GREAT BASIN SCIENCE SAMPLE AND RECORDS LIBRARY

Nevada Bureau of Mines and Geology
University of Nevada, Reno

on the Campus of the Desert Research Institute
GREAT BASIN SCIENCE SAMPLE AND RECORDS LIBRARY
Nevada Bureau of Mines and Geology
University of Nevada, Reno
on the Campus of the Desert Research Institute
22 May 2008
during site preparation
10 June 2008
site mostly ready

andalite -> quartz, illite-smectite, smectite, gypsum, and goethite

unaltered andesite

andalite -> quartz, illite-smectite
12 June 2008
decomposed granite on pad
15 August 2008 – roof being added
30 October 2008 – walls and windows nearly completed.
12 May 2008
before construction
10 June 2008
site mostly ready
31 July 2008 – new road connecting parking lots
Part of the building rests on unaltered andesite.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂ (%)</td>
<td>58.7</td>
</tr>
<tr>
<td>TiO₂ (%)</td>
<td>0.745</td>
</tr>
<tr>
<td>Al₂O₃ (%)</td>
<td>18.5</td>
</tr>
<tr>
<td>Fe₂O₃-T (%)</td>
<td>6.99</td>
</tr>
<tr>
<td>MnO (%)</td>
<td>0.131</td>
</tr>
<tr>
<td>MgO (%)</td>
<td>2.85</td>
</tr>
<tr>
<td>CaO (%)</td>
<td>5.34</td>
</tr>
<tr>
<td>Na₂O (%)</td>
<td>3.44</td>
</tr>
<tr>
<td>K₂O (%)</td>
<td>1.82</td>
</tr>
<tr>
<td>P₂O₅ (%)</td>
<td>0.219</td>
</tr>
<tr>
<td>LOI (%)</td>
<td>1.94</td>
</tr>
<tr>
<td>Total (%)</td>
<td>100.7</td>
</tr>
</tbody>
</table>
22 May 2008
during site preparation
10 June 2008
site mostly ready
31 July 2008 – grading completed
10 June 2008
site mostly ready

Road cut into unaltered andesite
10 June 2008
site mostly ready

Sample GBSSRL-7
10 June 2008
site mostly ready
10 June 2008
site mostly ready

Sample probably came from here

Sample GBSSRL-7: illite-smectite, quartz
22 May 2008
Samples GBSSRL-2, 3, & 4 collected from the cut east of the new building
22 May 2008
during site preparation

Samples GBSSRL-2, 3, & 4 collected from the cut east of the new building
Samples GBSSRL-2, 3, & 4 from this cut

22 May 2008
during site preparation
Samples GBSSRL-2, 3, & 4 from this cut

22 May 2008
during site preparation
Samples GBSSRL-2: illite-smectite, smectite, quartz, gypsum
Samples GBSSRL-3: illite-smectite, smectite, quartz, gypsum
Samples GBSSRL-4: illite-smectite, quartz, gypsum
Samples GBSSRL-1 & 5 from this outcrop: unaltered andesite with plagioclase, magnetite

12 May 2008
before construction
Hole for septic sump, 12 June 2008, illustrating 2 feet of decomposed granite above hydrothermally altered andesite
Ed Sloane and Mike Klein, Kleinfelder, on 2 feet of decomposed granite on top of natural rock, 12 June 2008. Above this will be 6 inches of aggregate, then the 6-inch reinforced concrete pad.
Peavine Peak

looking W  19
June 2008
looking WSE at elevator shaft
19 June 2008
19 June 2008
drain off NW corner
looking E
19 June 2008
looking E
19 June 2008
south wall, looking E
19 June 2008
looking W
19 June 2008
~ 18 July 2008, smoke from California fires
~ 18 July 2008, smoke from California fires
~ 18 July 2008, smoke from California fires
~ 18 July 2008, smoke from California fires
29 July 2008 – tilt-up concrete going into place
29 July 2008 – tilt-up concrete going into place
29 July 2008 – tilt-up concrete going into place
30 July 2008 – tilt-up concrete going into place
31 July 2008 – looking east at the west and south walls
31 July 2008 – looking north at the south wall
31 July 2008 – looking northwest at the south and east walls
31 July 2008 – looking southwest at the east and north walls
31 July 2008 – tilt-up concrete walls
31 July 2008 – tilt-up concrete walls and openings for utilities
31 July 2008 – tilt-up concrete walls and openings for utilities
15 August 2008 – crane for installing roof, looking WSW
15 August 2008 – crane for installing roof, looking W at Peavine Peak
15 August 2008 – roof under construction, looking SW
15 August 2008 – roof under construction, looking NE
15 August 2008 – roof under construction, looking W at SW corner
2 September 2008 – interior taking shape, looking NE at W & S sides
Insulation

2 September 2008
30 October 2008 – walls and windows nearly completed.
Gold* on windows – reflects heat but transmits visible light, and therefore saves energy for both heating and air conditioning.

*Nevada produced 78% of the gold in the U.S. and 8% of the world’s gold last year. We are in the biggest gold-mining boom ever, and Nevada is in the forefront.

25 March 2009 – ready to move in.
Gold* on windows – reflects heat but transmits visible light, and therefore saves energy for both heating and air conditioning.

*Nevada produced 78% of the gold in the U.S. and 8% of the world’s gold last year. We are in the biggest gold-mining boom ever, and Nevada is in the forefront.

[26 windows x (4 ft x 6 ft)/window + 20 ft x 20 ft for vestibule] x (1 m/3.2808 ft)² x [1.73 x 10⁻⁸ m thick gold coating] x 19.3 metric tons/m³ x 3.21507 x 10⁴ troy ounces/metric ton = 1.02 troy ounces of gold on these windows.

*Nevada produced 78% of the gold in the U.S. and 8% of the world’s gold last year. We are in the biggest gold-mining boom ever, and Nevada is in the forefront.
There is no gold coating on the windows of the rock-viewing room, so that we have natural light for examining the samples.

30 October 2008 – walls and windows nearly completed.
Heat-reflecting gold windows, 15 January 2009
4 May 2009
Geologist-photographer, Craig dePolo, in reflection, looking west
Skylights over the warehouse section,
15 January 2009
30 October 2008 – walls and windows nearly completed.
30 October 2008 – walls and windows nearly completed.
30 October 2008 – looking west inside the warehouse at the back stairs
30 October 2008 – looking east inside the warehouse from the second floor
30 October 2008 – a restroom for every occasion – we thought they were guidelines, but it’s really the Code.
Front stairs
15 January 2009
Back stairs
15 January 2009
Racks for core boxes
15 January 2009
Cuttings from oil, gas, and geothermal exploration and production wells
6 May 2009
Seismic base isolation for storage racks in the warehouse section, 6 May 2009
Order picker – one operator rides up and down with the core boxes and loads and unloads them using the steel platform with a wooden top.

6 May 2009
Roller rack for logging core in the rock-viewing room (without gold on these four windows), 6 May 2009
Binocular microscopes for looking at cuttings and other samples in the rock-viewing room
6 May 2009
Fume hood in rock preparation room
15 January 2009
Topographic maps, aerial photographs, and the Jay A. Carpenter Mining District Files (progressively scanned and placed on the web)
Scanning and quality-assurance checking of scanned maps, documents, and photos is done in the “employees only” section of the first-floor office area.
Publications are packaged and mailed from the “employee only” section.
The Records Library is open from 8:00 a.m. to 4:00 p.m., Monday-Friday.
Gneiss counter top
(from India, but similar to 1.7 Ga rock from southern Nevada)
Reception counter, 4 March 2009
70 different rocks from Nevada in wooden core boxes.
Mountains = Miocene & Quaternary basalt
Sky = Cretaceous granite & granodiorite
68 Nevada-shaped rocks.
Gneiss, Frenchman Mountain, Clark County

68 Nevada-shaped rocks.
Tapeats Sandstone, Frenchman Mountain, Clark County

Gneiss, Frenchman Mountain, Clark County

68 Nevada-shaped rocks.
The “Great Unconformity” between Precambrian gneiss and Cambrian sandstone.
Sandstone = Nevada State Rock

The key is at www.nbmg.unr.edu.

68 Nevada-shaped rocks.
Main room for customers to examine files on the web, publications for sale, and historical aerial photographs (to be scanned)

6 May 2009

Geologic map of Virginia City, published in 2009, the 100th anniversary of the discovery of the Comstock Lode
Office of the Geological Society of Nevada (GSN) – first floor
Office for the GSN 2010 Symposium – second floor (temporary, while GSN has a second employee to help with the symposium), 6 May 2009
Storage area for publications and records of the Nevada Petroleum Society (NPS). Both GSN and NPS are education-oriented volunteer organizations whose publications, including field-trip guidebooks and symposium proceedings, complement the mission of the Nevada Bureau of Mines and Geology.
Break area on the second floor
6 May 2009
30 October 2008 – second-floor conference room.
The building opened to the public on 27 April 2009, and the Nevada Commission on Mineral Resources held its 1 May 2009 meeting in the conference room.
View to the south-southwest from the conference room
6 May 2009
30 October 2008 – looking south from the second-floor conference room
Thanks to DRI (Steve Wells, Peter Ross and others), TSK (Mark Benzing), UNR-Facilities (Mike Bennett), West Coast Contractors (and their subcontractors)
Mark Benzing, TSK, and Mike Bennett, UNR-Facilities
Special thanks to Ron Hess, Chief Information Officer of the Nevada Bureau of Mines and Geology
SPECIAL THANKS TO SENATOR HARRY REID AND HIS STAFF, AND THE U.S. DEPARTMENT OF ENERGY, WHO HELPED WITH FUNDING FOR THE BUILDING.

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ALSO, SPECIAL THANKS TO THE NEVADA COMMISSION ON MINERAL RESOURCES AND THE NEVADA DIVISION OF MINERALS, WHICH PROVIDED FUNDS FOR THE MOVE AND GETTING SAMPLES AND RECORDS IN ORDER.

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A few items needed to be fixed before signing off. For example, note the second “e” in “Science” and the “e” in “Sample.”
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Great Basin Science Sample and Records Library
Nevada Bureau of Mines and Geology

6 May 2009
GREAT BASIN SCIENCE SAMPLE AND RECORDS LIBRARY

Nevada Bureau of Mines and Geology

University of Nevada, Reno

on the Campus of the Desert Research Institute
Geoscience Data Preservation in Nevada

Jon Price
Nevada Bureau of Mines and Geology
We need your help!

AX core at the Greenwood Shaft, Pioche, Nevada
As geologists and engineers, we appreciate the importance of preserving drill core.

spinifex texture in ultramafic lava associated with Ni ore
As geologists and engineers, we also appreciate the importance of preserving data that relate to the core, surface geology, and subsurface geology.
The applications of geoscience data preservation that are most relevant to Nevadans are:

- economic development and land management in areas of potential mineral and energy resource extraction and urban growth;

- assessment of ground-water resources and water-quality protection;

- minimization of environmental impacts from land disturbance;

- evaluation of natural hazards, particularly earthquakes, landslides, and floods;

- long-term monitoring of waste disposal sites and ground impacted by nuclear explosions;

- improvement of the scientific knowledge of Earth processes and expansion of research opportunities.
Tynagh mine, Ireland (in reclamation)

- rotary drill cuttings
- diamond drill core
Tynagh mine, Ireland (in reclamation)
Tynagh mine, Ireland (in reclamation)
Tynagh mine, Ireland (in reclamation)
Tynagh mine, Ireland (in reclamation)
The National Research Council highlighted the problem in its 2002 report on *Geoscience Collections and Data: National Resources in Peril*.

- available through: http://www.nap.edu/
Jay A. Carpenter Fund

Jay A. Carpenter was the Director of the Nevada Bureau of Mines and Geology and Director of the Mackay School of Mines at the University of Nevada from 1939 until his retirement in 1951. He was a 1907 graduate of the Mackay School of Mines, and he worked in the mining industry in Tonopah, Belmont, and other Nevada camps before returning to the University as professor of mining in 1926. In 1929, his Nevada Bureau of Mines Bulletin on Mineral Resources of Southern Nevada helped in Nevada’s fight for an allocation of power from Hoover Dam. In 1954, he was elected as an Honorary Member of the Association of American State Geologists.

On June 14, 2002, Mrs. Ann Burgess established the Jay A. Carpenter Fund through the University of Nevada, Reno Foundation in honor of her grandfather. The fund consists of two parts, an expendable fund and an endowment, the interest of which is used to support the function of the Nevada Bureau of Mines and Geology Information Office.
Jay A. Carpenter Fund

Thanks to the Jay A. Carpenter Fund, which was used to purchase our first wide-map scanner, and donations from the Nevada Division of Minerals, the Nevada Bureau of Mines and Geology has completed scanning of over 20,000 files in its Mining District holdings, including many large maps.

These are available on line through

http://www.nbmg.unr.edu/.
Jay A. Carpenter Fund

We have many more files and maps to scan, and we plan to eventually run optical character recognition, making the files more easily searchable. We are also georeferencing the maps for use in GIS and on-line searches by location.

We need your help – with appropriations from the federal government (the land manager of 87% of the land in Nevada), state funds, and private donations AND with obtaining representative samples and data!
The Association of American State Geologists has promoted geoscience sample and data preservation (see our position papers at http://www.stategeologists.org/PositionPapers/index.html) and funding for the National Geological and Geophysical Data Preservation Program of the U.S. Geological Survey (authorized in the Energy Policy Act of 2005 at a level of $30 million per year, but not appropriated anywhere near that level.)
We used the Austin Core Research Facility of the Texas Bureau of Economic Geology as our guide for the warehouse portion of our new building, which initially will be about 1/10th the size of the Texas facility.
Steel racks with core boxes stacked 18 feet high

Texas Bureau of Economic Geology facility in Austin, TX
Shorter boxes of cuttings (in our case mostly from oil and gas and geothermal wells, by regulation) are stored on the same racks.

Texas Bureau of Economic Geology facility in Austin, TX
An “order picker” forklift is used to move boxes from the racks to the viewing room.

Texas Bureau of Economic Geology facility in Austin, TX
NBMG will also have a good viewing room, with natural lighting.
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Warehouse for samples (two stories)
Warehouse for samples (two stories)

Rock preparation

Rock viewing (public work area)

Public area
Warehouse for samples (two stories)

Rock preparation

Rock viewing (public work area)

Public area

GSN office
Footprint of ~10,000 ft² in Phase I, for which money is “in the bank.”

- Warehouse for samples (two stories)
- Rock preparation
- Rock viewing (public work area)
- Public area
- NBMG Publication Sales and Information Office staff, with publications stored on the second floor
- GSN office
Phase II – another 5,000 ft² of two-story warehouse space for samples

- Warehouse for samples (two stories)
- Rock preparation
- Rock viewing (public work area)
- Public area
- GSN office
- NBMG Publication Sales and Information Office staff, with publications stored on the second floor
Our vision for geoscience data preservation in Nevada:

1. GREAT BASIN SCIENCE SAMPLE AND RECORDS LIBRARY in Reno, (staffed by State- and contract/grant-supported NBMG employees)
2. A facility in or near Elko (Great Basin College – Mike McFarlane)
3. A facility in southern Nevada (Nye County – DOE-supported?)
Our estimates of the initial costs for completion of the project are as follows:

Completion of facility in Reno (to expand it to 15,000 square feet – Phase II)
   $ 2.2 million

Cost of digital data capture and selective acquisition of samples
   from key localities throughout the State, $2.8 million for first 3 years;
   $ 2.8 million
   plus $2 million per year for each of the following two years
   $ 4.0 million

Facility on Nevada System of Higher Education land in or near Elko
   $ 5.7 million
Facility on Nye County or federal land in southern Nevada
   $ 4.0 million

TOTAL needs for Geoscience Collections and Data Preservation in Nevada
$18.7 million.
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We need your help – with appropriations from the federal government (the land manager of 87% of the land in Nevada), state funds, and private donations AND with obtaining representative samples and data.
We are in the midst of the biggest mining boom in history, and there will be more booms in the future. We must preserve the data and samples.
Thank you!

Mark Benzing, TSK, and Mike Bennett, UNR-Facilities
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