC drilling. Hecla gets the "golden core award" for an underground intercept of 15 feet grading 48.244 Oz/ton gold and 39.48 oz/ton silver at this epithermal deposit.

19. **FMC Bear-track, view SW along TCFS from high wall, South pit.** Up in Lemhi County, FMC alias, Meridian Gold, got the green light for the Beartrack mine. Construction began in April, after the project received
a No-Jeopardy decision by National Marine Fisheries Service. Some 715,000 ounces of gold (30 million tons at 0.034 oz/ton gold) will be recovered by heap-leach during the mine's 7-year life. Gold is hosted in PC rocks along the Panther Creek Fault, shown here from the new high wall to the South Pit.

By late fall, workers had logged off the site and laid liner on the pad. Run of mine ore was being trucked to the pad, and building of shop and office facilities underway. Full-scale operations should start next May. 150 permanent employees. Over $75 million expenditure.

20. **FMC Beartrack, Napias mitigation.** Copeland Construction received including this reconstructed a reclamation award for their work at Beartrack, wetlands along Napias Creek. Bert Jeffries assisted Copeland's efforts to turn the old dredge piles into a scenic riparian ecosystem.

**EXPLORATION 1994**

While the number of exploration projects, especially reconnaissance, were down from previous years, the number of drill holes and exciting results were up.

21. **Formation Capital Blackpine project, rotary rig.** Formation Capital Corporation expanded their program at the Blackpine mine in the Idaho Cobalt Belt. They drilled 22 core, 100 RC holes, and 6 metallurgical holes searching for stratabound copper-cobalt-gold mineralization in the Yellowjacket Formation. The company has mapped out over 3 miles of strike length and is interested in an open pit mine with solvent extraction and electrowinning to extract copper and cobalt. RC drill is testing the Jacob zone.

22. **Formation Capital Blackpine project, core review.** 8000 feet away in the Regina zone, core hole 17 cut a 9.2-foot intercept averaging 0.88% cobalt with 0.41 ounces gold. The higher grade cobalt pods are interpreted as feeder zones, similar to ores at the nearby Blackbird mine. The company is very excited about the results this year, but also about cobalt prices in the $25 per pound range.

23. **Newmont, Musgrove project, view of cliffs and drill pad.** Down the road at the Musgrove project, Newmont kept a team of geos busy all season with mapping, sampling, geophysics, and drilling. Ten core holes were completed by mid-November on this gold play in Yellowjacket rocks next to Tertiary volcanics. The company was tight-lipped on results, but will be back next year at the large property.

24. **Cominco geologist, Kathy Turek, core.** Cominco has been exploring for base metal targets in the Precambrian sediments and drilled a few holes up near Freeman Peak this year. Also seen near Salmon were BHP Minerals drilling the Bobcat porphyry copper target joint-ventured from Formation Capital.

25. **USMX Dewey mine, overview.** In central Idaho, USMX, Inc., drilled 28,000 feet in 99 core and RC holes at the Dewey mine in the Thunder Mountain District. Last year's mineable reserve of 4.7 million tons of 0.05 oz/ton gold is being updated with this year's results. Highlighted hole was 94-75R with 80 feet averaging 0.983 oz per ton gold. The Dewey ores are hosted in Tertiary sediments and volcanics near the Sunnyside
area mined a few years ago by Coeur d'Alene Mines. USMX is investigating permitting for a seasonal (8-10 year) open pit with milling (gravity and flotation, vats optional), and will be back next year. (Environmental monitoring and metallurgical work is underway.)

26. **ICAN Idaho Almaden mine, map.** In southwestern Idaho, near Weiser, Ican Minerals picked up work on their Idaho-Almaden property after AMAX returned the property after its merger with Cyprus. The old mine is a hot spring mercury occurrence with a resource of 40 million tons of 0.024 oz/ton gold, identified from previous drilling. AMAX was looking at a low-cost, run-of-mine operation with only 38% recovery. Ican drilled 44 core and RC holes on the deposit and two new exploration targets, suggested by structural intersections. The new discoveries at Stinking Water basin and Cove contain mineralization at a lower horizon. You may have seen core from the deposit at the Core Shack, and talked to geologist, Cal Herron, about his exciting new ideas.

27. **Ramrod Gold/Atlanta Gold, miners drilling.** Atlanta Gold Corporation joint-ventured with Ramrod Gold USA Inc. late last year to explore the Atlanta property in Elmore County. The 900 level on the old Tolache mine was reopened, and 2500 feet of new and rehabed drift completed. A 12,000 foot underground drilling program started month to test the downward extension of the Atlanta Lode. Previous holes from surface vein grades of a half-ounce gold over a 6.5-foot width.

28. **Atlanta Gold, RC rig by Monarch shaft.** The company also drilled 14,000 feet of RC hole this summer to expand the near-surface, million-ounce resource along the shear.

GG. **IDAHO GEOLOGICAL SURVEY – 75th ANNIVERSARY**

29. **V. S. Gillerman standing 2 old steam boilers at Rocky Bar District.** Mining in Idaho has been around a long time. So has the Idaho Geological Survey. Come over and visit our booth_____in the Exhibit Hall, as we celebrate 75 years of service to the state and look for new ways to serve Idaho's people, rocks, and industry.
Slide 7
Three Rivers stone, Clayton, ID 1994

Slide 8
Sunshine Mine, long section. Chester Vein. Econ geol, 1994, V.89, pp. 515-527

Slide 9
Lucky Friday mine, 1989.
Slide 10

Idaho Mining, reclamation awards, Monsanto, Dave Farnsworth and Mike Vice.

Slide 11

Thompson Creek, using logging loader to slush off landslide on the high wall. 1994

Slide 12

Black Pine mine, Cassia county, Lower left rear = Tallman pit. A pit in front and B pit in center (* Black Pine *)
Slide 13
Glensilver pit, Kinross DeLamar mine, Owyhee County, 1994

Slide 14

Slide 15
Beartrack development, Lemhi Co., 1994, Looking SW along the TCFZ from the highwall at the north end of the South Pit.
Slide 16  
Hecla Grouse Creek, cyanide tanks under construction, 1994

Slide 17  
Hecla Grouse Creek, crusher site under construction, 1994

Slide 18  
Core at Blackpine mine, Bill Scales, Formation Capital. (* Black Pine *)
Slide 19
Johnney’s point drill station.
Newmont’s Musgrove Creek program.
Yellowjacket fm. (looking down into Musgrove Creek)

Slide 20
Kathy Turek, Cominco, looking at core from Freeman Creek (?), Salmon, ID.

Slide 21
USMX, Dewey mine, from the top of the reef.
Slide 22
Idaho Almaden, Hg, Ican Minerals.

Slide 23
Ginna at Spokane double boiler mill, Rocky Bar

Slide 24
Monsanto’s Enoch Valley mine, 1992

Slide 26  Juliaetta slide from Roy Breckenridge

Slide 27  Triumph mine, tailings pond, late 30’s ~ early 40’s
Slide 28  
Sunshine mine development

Slide 29  
Sunshine mine, development

Slide 30  
Formation Capital at Blackpine, DD hole 18. (* Black Pine *)
Slide 31  
Opening the new Mining Museum at the Old Pen in Boise

Slide 32  
Opening the Mining Museum in Boise, Fred Schutte.

Slide 33  
IGS display at the Mining Museum in Boise.
Slide 34
Building spillway at the old tailings dam at Blackbird mine.

Slide 35
Touring new Grouse Creek mine- LtoR- Tamara (Hecla), Hecla ME, Falma, Bob Bartlett, Earl Bennett. 10/5/1994

Slide 36
Hecla’s Grouse Creek, Tailings pond under construction.
Slide 37
Celebration mining 100m oz. silver from Lucky Friday mine, Art Brown, CEO

Slide 38
Banner mine, chimney lined with fire brick.

Slide 39
Alberta Mine, Marshall Mountains, exploration project. (* “Strata Mining and Exploration “ printed on slide. Prob. EC0680 *)
Slide 40
U.S. Antimony, flotation cells, Yellowjacket mine.

Slide 41
Old Yellowjacket boarding house.

Slide 42
Mill facilities Kinross: DeLamar Mine
Slide 43
Ramrod Atlanta Talache 900 level drilling blasthole to turn drift.

Slide 44
Cyanide tanks at Hecla’s Grouse Creek mine. Custer County, 1994

Slide 45
Washing plant and dragline at Emerald Creek Garnet. Ferdinand, ID.
CSC Mining at Rescue Mine, Warren, ID.

Conveyor from lime pit to Chemstar’s plant (vertical kiln) at Bancroft, ID 1993

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