# Peña Blanca, Mexico

# Natural Analog Site

## Photographs



Supplemental Material, Technical Activity Supporting Documentation: Experimental Data for Pena Blanca, Mexico Natural Analog Site,Photographs (02/24/1991 through 03/06/1992)

Summary of Photographic Slides from the Pena Blanca Field Trip, Feb 24-Mar 2, 1991, Chihuahua, Chihuahua, Mexico

**ROLL 1**

| Slide No. | Description |
|---|---|
| 1 | Panoramic view from hill will radio towers located to the east of the Santa Eulaian mine, facing NE. |
| 2 | Panoramic view from hill will radio towers located to the east of the Santa Eulaian mine, facing N toward Sierra Pena Blanca. |
| 3 | Panoramic view from hill will radio towers located to the east of the Santa Eulaian mine, facing NW. |
| 4 | Panoramic view from knoll located about 300-400 m to the east of the radio tower hill, facing ENE. Photos 4-7 illustrate the transition from the playa to the east of Sierra Pena Blanca to the graben to the west of Sierra Pena Blanca. |
| 5 | Panoramic view from knoll located about 300-400 m to the east of the radio tower hill, facing NE. |
| 6 | Panoramic view from knoll located about 300-400 m to the east of the radio tower hill, facing NW. |
| 7 | Panoramic view from knoll located about 300-400 m to the east of the radio tower hill, facing WNW. |
| 8 | Located along main mining road showing the contact between the diabase dike and the Corrales Formation. |
| 9 | Located along main mining road showing the contact between the diabase dike and the Corrales Formation. Illustrating alteration along the fractures. |
| 10 | Located along main mining road showing the contact between the diabase dike and the Corrales Formation. Illustrating alteration along the fractures. |
| 11 | Located 1-2 km east of Camp Nopol, at Nopol 1, facing east. Vista view of playa to the east of Sierra Pena Blanca. |
| 12 | Nopol 1, level 0, facing west toward exposed cliff. |
| 13 | Nopol 1, level 0, 2-4 m inside adit, toward the end of the short (4-5 m) adit to the right, w/o flash. |
| 14 | Same as No. 13. |

15 Photo of field crew during lunch break.

16 Nopol 1, level 0, 2-4 m inside adit, toward the end of the short (4-5 m) adit to the right, w/ flash.

17 Nopol 1, level 0, 2-4 m inside adit, toward the end of the short (4-5 m) adit to the right, w/ flash.

18 Nopol 1, level 0, 2-4 m inside adit, toward the end of the short (4-5 m) adit to the right, w/ flash. E. Pearcy removing rock sample.

19 Nopol 1, level 0, 8 m NE of adit opening, facing west, W. Murphy pointing to NE limit of alteration (see arrow).

20 Nopol 1, 10 m level, facing west, showing excavation with alteration.

21 Nopol 1, 20 m level, facing east, looking down on level 1 showing exposed alteration transition zone on top of breccia pipe.

22 Nopol 1, 20 m level, facing east, looking down on level 1 showing exposed alteration transition zone on top of breccia pipe.

23 Nopol 1, 20 m level, facing west toward Camp Nopol.

24 Nopol 1, 20 m level, facing east, looking down on level 1 showing exposed alteration transition zone on top of breccia pipe.

25 Nopol 1, 10 m level, facing east, close up view of trench exposing the transition alteration zone of breccia pipe.

**ROLL 2**

| Slide No. | Description |
|---|---|
| 1 | Margaritas pit at end of mining road, facing south looking at excavation face with alteration zone, not uranium alteration. |
| 2 | Margaritas pit at end of mining road, facing south looking at scree boulder with alteration and Jarosite, on floor of pit. |
| 3 | 200 m north of Margaritas pit at end of mining road, facing north, showing 4 m deep excavation pit, E. Pearcy collected sample at photo location, sample is thought to be Margaritisite. |
| 4-25 | Not controlled. |

## ROLL 3

| Slide No. | Description |
|---|---|
| 1-12 | Not controlled. |
| 13 | Puerto 1, facing north, showing tailings pile with head works. |
| 14 | Along main mining road, facing NE, showing massive Mesa Formation cliff, wide angle photo. |
| 15 | Along main mining road, facing NE, showing massive Mesa Formation cliff, regular photo. |
| 16 | Along main mining road, facing NE, at base of massive Mesa Formation cliff, showing close up of the Pena Blanca Formation, a red unit. A sample was collected at this location. |
| 17 | Past end of mining road along the Boquilla Colorada stream, showing exposures of the Coloradas Formation with alteration zones associated with fractures. |
| 18 | Past end of mining road along the Boquilla Colorada stream, showing exposures of the Coloradas Formation with alteration zones associated with fractures. |
| 19 | Past end of mining road along the Boquilla Colorada stream, showing exposures of the Coloradas Formation with alteration zones associated with fractures. |
| 20 | Past end of mining road along the Boquilla Colorada stream, showing exposures of the Coloradas Formation with alteration zones associated with fractures. |
| 21 | Past end of mining road along the Boquilla Colorada stream, showing exposure of tuff with localized conglomeration of inclusions. |
| 22 | Past end of mining road along the Boquilla Colorada stream, showing prominent cliff of the Nopol Formation, facing north, sample location. |
| 23 | Vista view at Questa 2, facing east from topographic notch. |
| 24 | Vista view at Questa 2, facing west from topographic notch. |
| 25 | Questa 2 at topographic notch, facing north, showing adit located in alteration zone, located near the '60 anomaly'. |

**ROLL 4**

| Slide No. | Description |
|---|---|
| 1 | From mining road, facing SE toward notch on Questa 2. |
| 2 | La Parrita spring and associated stream bed. |
| 3 | La Parrita spring and associated stream bed. |
| 4 | Yellow Cave, facing north toward adit opening. |
| 5 | Yellow Cave, facing east from adit opening toward Devil's Lake. |
| 6 | Yellow Cave, vista view from adit opening, facing south. |
| 7 | Yellow Cave, vista view from adit opening, facing SE. |
| 8 | Yellow Cave, vista view from adit opening, facing east. |
| 9 | Yellow Cave, vista view from adit opening, facing SW. |
| 10 | Well Head with reservoir located at ranch in basin to the east of Sierra Pena Blanca and Nopol 1. |
| 11 | Well head, inactive, mining district, located along abandoned road located 1.5 km east of Nopol 1. |
| 12 | Along abandoned mining road, 0.8 km east of Nopol 1, facing west toward Nopol 1. |
| 13 | Along abandoned mining road, 0.8 km east of Nopol 1, facing west toward Nopol 1. |
| 14 | From knoll located about 0.5 km east of Nopol 1, facing west toward Nopol 1. |
| 15 | From knoll located about 0.5 km east of Nopol 1, facing west toward Nopol 1. |
| 16 | From knoll located about 300 m south of knoll in photos 14 and 15, facing west toward Nopol 1. |
| 17 | From knoll located about 300 m south of knoll in photos 14 and 15, facing west toward Nopol 1. |
| 18 | Excavation pit located at the base of the cliff containing Nopol 1, facing north, showing alteration zone. |
| 19 | Northern edge of excavation pit located at the base of the cliff containing Nopol 1, facing south toward the interior of the pit. |

20 Northern edge of excavation pit located at the base of the cliff containing Nopol 1, facing SE toward the interior of the pit.

21 Northern edge of excavation pit located at the base of the cliff containing Nopol 1, facing south toward the interior of the pit.

22 Nopol 1, vista view, facing NE.

23 Nopol 1, 10 m level, facing west, showing lithofacies of the Nopol Formation on the exposed cliff face.

24 Nopol 1, 10 m level, facing west, showing a close up view of alteration along fractures in the Nopol Formation.

**ROLL 5**

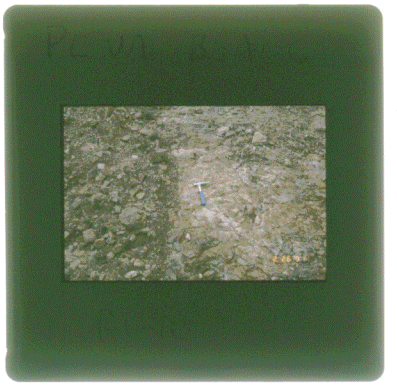
| Slide No. | Description |
|---|---|
| 1 | Nopol 1, 10 m level, showing alteration contact of semi-horizontal fault (reddish color) with white host rock. |
| 2 | Nopol 1, 10 m level, on excavated planar surface, showing slickenside structure. |
| 3 | Nopol 1, 10 m level, showing alteration contact of semi-horizontal fault (reddish color) with white host rock, close up view. |
| 4 | Example of flora at Nopol location. |
| 5 | On main mining road, 0.5 km north of El Tigre stream, facing west toward outcrop of Esquedra Formation, sample location. |
| 6 | On main mining road, 0.5 km north of El Tigre stream, facing west toward outcrop of Esquedra Formation, sample location. |

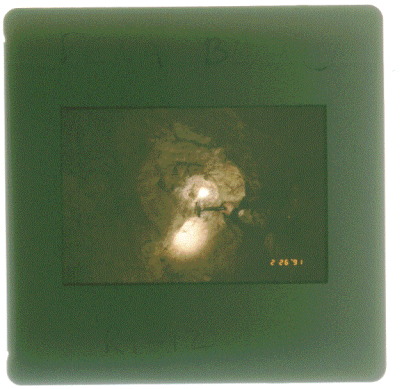
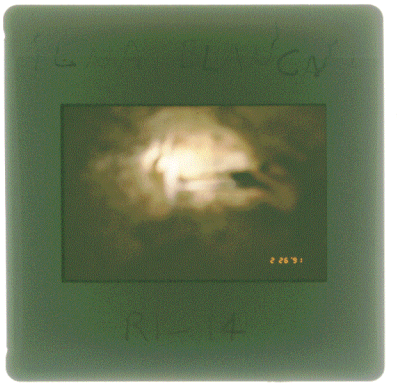












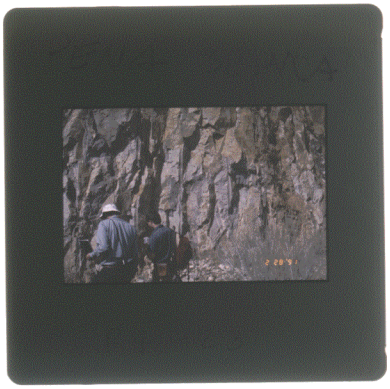




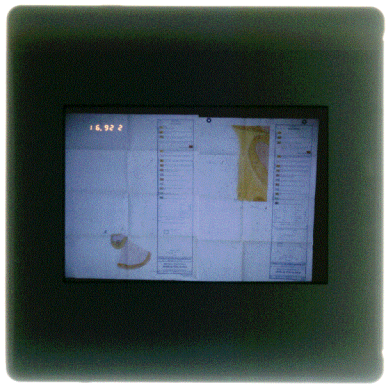






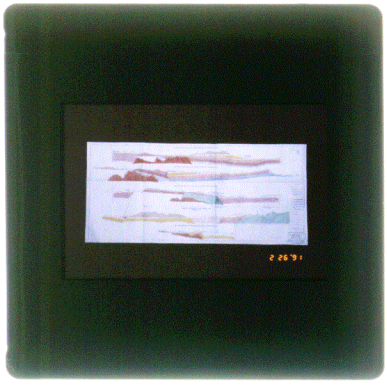
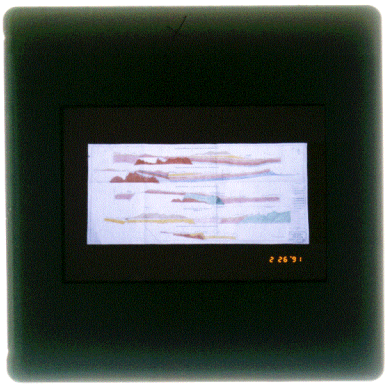










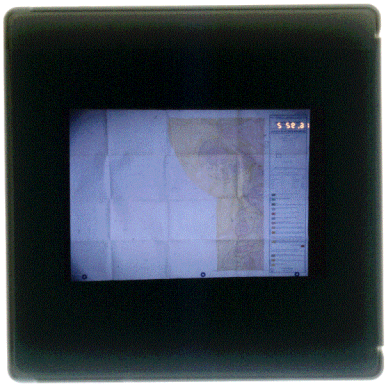






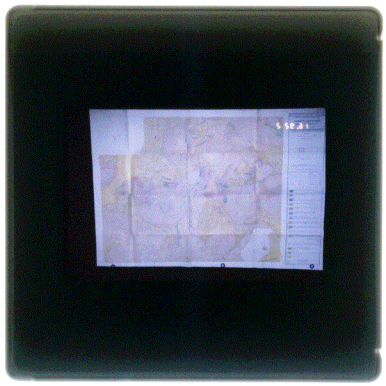













Summary of Photographic Slides from the McDermit (Horse Creek, Moonlight Mine and Virgin Valley) Field Trip, April 18-19, 1991, McDermit-Denio, NV.

**ROLL 1**

| Slide No. | Description |
|---|---|
| 1-1 | Racks located at Jim LaBrett's house, Orovada, NV, containing rock core from Horse Creek mining area. |
| 1-2 | E. Pearcy inspecting rock core from south drill area at Horse Creek mining area. Jim LaBrett's house, Orovada, NV. |
| 1-3 | Close-up photo of (breccia) core from core box in photo 1-1. Jim LaBrett's house, Orovada, NV. |
| 1-4 | Core rack showing open core boxes. Jim LaBrett's house, Orovada, NV. |
| 1-5 | Chip boards of cuttings from well at Horse Creek mining area. Jim LaBrett's house, Orovada, NV. |
| 1-6 | Board with rock samples and unit names from Horse Creek mining area. Jim LaBrett's house, Orovada, NV. |
| 1-7 | Horse Creek, on hill facing east toward road cuts. |
| 1-8 | Horse Creek, on hill facing southeast toward road cuts. |
| 1-9 | Horse Creek, on hill facing west toward King's Creek valley. |
| 1-10 | Horse Creek, further up hill facing southwest toward road cuts in side of hills, lowest road cut on right is vantage point for photos 1-7, 1-8 and 1-9. |
| 1-11 | South of Horse Creek on road to south area, facing north toward massive outcrop. |
| 1-12 | Moonlight Mine, facing south toward adit. |
| 1-13 | Moonlight Mine, facing east toward adit. |
| 1-14 | Moonlight Mine, facing north toward adit. |
| 1-15 | On outcrop over Moonlight Mine, facing north. |
| 1-16 | Same location as 1-15, but 50 m to the south, facing northeast. |
| 1-17 | Sign on Moonlight Mine camp building. |

1-18 Denio Junction, NV, facing east from a distance of 1000 m.

1-19 Denio, NV, facing north from a distance of 4 km.

1-20 Virgin Valley, west side of valley and main valley road, brown opal beds, facing west.

1-21 Virgin Valley, west side of valley and main valley road, brown opal beds, facing west, same location as 1-20 but from the road.

1-22 Virgin Valley, west side of valley and main valley road, lower section of brown opal beds, facing west.

1-23 Virgin Valley, west side of valley and main valley road, upper section of brown opal beds, facing west.

1-24 Virgin Valley, west side of valley and main valley road, close-up view of green beds, about 8-10 m lower in section than the brown opal beds, facing west.

**ROLL 2**

| Slide No. | Description |
|---|---|

2-1 Virgin Valley, west side of valley and main valley road, in wash north of photos 1-20 to 1-25, toward green beds, facing south or southwest.

2-2 Virgin Valley, close-up view of photo 2-1.

2-3 Virgin Valley, west side of valley and main valley road, on top of rim overlooking location of photo 2-2 (in foreground). In background are basalt capped mesas, facing south.

2-4 Virgin Valley, east side of valley and main valley road, behind Royal Peacock Mine offices, toward opal bed.

2-5 Virgin Valley, east side of valley and main valley road, same location as photo 2-4 but taken inside of small hand-dug adit.

2-6 Same as photo 2-5.

2-7 Same as photo 2-5.

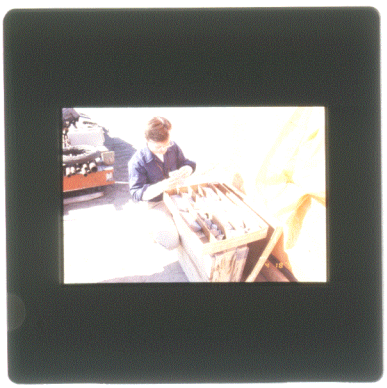
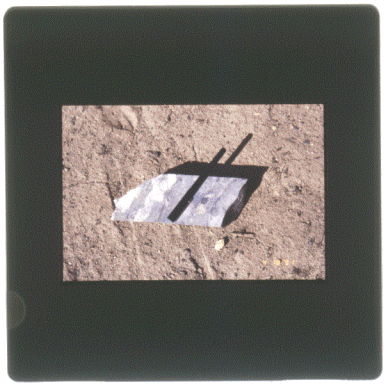
2-8 Same location as photo 2-4, showing Steve Castor exiting adit.

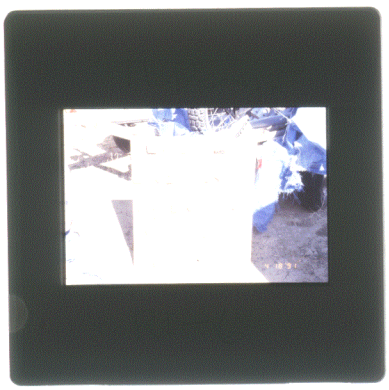
2-9 Same as photo 2-8

2-10 Same as photo 2-8

2-11 10 m west of location of photo 2-4, showing exposed opal beds in small pit.

2-12 Virgin Valley, east side of valley and main valley road, on top of mound behind adit in photo 2-4, facing northwest toward brown opal beds shown in photos 1-20 to 1-25.

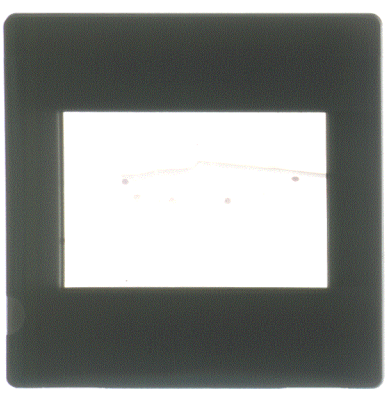



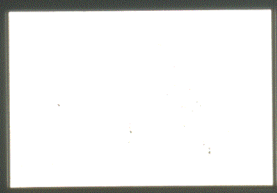










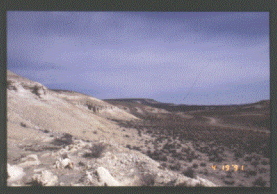














Photo Log for March 1 - March 6, 1992 Trip to Peña Blanca, Mexico

Film Roll 1.

1. Geologic overview looking west toward the Sierra del Nido block from on top of the Santa Eulalia mine. Left to right Enrique Garcia (EG), Sergio Ajuria (SA), English Pearcy (EP), Philip Goodell (PG), John Bradbury (JB), and Jaime Fusilla (JF, our driver). The identities and affiliations of these individuals is given in the trip report associated with this visit to Mexico.

2. Geologic overview looking northwest toward the Sierra del Nido block from on top of the Santa Eulalia mine. Left to right EG, SA, Rafael Martinez (RM), Luis Aguilar (LA), PG, EP, Linda Kovach (LK), JF, and JB. The identities and affiliations of these individuals is given in the trip report associated with this visit to Mexico.

3. Geologic overview looking north toward the Sierra Peña Blanca, with the city of Chihuahua in the background, from on top of the Santa Eulalia mine. Left to right EG, RM, PG, SA, LA, JF, EP, JB, and LK. Note rhyolite domes from left to right in background. The calderas associated with the volcanics are located in the Sierra del Nido block to the west and south of Chihuahua city.

4. Group photo facing north about 100 m further south than previous photos on the peak of the Santa Eulalia mine mountain, with the radio towers in the background. Left to right LA, EG, SA, RM, PG, EP, LK, JB, and JF.

5. Same as number 4 with Luis Aguilar taking photo.

6. At the Nopal 1 mine in the Sierra Peña Blanca mountains. Standing on the level 0 of the deposit, photo looking south away from adit, while PG provides geologic overview of the deposit. Left to right EP, JB, Ignacio Reyes (IR), JF, SA, EG, PG, LK, RM and LA taking a photo. The identities and affiliations of these individuals is given in the trip report associated with this visit to Mexico.

7. Looking west at the Nopal 1 site on the level 0 of the deposit along the road which leads up to the adit, towards the location of the caliche that Bill Murphy (WMM) sampled during September of 1991 (Sample NOP1-ECP-17 ). Left to right EP, JB, IR, SA, LK, EG, JF, RM, and LA taking a photo.

8. At Nopal 1 on the level 0 surface facing north shooting at the adit with the workmen clearing the level +10 surface. The shot angle is parallel to the fault surface at the west boundary of the photo and the breccia pipe. The strong Fe staining along the west portion of the breccia pipe along the top of the the adit is visible.

9. A portion of the +10 level surface of the Nopal 1 site that has been cleared, exposing uranium silicates (yellow) just a few centimeters away (2 o'clock position) from the lens cap.

10. Facing south on the +10 level surface of the Nopal 1 site with the cleared portion in the near background. Left to right: LA, SA, RM, EG and their Mexico city driver. The Sierra de Gomez Mountains (horst) and the Aldama Valley (graben) are in the distance.

11. Borehole found during clearing of +10 m level, located within the orebody (breccia pipe). The broom handle provides a scale for the photo and this photo records the detail of the cleaning procedure.

12. A low-angle shot of the cleared portion of the +10 m level of the Nopal 1 site, with the broom providing the scale of the photo. The location of the preexisting borehole in the orebody/breccia in relation to the front of the level +10 m level surface and the western face/fault of the edge of the breccia pipe are documented. The edge of the +10 m level surface is typical of the uncleared portion of the level +10 m surface.

13. The collection of a portion of a diabase dike in the Corrales formation just south of the road at La Parita Spring. The two field vehicles used during the trip are in the foreground, with EP on the top of the van retrieving a sample bag and JF on the left.

14. The diabase dike (dark brown) in the Corrales formation just south of the road at La Parita. This dike has been postulated by previous French workers as being the heat and/or source for the uranium in the district. LA (left) and JF excavating a boulder of the dike to be dated by Ar/Ar techniques (PG).

15. The extent of the diabase dike (dark brown) seen south of the road at La Parita Spring. JF excavating the boulder, while PG explains to IR and RM (right).

16. La Parita Spring is normally much lower or dry, but it is flowing at about 1 liter/minute due to the recent rains (1 day earlier). Photo looking south toward the diabase collection site.

17. Looking downstream of La Parita Spring. Runnel at the left of the photo was used to measure mass flow as all flow was restricted to this location.

18. Further east from La Parita Spring along the road to the Nopal 1 site. This outcrop of the Mesa and Peña Blanca formations occurs about 100 m north of the road. This is the location of a sample which consists of calcite veins which cut through the Mesa formation. The rock hammer provides a scale for the photo.

19. Several near vertical calcite veins intersecting the lower portion of the Mesa formation at the same location as photo #18. A sample was collected here and the hammer provides a scale for the photo.

20. Lower Mesa formation calcite veins with minor yellow mineral formation. These yellow minerals do not register on the field meter, suggesting that they are not uranium bearing minerals. These veins and yellow minerals occur about 25 feet west of the location of the veins documented in photos # 18 and 19. A sample was collected here and the rock hammer provides a scale.

21. Boxes of core and the core material from URAMEX drilling of the Nopal 1 site. The designation of N1-4 70 $^{o}$ is equivalent to hole #4 at Nopal 1 which was drilled 70 $^{o}$ from the horizontal. Caja is Spanish for box. Cores and supporting data of the URAMEX investigation of the Nopal 1 site are located at the Las Margaritas mining camp/site.

22. Partial view of core boxes and their storage containers in coreshed at Las Margaritas. IR posing for the camera. All boxes are well labeled and the collection of cores is from several sites in the Peña Blanca district, including the Nopal 1 site.

23. Hungry EP and JF chow down at Las Margaritas mining camp.

24. Lunch time frivolities with the question posed, do you trust BIMBO bread? Left to right JB, JF, LK (notice writing on cap) and EP.

25. JB, LK and PG preparing for lunch at the Las Margaritas camp.

Film Roll 2.

1. Inside the level 0 adit of the Nopal 1 mine, showing the location of a drill hole of uraninite collected during the September 1991 trip. The location of the uraninite and the sample is located between the beams of the flashlights. This location is at the end of the east side of the first east-west cross adit.

2. Inside the level 0 adit of the Nopal 1 mine, showing the location of a drill hole of uraninite collected during the September 1991 trip. The drill hole is the circle in the center of the photo, with the black minerals uraninite, and the white in the lower portion of the frame being kaolinite, and the yellow and orange minerals being various uranium silicates or uranyl hydroxides. The sample location is along the north wall of the eastern portion of the first east-west cross adit.

3. Same as photo #2, except a few feet lower and the lens cap is used for a scale of the photo.

4. The ceiling of the level 0 adit of the Nopal 1 mine. This location is at the edge of the breccia pipe and is located in the rear section of the north-south branch of the adit. The rocks are glistening from the rain which has percolated 10 m in the past two days. The floor was wet from the rain two days earlier.

5. Same as photo #4, except a water drop appears orange in the photo just southwest (7 o'clock) of the center of the photo.

6. Further north in the back portion of the N-S adit on level 0 of the Nopal 1 mine. This photo documents the presence of a root system (> 8 meters in length from the surface) along a broken face on the west side of the adit. Brownish strings are the roots which are located outside of the ore zone and breccia pipe.

7. Same as photo #6.

8. IR holding the PVC bailer used to collect fluid samples during the September 1991 and March 1992 trips. He is standing on the +10 m level of the Nopal 1 site and the grey cuttings at his feet are from a series of boreholes drilled along the back portion of this surface.

9. Workers clearing the +10 m level at the Nopal 1 site, showing the extent of the clearing. In the background is the Aldama Valley (graben) and the Sierra de Gomez Mountains (horst) to the east. This photo was shot from the +10 m level.

10. Same as photo #9.

11. Details of the clearing of the +10 m level of the Nopal 1 site showing that picks, hoes, shovels, rakes and brooms are used to clear the regolith. Cleared area is is colored by the mineralization and the uncleared portion of this level is buff colored.

12. Photo is shot from the +20 m level of the Nopal 1 site and documents the extent of the clearing of the +10 m surface, indicating that it is about 1/3 complete. In the

background is the Aldama Valley (graben) and the Sierra de Gomez Mountains (horst) to the east. This photo was shot from the +10 m level.

13. Photo is shot from the +20 m level of the Nopal 1 site and documents the details of the clearing (highly colored, whites and reds, is cleared area and buff area is uncleared). Background is approximately 50 meters lower and the edge of the +10 m level is clearly visible.

14. Same as photo #12, but with Bret Leslie (BL) carrying supplies to the van. In the background is the Aldama Valley (graben) and the Sierra de Gomez Mountains (horst) to the east. This photo was shot from the +10 m level.

15. Same as photo #13 with BL looking back up at the camera. The color change in the background is a lithologic change to the underlying Cretaceous limestone.

16. The garbage collector designed by IR and JF to collect seepage from the ceiling of the rear portion of the north-south adit in the Nopal 1 mine. The ends of the bags are nailed into the rock and the hole at the bottom allows the flow to drop into a 5 gallon cubitainer. The location of the collector is at a fracture zone which is postulated to be the north edge of the breccia pipe.

17. Same as photo #16 with JB illuminating the collection device and with the fracture zone directly above his hard hat.

18. A view of the rear of the north-south adit on level 0 in the Nopal 1 mine which gives a clear picture of the size of the adit. This photo also shows the collection device and the open 5 gallon polyethylene container. Notice that the floor of the adit is wet and that the photo was shot while I was standing within the breccia pipe.

19. Same as photo #18 with JB looking tired. The flashlights are pointed at the garbage-bag collection device and the cubitainer.

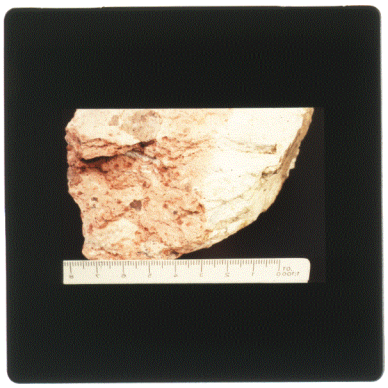
20. Just west of the adit at level 0 of the Nopal 1 mine documenting the location of a caliche sample that was retrieved to replace the sample that WMM had previously collected (Sept. 1991). His sample was entered as sample NOP1-ECP-17 and this sample is documented as sample NOP1-BWL-1. The number 5 on the wall is a reference location used by IR during his detailed mapping of the deposit.

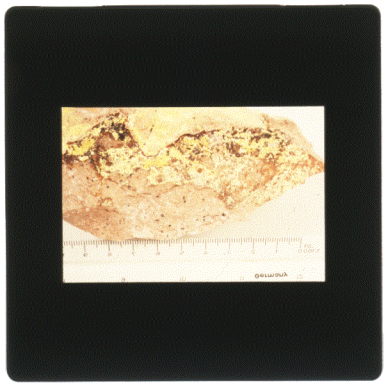
21. Petroglyphs located about 15 miles south of Ciudad Juarez along the highway 45 which connects El Paso and Chihuahua.

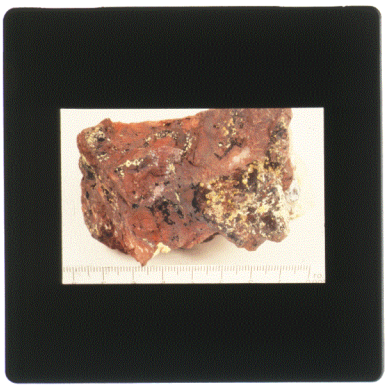
22. More petroglyphs at the same location as in photo #21.

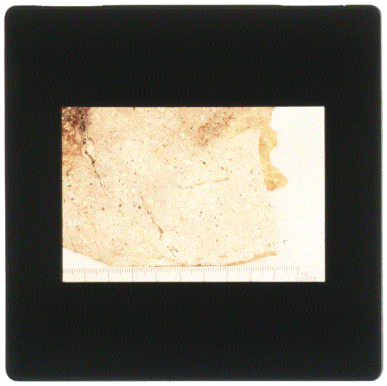
23. A tired JB, LK and EP musing about the petroglyphs.

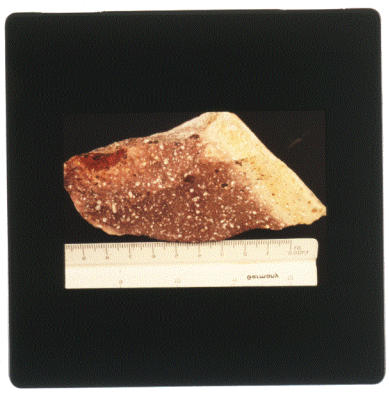
24. A petroglyph waving goodbye to Philip Goodell and this trip.



























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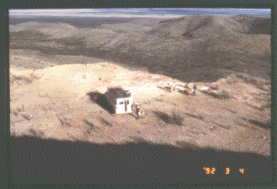

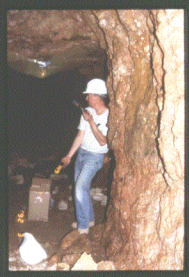

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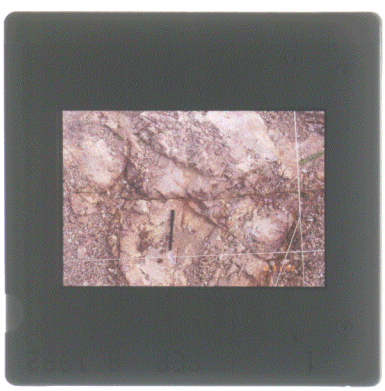

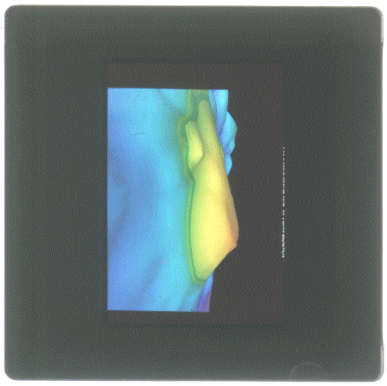
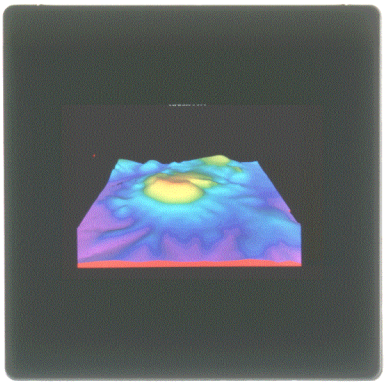
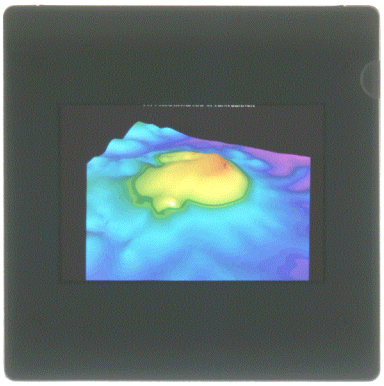
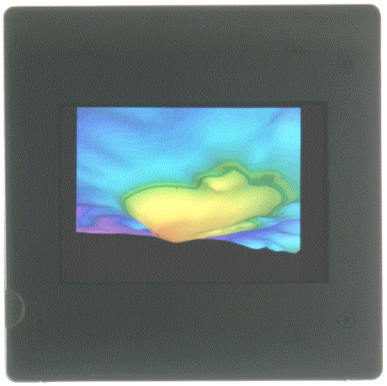
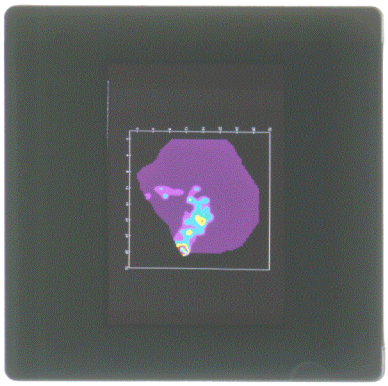
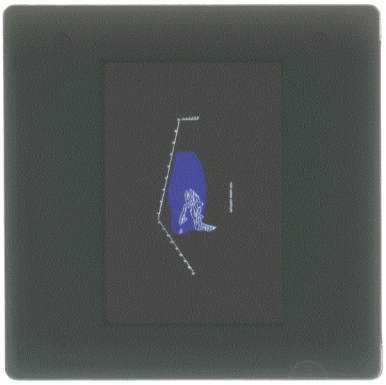
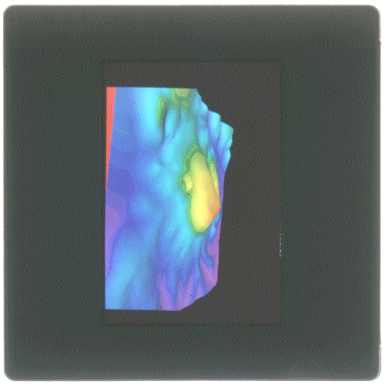
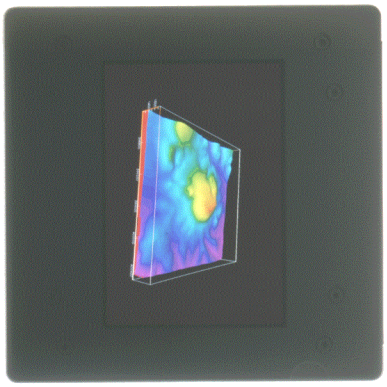
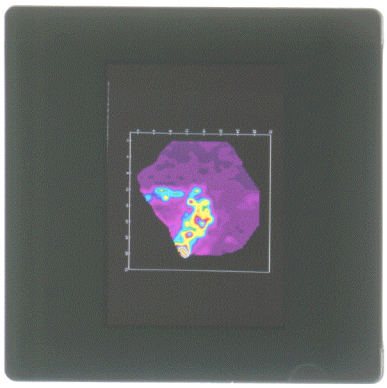
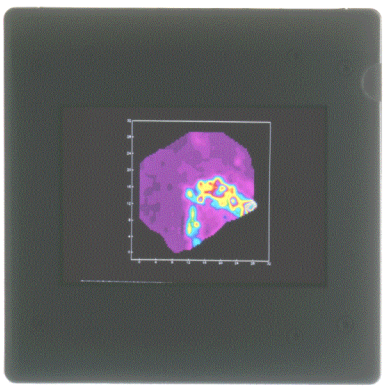
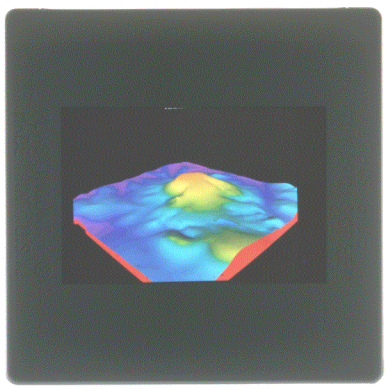
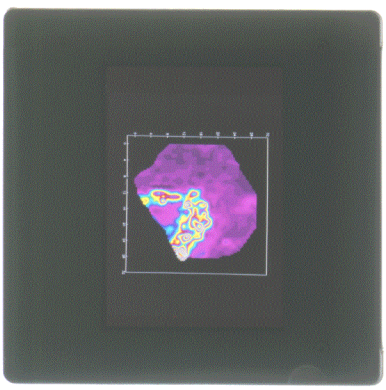
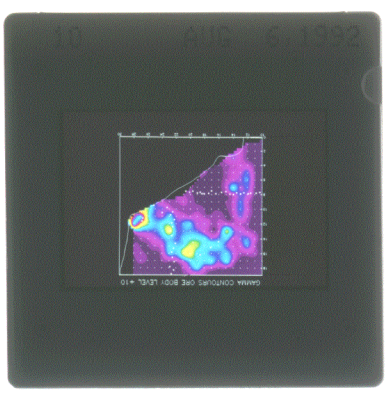
GAMMA CONTOURS 69E BODY LEVEL +10