

COL-EC P-1

## PETROGRAPHY

Sample No.: COL-ECP-1-TS1

Locality: Sierra Para Blanca, Chihuahua, Mexico

Formation: Coloradas

Classification (rock type): lithic rhyolite tuff, hematitic

Matrix or groundmass: 80%

cryptocrystalline quartz-feldspar

Grains or crystals: 20%

Phenocrysts:

Otz - 1%

Feldspar - 1%

Lithoclasts:

VRFs - 20%

Texture or fabric:

Welded with entaxitic texture preserved under plane light.  
Groundmass has undergone devitrification to cryptocrystalline  
qtz-feldspar.

Under plane light entaxitic texture can be observed; ghostlike  
vestiges of glass shards have been flattened parallel  
to depositional plane by compaction.

Alteration/Mineralization:

Most phenocrysts + lithoclasts have undergone partial or  
complete replacement by calcite and an unidentified  
fibrous mineral.

Devitrification of glass groundmass to qtz-feldspar. (Cont on back)  
Volcanic processes or depositional origin:

Pyroclastic air fall or flow.

Alteration:

Sample consists of contact between weathered and unweathered surface. Unweathered part is red while weathered part is tan to light brown. Tan color seems to be result of removal of iron.

PETROGRAPHY

Sample No.: COL-ECP-1-TS2

Locality: Sierra Pena Blanca, Chihuahua, Mexico

Formation: Coloradas

Classification (rock type): lithic rhyolite tuff, hematitic

Matrix or groundmass: 80%

Cryptocrystalline quartz-Feldspar

Grains or crystals: 20%

Phenocrysts:

Otz - 1%

Feldspar - 1%

Lithoclasts:

URFs - 20%

Texture or fabric:

Same as COL-ECP-1-TS1

Alteration/Mineralization:

Same as COL-ECP-1-TS1

Volcanic processes or depositional origin:

Pyroclastic air fall or flow



PHOTOGRAPHY

Photographer: *JF*

Microscope: *Nikon*

Type of photography: *Standard thin section*

Camera: *Nikon*

Date: *5/3/91*

Film: *Ektar 125*

Photo No.	Sample No. and description	Obj.	FOV	Light
	<i>COL-ECP-1-T31</i>			
<i>13</i>	<i>Quartz phenocryst + vrf in devitrified groundmass of microcrystalline qtz-feld. Quartz being replaced by calcite</i>	<i>4x</i>	<i>3.0mm</i>	<i>XN</i>
<i>14</i>	<i>Same as #13. Ghostlike vestige of glass shards. In weathered zone hematite washed out.</i>	<i>4x</i>	<i>3.0mm</i>	<i>PL</i>
<i>15</i>	<i>Contact between weathered + unweathered zone. Calcite replaced phenocryst in devitrified groundmass. Flattened pumice? Fragmit replaced by chalcidol.</i>	<i>4x</i>	<i>3.0mm</i>	<i>XN</i>
<i>16</i>	<i>Same as #15. Notice at contact washing out of red hematite.</i>	<i>4x</i>	<i>3.0mm</i>	<i>PL</i>
<i>17</i>	<i>Phenocrysts replaced by calcite + opague. Entatic texture.</i>	<i>4x</i>	<i>3.0mm</i>	<i>XN</i>
<i>18</i>	<i>Same as #17. Entatic texture well developed. Hematite.</i>	<i>4x</i>	<i>3.0mm</i>	<i>PL</i>

PHOTOGRAPHY

Photographer: JP

Microscope: Nikon

Type of photography: ~~Standard Thin~~  
Section

Camera: Nikon

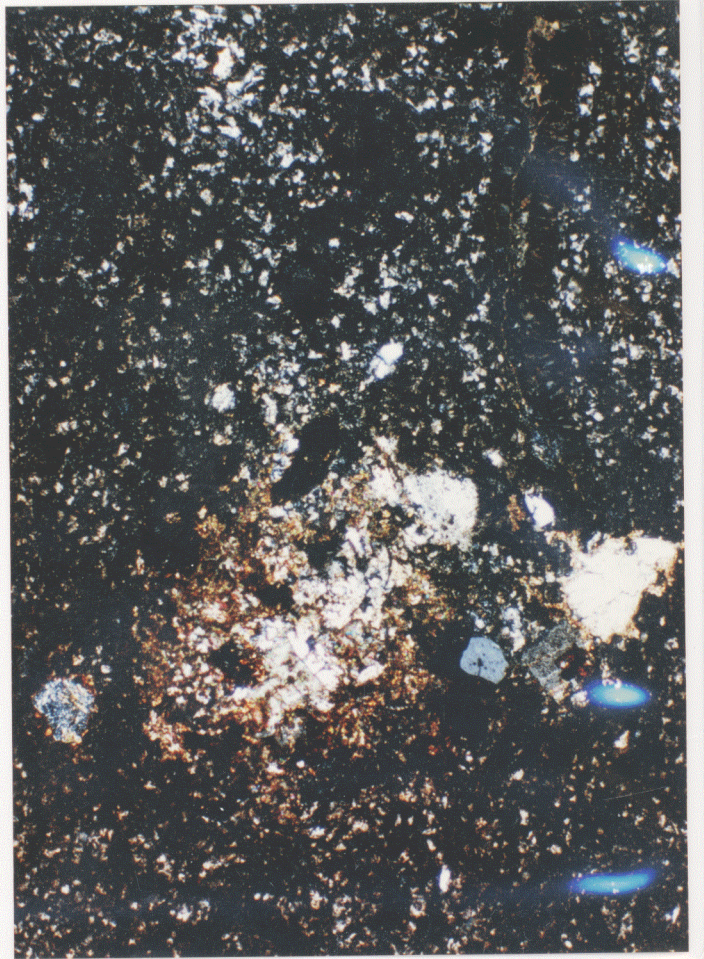
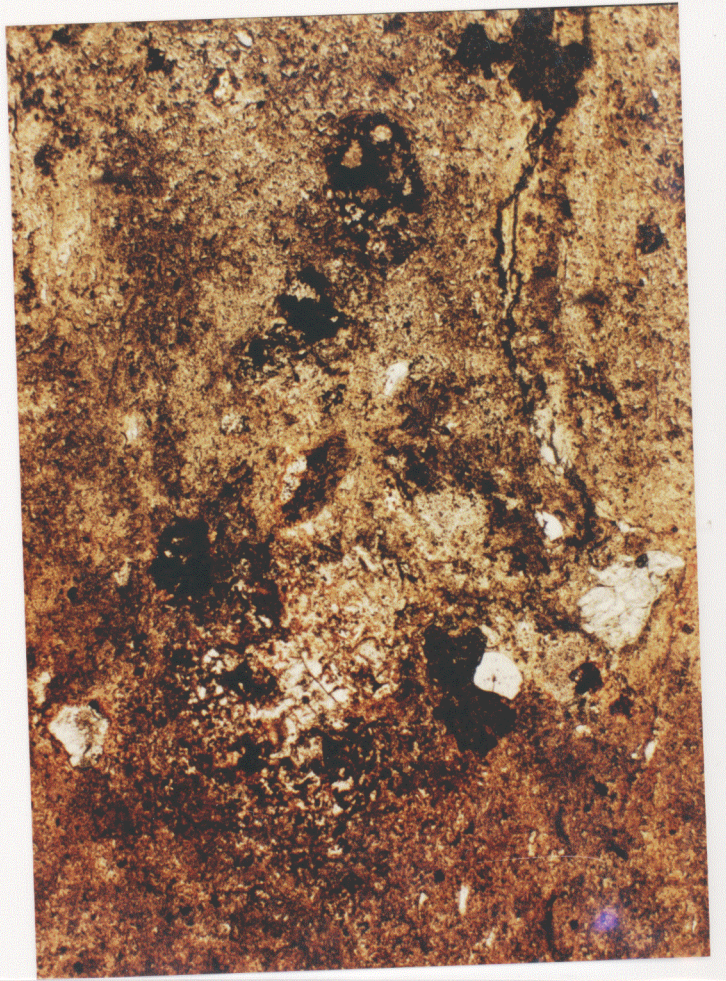
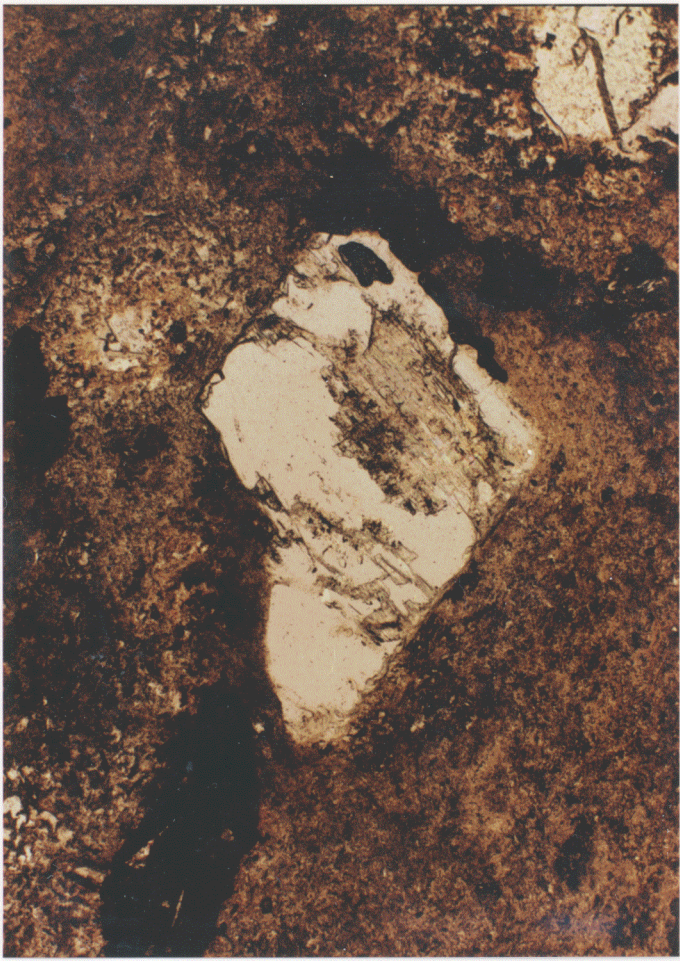
Date: 5/3/91

Film: Ektar 125

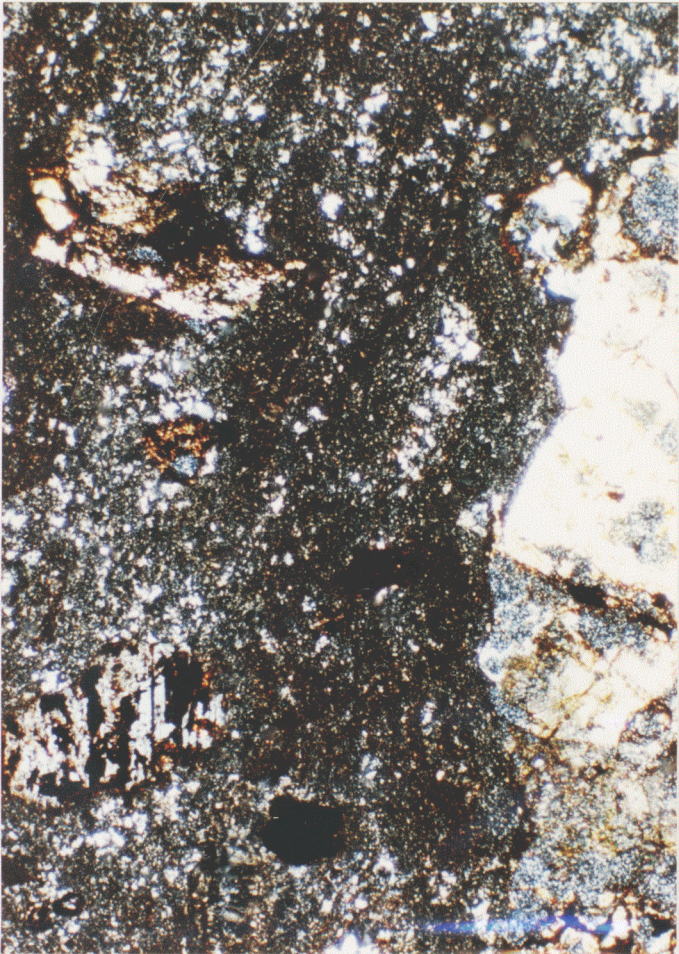
Photo No. Sample No. and description Obj. FOV Light

Photo No.	Sample No. and description	Obj.	FOV	Light
	COL-ECP-1-TS2			
19	Phenocryst +/- VRFs replaced by calcite + opaque. Eutaxitic texture in groundmass.	4x	3.0mm	XN
20	Same as #19.	4x	3.0mm	PL
21	VRFs replaced by fibrous calcite + opaque.	4x	3.0mm	XN
22	Same as #21. Notice ghosts of glass shards in groundmass	4x	3.0mm	PL
23	Hematite rich zone - calcite replaces VRFs + phenocrysts	4x	3.0mm	XN
24	Same as #23	4x	3.0mm	PL

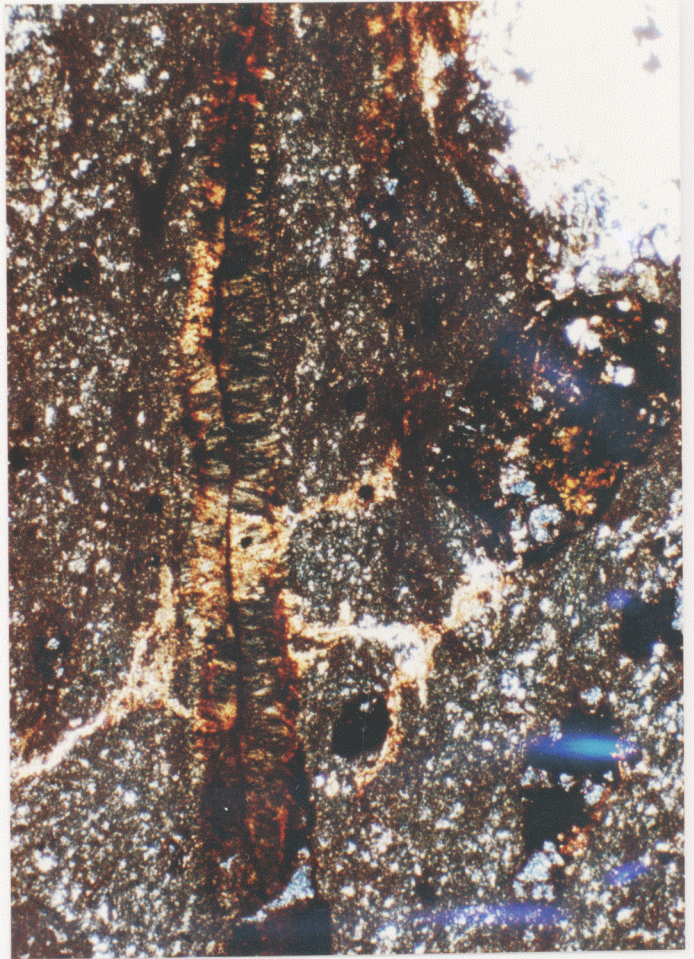
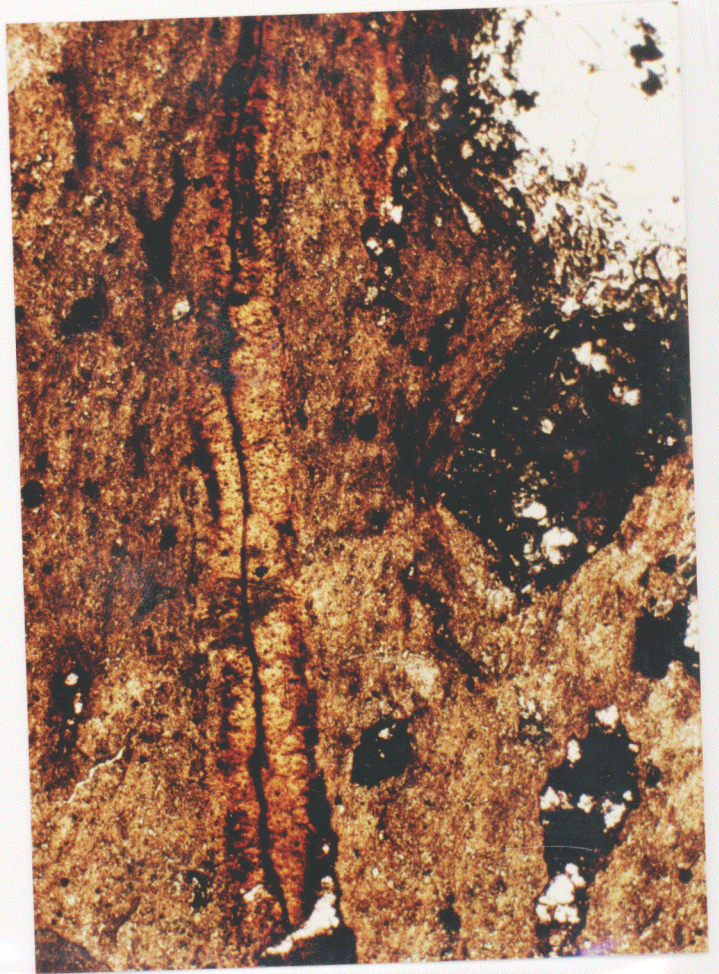
















## PETROGRAPHY

Sample No.: ESC-ECP-1-TS1

Locality: Sierra Pena Blanca, Chihuahua, Mexico

Formation: Escuadra

Classification (rock type): altered lithic tuff.

Matrix or groundmass: 90%

Intergrown calcite-gtz-feldspar - fine to medium crystalline  
Cryptocrystalline-quartz-feldspar.

Grains or crystals: 10%

Phenocrysts:

Quartz - 3%

Feldspar - <1%

Lithoclasts:

VRFs - 7%

Texture or fabric:

Groundmass consists of intergrown fine to medium crystalline  
calcite-quartz intergrowth replacing a devitrified groundmass  
of cryptocrystalline quartz-feldspar.

Original vitric texture of groundmass has been completely  
obliterated by devitrification + alteration.

Porphyblastic - phenocrysts in fine-grained groundmass.

Alteration/Mineralization:

Devitrification of glass to cryptocrystalline gtz-feldspar.

Alteration or recrystallization of cryptocrystalline groundmass to  
coarser crystalline calcite + quartz.

Replacement of phenocrysts predominantly by calcite

Volcanic processes or depositional origin:

Rhyolite air fall.

PETROGRAPHY

Sample No.: ESC-ECP-1-TS2

Locality: Sierra Pena Blanca, Chihuahua, Mexico

Formation: Escudra

Classification (rock type): altered lithic tuff

Matrix or groundmass: 90%

Cryptocrystalline qtz - Feldspar

Intergrown calcite - quartz - fine to medium crystalline

Grains or crystals: 10%

Phenocrysts:

Quartz  
Feldspar

Lithoclasts:

JRFS

Texture or fabric:

Same as ESC-ECP-1-TS1

Alteration/Mineralization:

Same as ESC-ECP-1-TS1

Volcanic processes or depositional origin:

Air Fall



PHOTOGRAPHY

Photographer: *JF*

Microscope: *Nikon*

Type of photography: *Strand Thin Section*

Camera: *Nikon*

Date: *5/3/91*

Film: *Ektar 125*

Photo No.	Sample No. and description	Obj.	FOV	Light
<u>ESC-ECP-1-TS1</u>				
1	Quartz phenocryst in altered groundmass. Devitrified groundmass replaced by calcite-gly.	4x	3.0mm	XN
2	Same as #1	4x	3.0mm	PL
3	URF in altered groundmass. URF being replaced by calcite at boundaries	4x	3.0mm	XN
4	Same as #3	4x	3.0mm	PL
5	Closeup of altered groundmass composed of equigranular, anhedral calcite quartz. Also, shows URF replaced by calcite at edges	10x	1.7mm	XN
6	Same as #5	10x	1.7mm	PL

PHOTOGRAPHY

Photographer: JP

Microscope: Nikon

Type of photography: *Standard Thin Section*

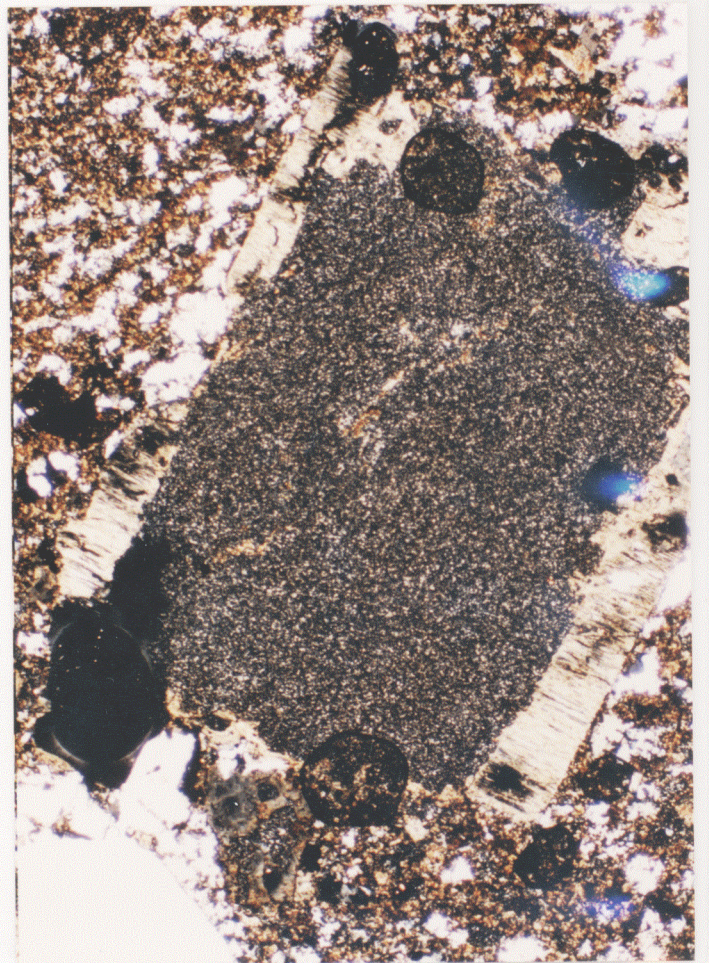
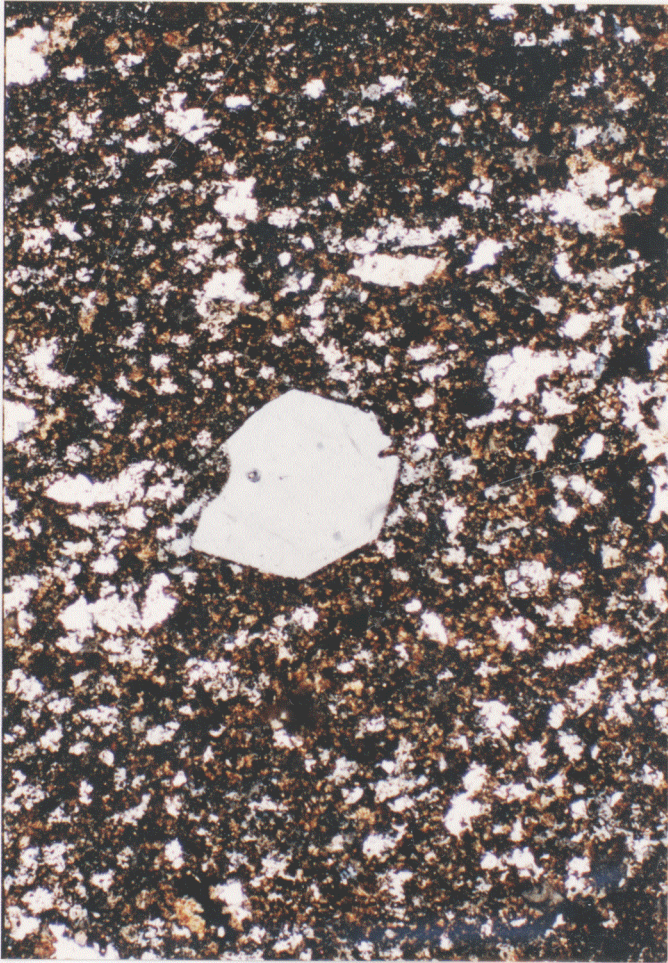
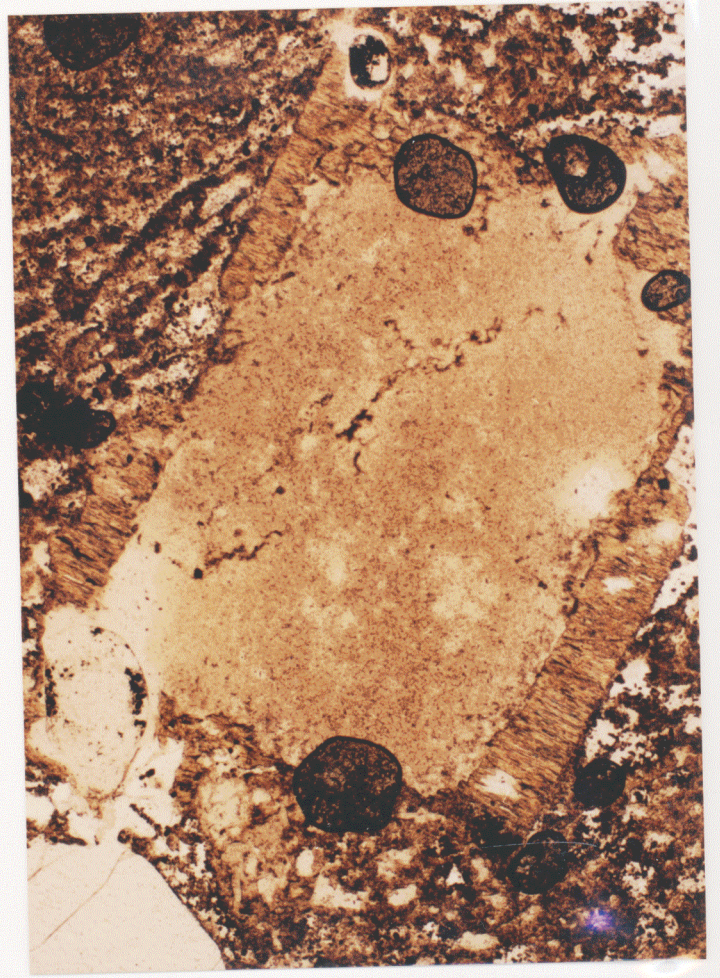
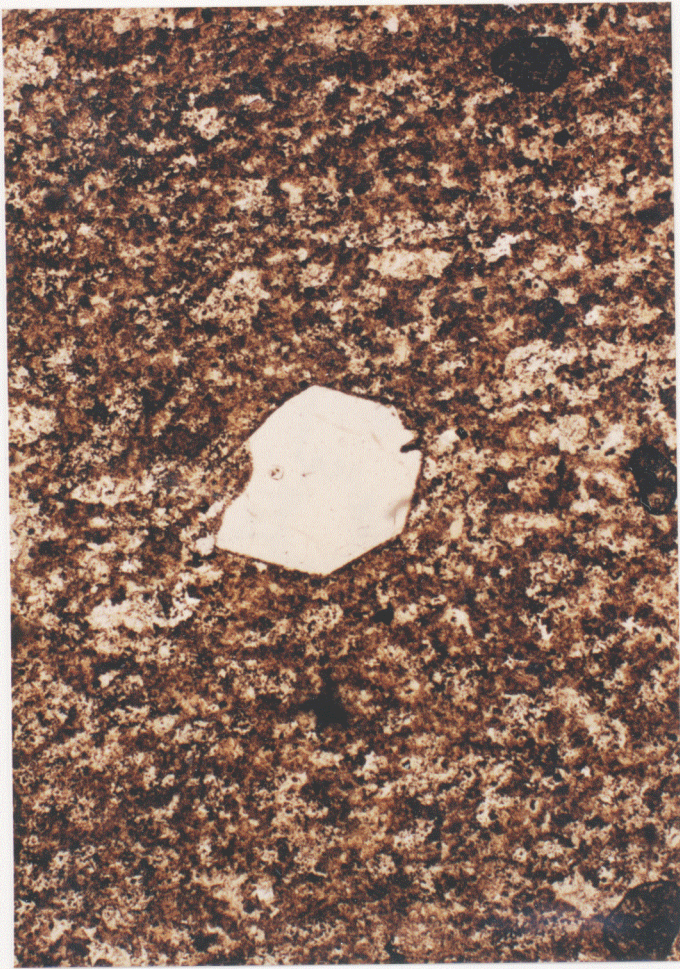
Camera: Nikon

Date: 5/3/91

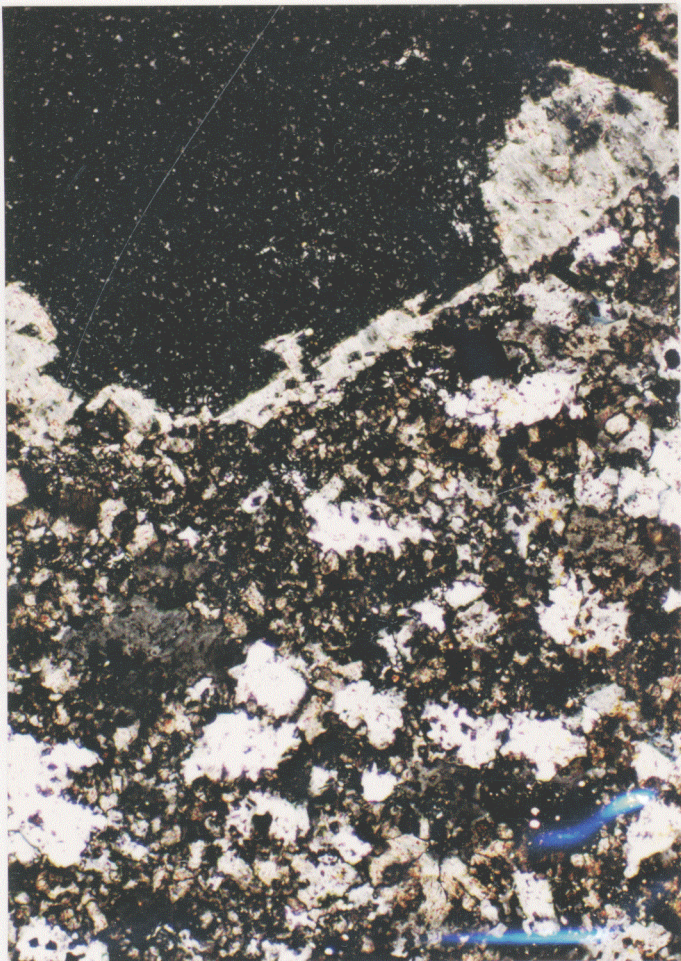
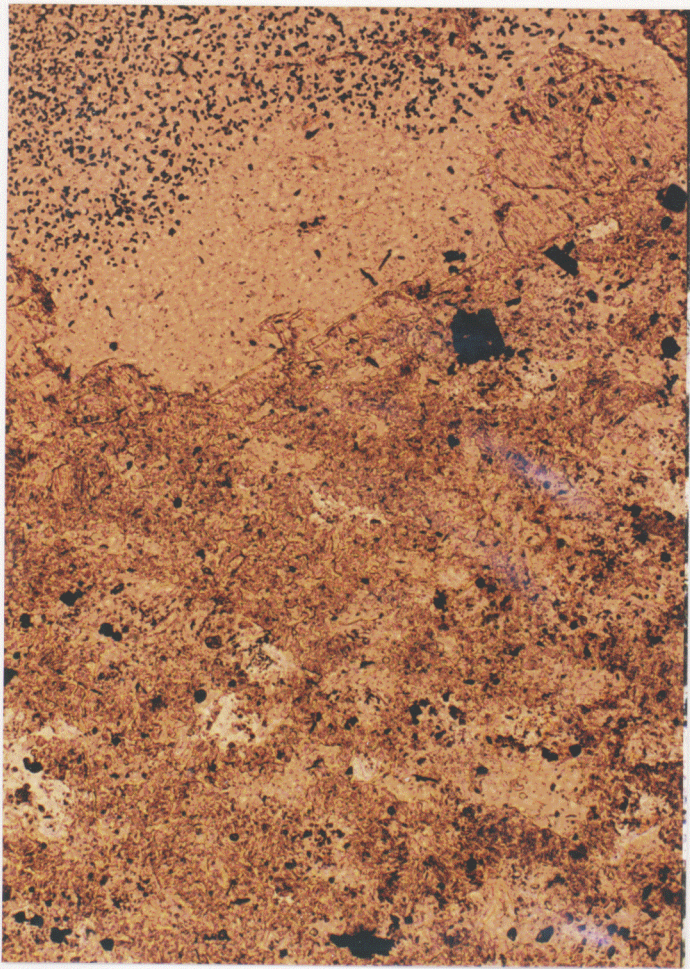
Film: Ektar 125

Photo No.	Sample No. and description	Obj.	FOV	Light
	<u>ESC-ECP-1-T32</u>			
7	Phenocrysts + VRF in altered groundmass. Phenocryst completely replaced by quartz	4x	3.0mm	XN
8	Same as #7	4x	3.0mm	PL
9	Replaced + fresh phenocrysts + VRF in altered groundmass	4x	3.0mm	XN
10	Albite - quartz - calcite replacing a phenocryst or lathwork	4x	3.0mm	XN
11	Closeup of altered groundmass	10x	1.7mm	XN
12	Same as #11	10x	1.7mm	PL

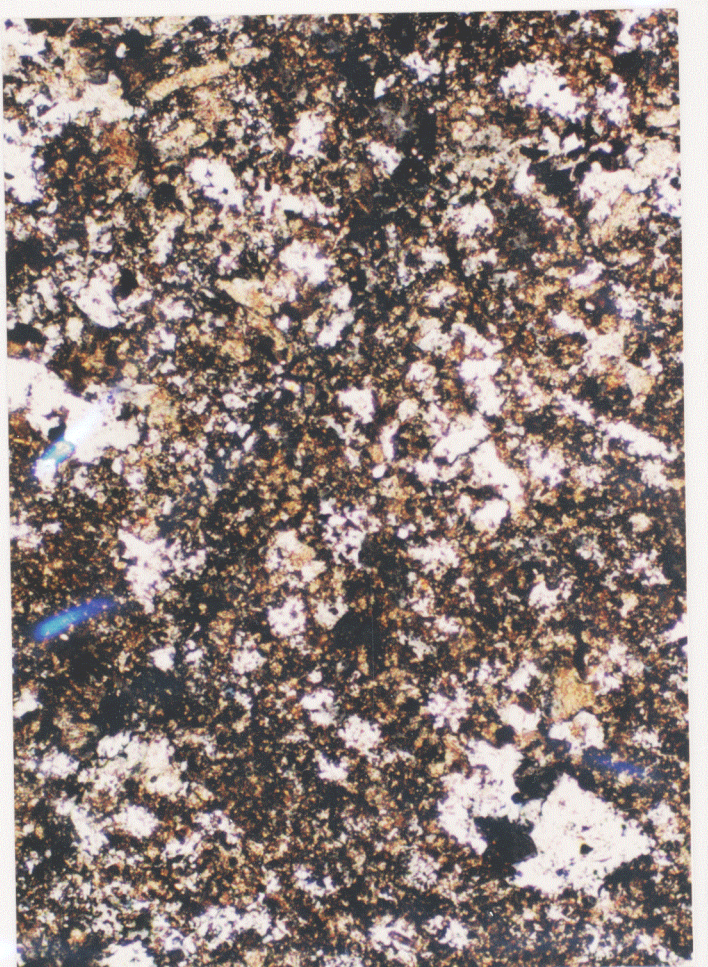
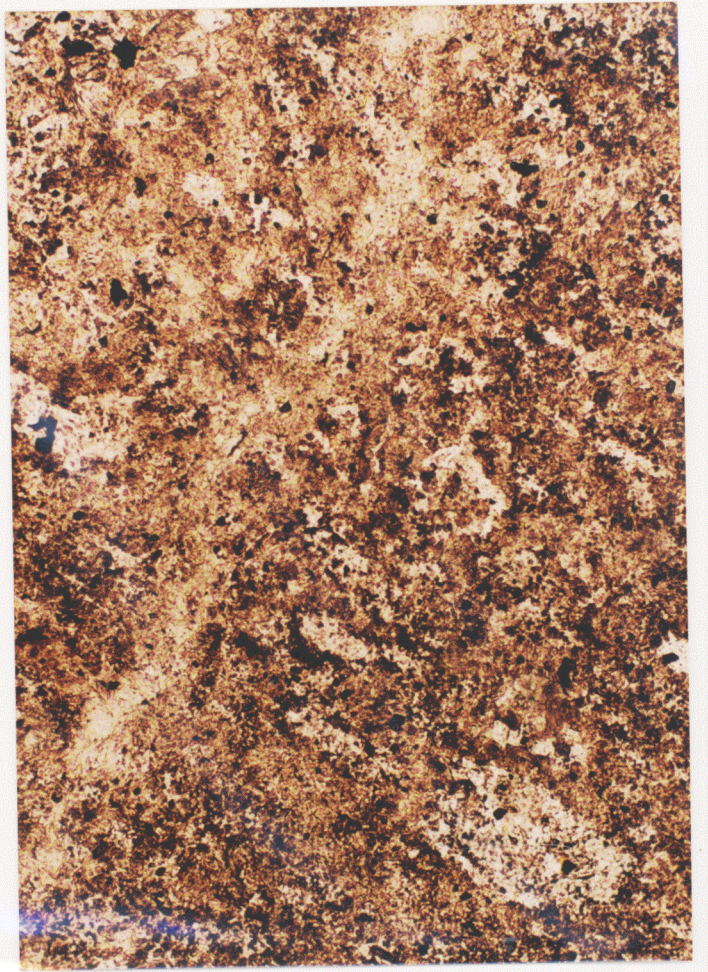
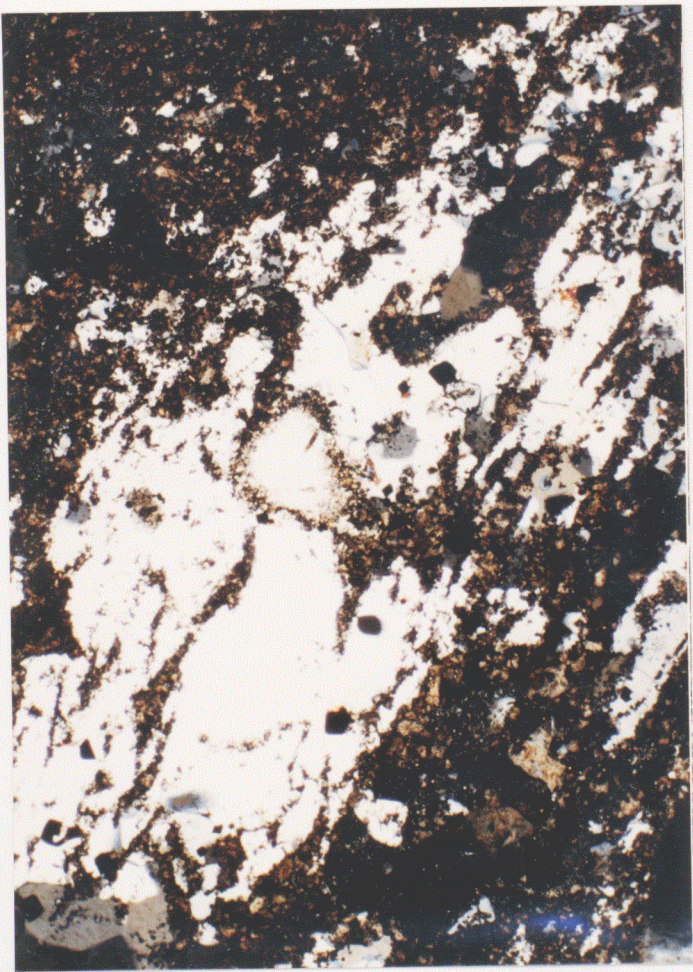
















## PETROGRAPHY

Sample No.: N0P1-EC P-9-TS1

Locality: Sierra Para Blanca, Chihuahua, Mexico

Formation: Nopal

Classification (rock type): altered lithic tuff

Matrix or groundmass: 85%

cryptocrystalline quartz - feldspar  
Microcrystalline calcite  
clay.

Grains or crystals: 15%

Phenocrysts:

Quartz - 2%  
Feldspar - 1%

Lithoclasts:

URFs - 12%

Texture or fabric:

Weakly welded, porphyritic.

In plane light, some vitroclastic texture preserved - ghostlike vestiges of glass shards can be observed.

Glass groundmass was devitrified to cryptocrystalline quartz-feldspar.

Alteration/Mineralization:

Cryptocrystalline groundmass is being replaced by microcrystalline calcite and clays.

URFs being replaced by calcite & clay.

Volcanic processes or depositional origin:

Pyroclastic air fall.

**PETROGRAPHY**

Sample No.: NOPI-ECP-4-TS2

Locality: Sierra Pena Blanca, Chihuahua, Mexico

Formation: Pena Blanca

Classification (rock type): altered lithic tuff

Matrix or groundmass: 85%

Cryptocrystalline quartz - Feldspar  
Microcrystalline calcite  
clay

Grains or crystals: 15%

Phenocrysts:

Quartz - 2%  
Feldspar - 1%

Lithoclasts:

VRFS - 12%

Texture or fabric:

Same as NOPI-ECP-4-TS1

Alteration/Mineralization:

Same as NOPI-ECP-4-TS1

Volcanic processes or depositional origin:

Pyroclastic air fall



PHOTOGRAPHY

Photographer: *JF*

Microscope: *Nikon*

Type of photography: *Stratified Thin Section*

Camera: *Nikon*

Date: *5/3/91*

Film: *Ektar 125*

Photo No.	Sample No. and description	Obj.	FOV	Light
	<u><i>NOPI-ECP-9-TS1</i></u>			
<i>13</i>	<i>URFs in altered groundmass Calcite replacement.</i>	<i>4x</i>	<i>3.0mm</i>	<i>XN</i>
<i>14</i>	<i>Same as #13</i>	<i>4x</i>	<i>3.0mm</i>	<i>PL</i>
<i>15</i>	<i>Fibrous calcite? replacing URF in altered groundmass</i>	<i>10x</i>	<i>1.7mm</i>	<i>XN</i>
<i>16</i>	<i>Same as #15</i>	<i>10x</i>	<i>1.7mm</i>	<i>PL</i>
<i>17</i>	<i>Closeup of altered groundmass</i>	<i>10x</i>	<i>1.7mm</i>	<i>XN</i>
<i>18</i>	<i>Same as #17</i>	<i>10x</i>	<i>1.7mm</i>	<i>XN</i>

PHOTOGRAPHY

Photographer: JP

Microscope: Nikon

Type of photography: *Stadial Thin Section*

Camera: Nikon

Date: 5/3/81

Film: Ektar 125

Photo No.    Sample No. and description    Obj.    FOV    Light

Photo No.	Sample No. and description	Obj.	FOV	Light
	<u>NOPI-ECP-9-T52</u>			
19	Quartz phenocryst in altered groundmass.	4x	3mm	XN
20	URFs in altered groundmass	4x	3mm	XN
21	Fibrous calcite replacing a URF <del>(?)</del>	4x	3mm	XN
22	Same as #21. Matrix preserved vitroclastic texture	4x	3mm	PL
23	Clump of altered groundmass	10x	1.7mm	XN
24	Same as #23. Matrix euhedral texture preserved.	10x	1.7mm	PL



