PETROGRAPHY

Sample No.: COL-ECP-1-TS1

Locality: Sierra Pena Blanca, Chihauhau, Mexico

Formation: Coloradas

Classification (rock type): lithic rhyolite tuff, hematitic

Matrix or groundmass: 80%

cryptocrystalline quartz-feldspar

Grains or crystals: 20%

Phenocrysts:

Qtz - 1%

Feldspar - 19%

Lithoclasts:

VRFs - 20%

Texture or fabric:

Welded with eutaxitic ~~texture~~ preserved under plane light.

Groundmass has undergone devitrification to cryptocrystalline qtz-feldspar.

Under plane light eutaxitic texture can be observed; ghosttike vestigas 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:

Qtz - 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: 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
	COL-ECP-1-TS1			
13	Quartz phenocryst + VRF in devitrified groundmass of microcrystalline felty-feld. Quartz being replaced by calcite	4X	3.0mm	XN
14	Same as #13. Ghostlike vestiges of glass shards. In weathered zone hematite washed out.	4X	3.0mm	PL
15	Contact between weathered + unweathered zone. Calcite replaced phenocryst in devitrified groundmass. Flattened pumice? fragment replaced by chalcedony.	4X	3.0mm	XN
16	Same as #15. Notice at contact washing out of red hematite.	4X	3.0mm	PL
17	Phenocrysts replaced by calcite + opaques. Entaxitic texture.	4X	3.0mm	XN
18.	Same as #17. Entaxitic texture well developed. Hematite.	4X	3.0mm	PL

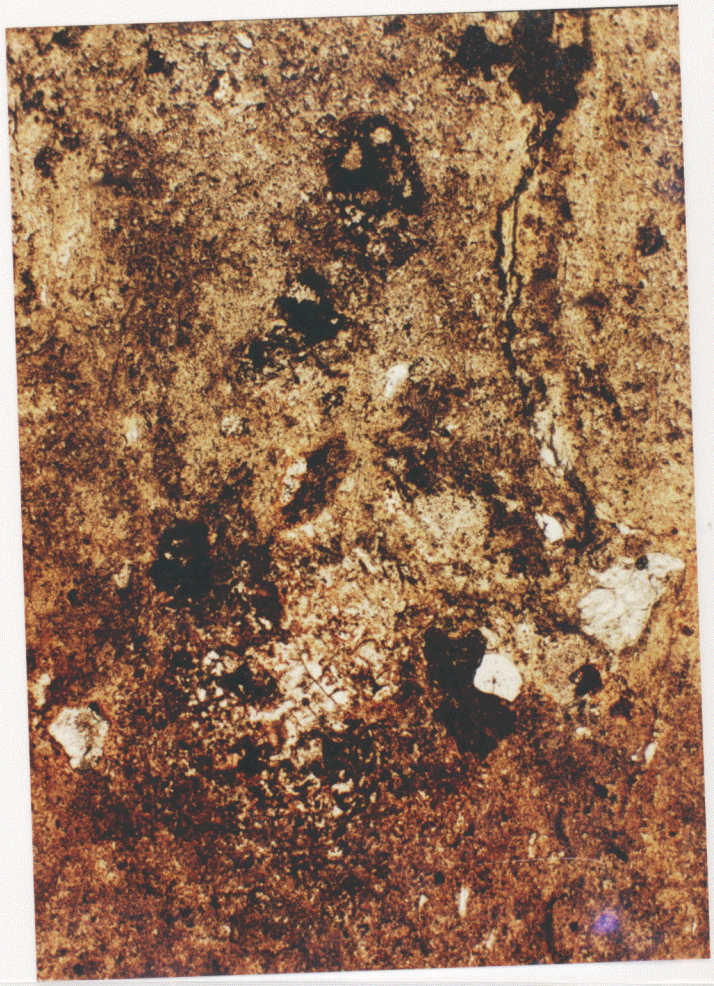
PHOTOGRAPHY

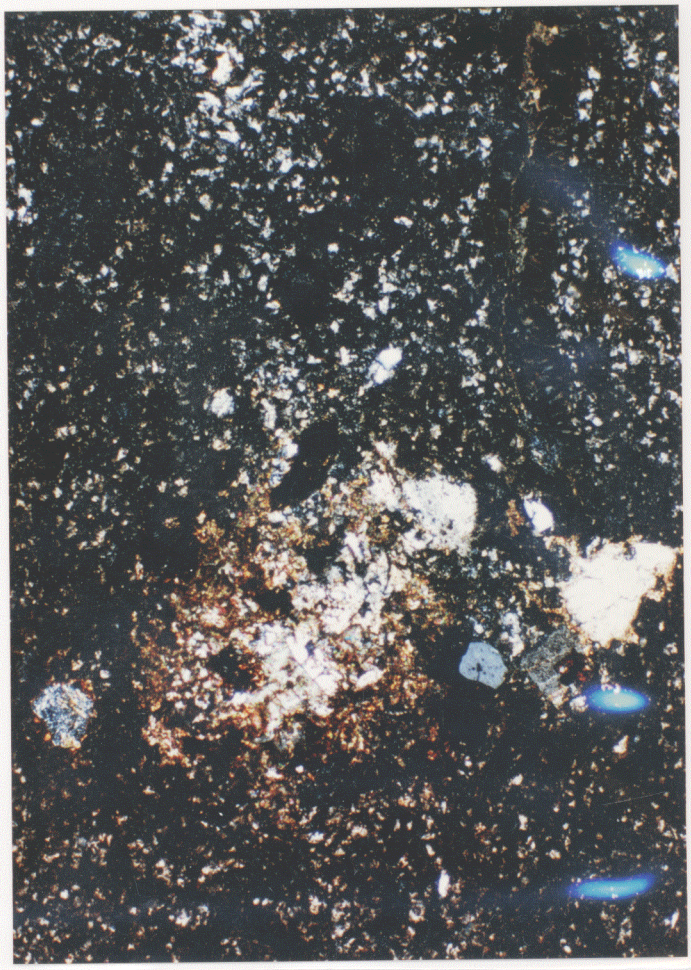
Photographer: JP
Microscope: Nikon

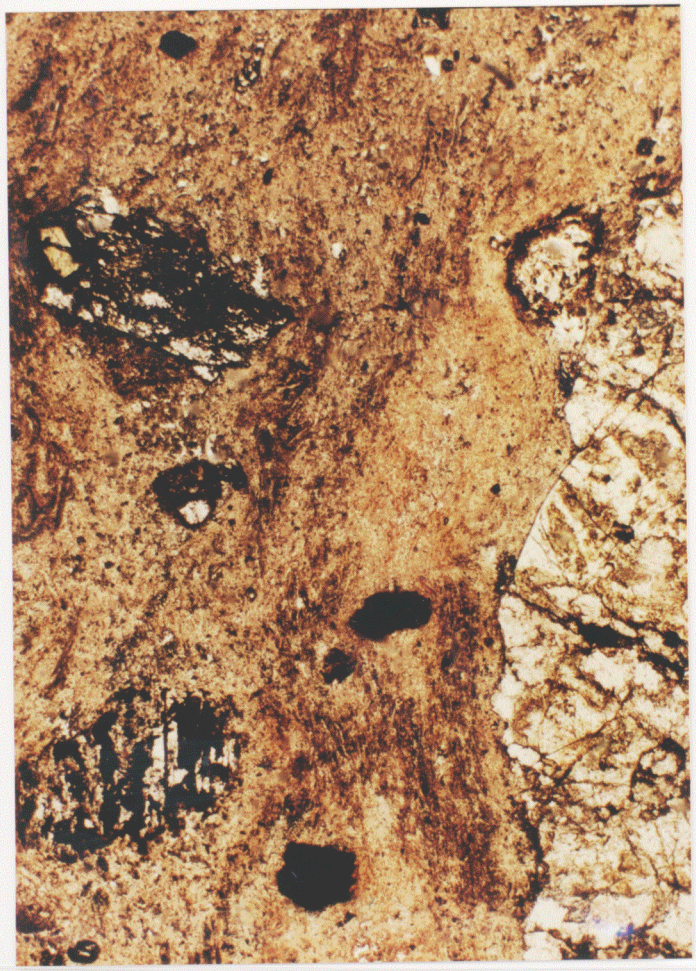
Type of photography: ~~Standard~~ Thin Section
Camera: Nikon

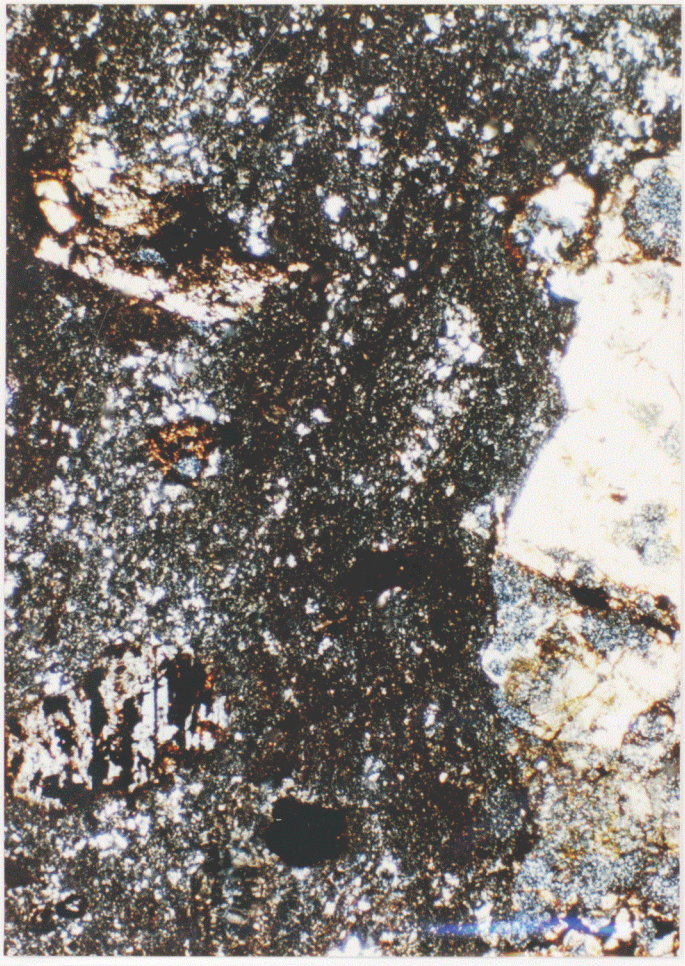
Date: 5/3/91
Film: Ektar 125

Photo No.	Sample No. and description	Obj.	FOV	Light
	COL-ECP-1-TS2			
19	Phenocrysts +/or VRFs replaced by calcite + opaques. Eutaxitic texture in groundmass.	4x	3.0mm	XN
20	Same as #19.	4x	3.0mm	PL
21	VRFs replaced by fibrous calcite + opaques.	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-qtz-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 intergrowths replacing a devitrified groundmass of cryptocrystalline quartz-feldspar.
Original vitric texture of groundmass has been completely obliterated by devitrification + alteration.
Porpyoblastic - phenocrysts in finer groundmass.

Alteration/Mineralization:

Devitrification of glass to cryptocrystalline qtz-feldspar.
Alteration or recrystallization of cryptocrystalline groundmass to coarser crystalline calcite + quartz.
Replacement of phenocrysts predominantly by calcite

Volcanic processes or depositional origin:

Pyroclastic air fall.

PETROGRAPHY

Sample No.: ESC-ECP-1-TS2

Locality: Sierra Pena Blanca, Chihuahua, Mexico

Formation: Escuadra

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:

VRFs

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: M

Type of photography: Standard Thin Section

Date: 5/3/91

Microscope: Nikon

Camera: Nikon

Film: Ektar 125

Photo No.	Sample No. and description	Obj.	FOV	Light
	ESC-ECP-1-TS1			
1	Quartz phenocryst in altered groundmass. Devitrified groundmass replaced by calcite-qtz.	4x	3.0mm	XN
2	Same as #1	4x	3.0mm	PL
3	VRF in altered groundmass. VRF 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/qtz. Also, shows VRF replaced by calcite at edges	10x	1.7mm	XN
6	Same as #5	10x	1.7mm	PL

PHOTOGRAPHY

Photographer: JP

Microscope: Nikon

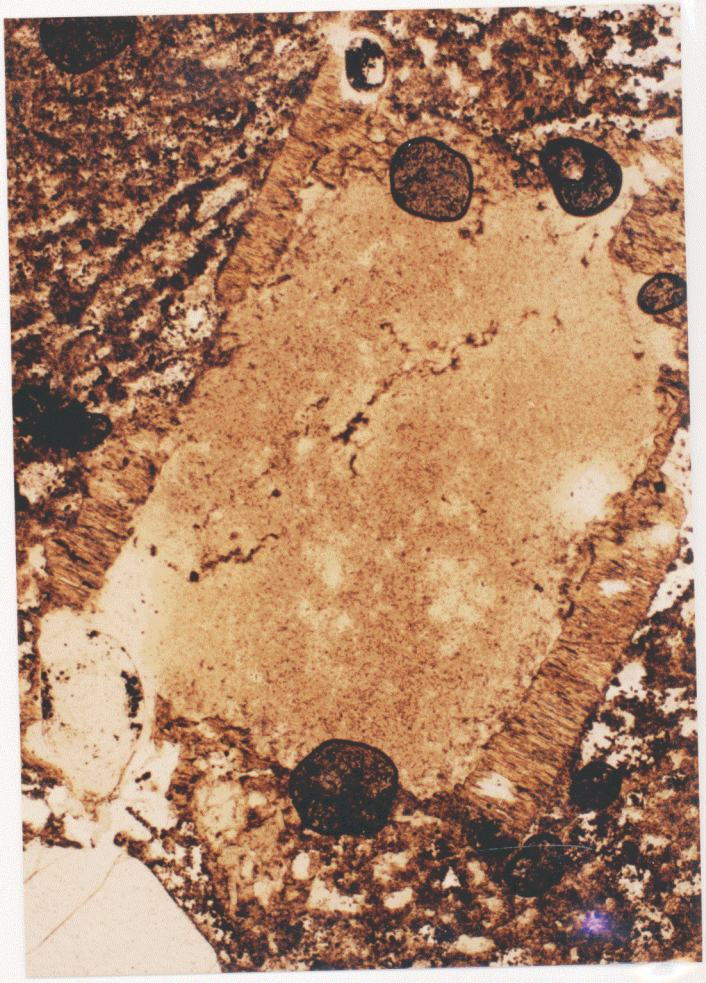
Type of photography: Standard Thin Section

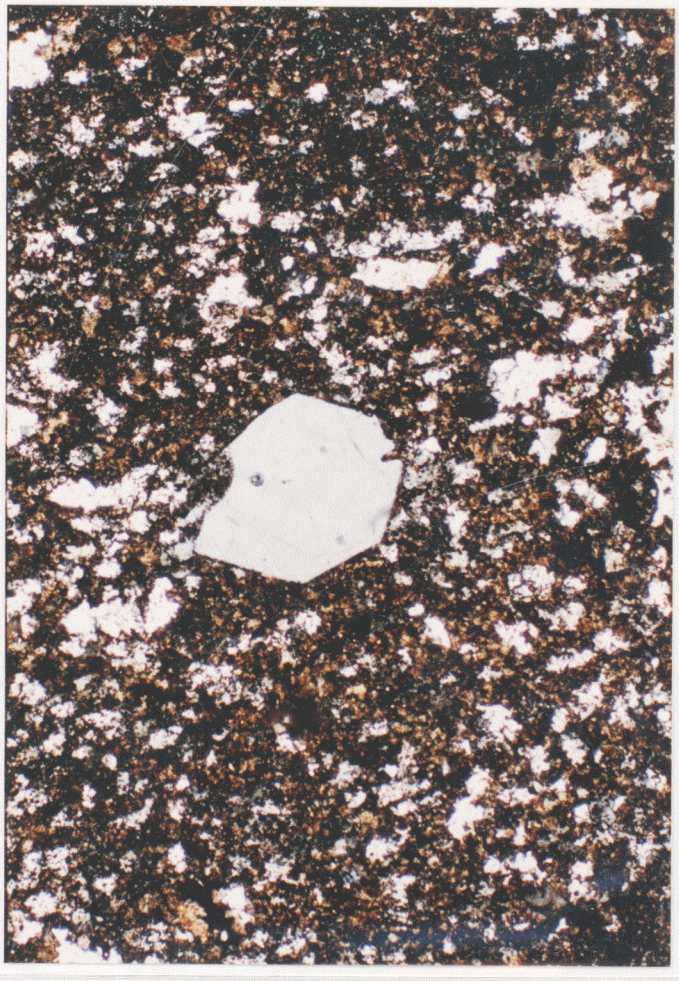
Camera: Nikon

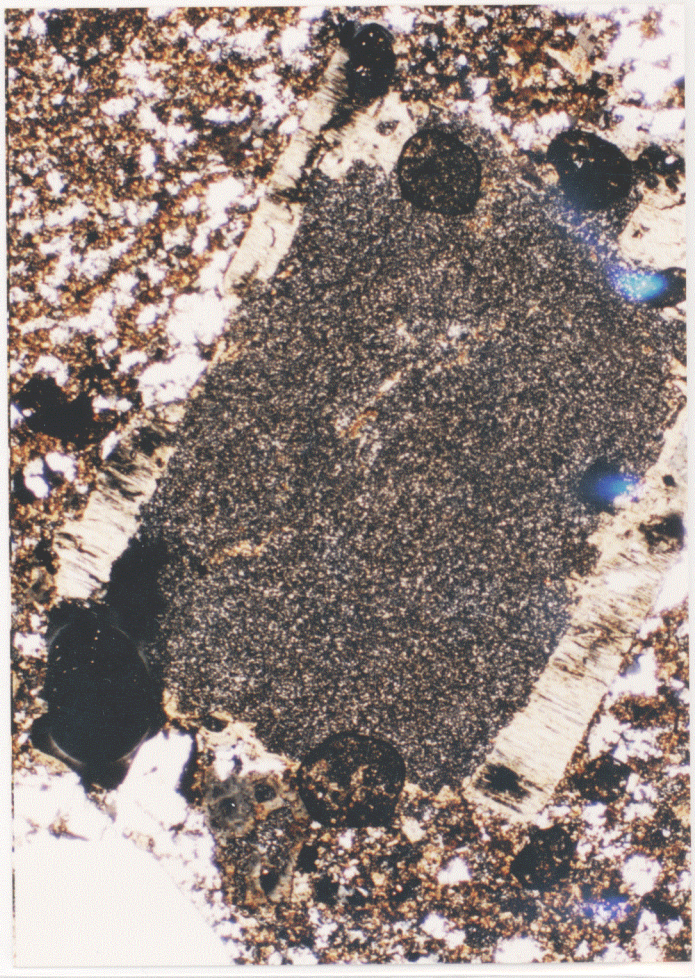
Date: 5/3/91

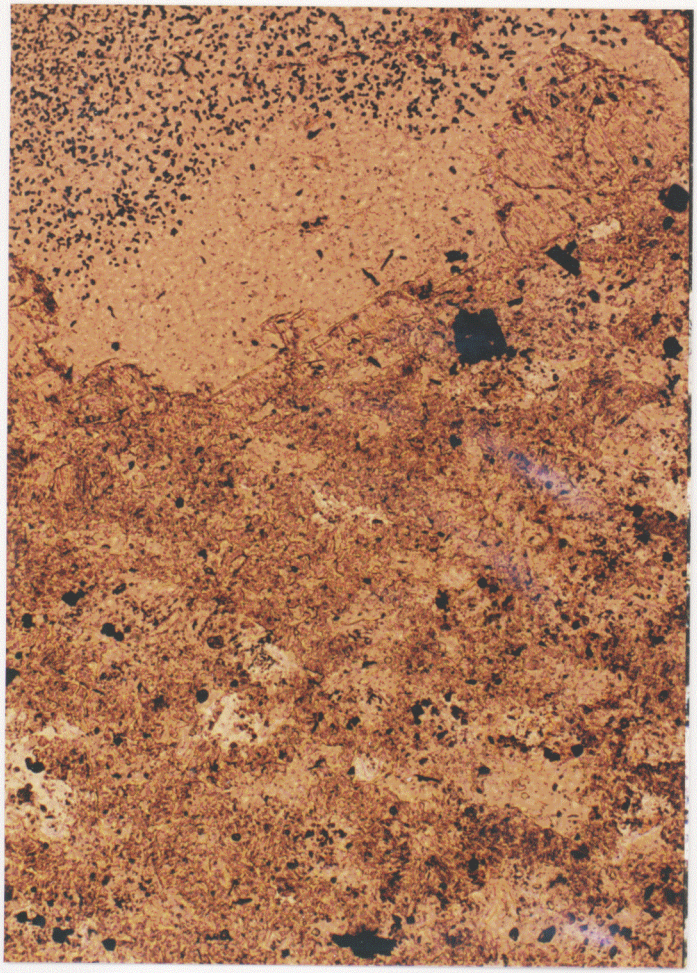
Film: Ektar 125

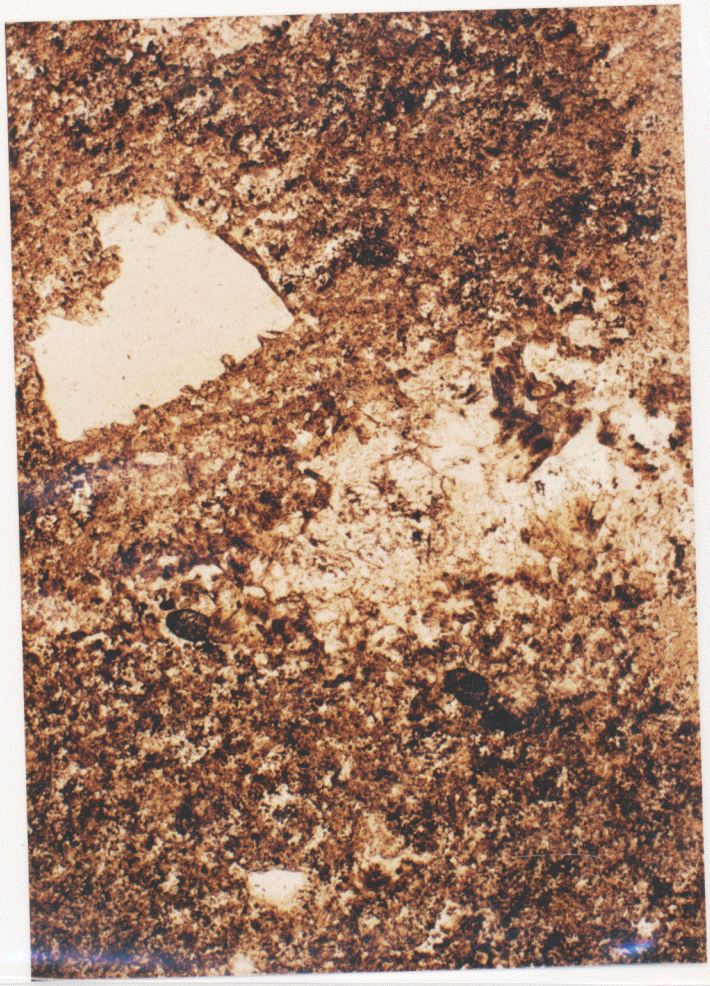
Photo No.	Sample No. and description	Obj.	FOV	Light
	ESC-ECP-1-TS2			
7	Phenocrysts & VRF in altered groundmass. Phenocryst completely replaced by quartz	4x	3.0mm	XN
8	Same as #7	4x	3.0mm	PL
9	Replaced & fresh phenocrysts & VRF in altered groundmass	4x	3.0mm	XN
10	Albite - quartz-calcite replacing a phenocryst or lithoclast	4x	3.0mm	XN
11	Closeup of altered groundmass	10x	1.7mm	XN
12	Same as #11	10x	1.7mm	PL

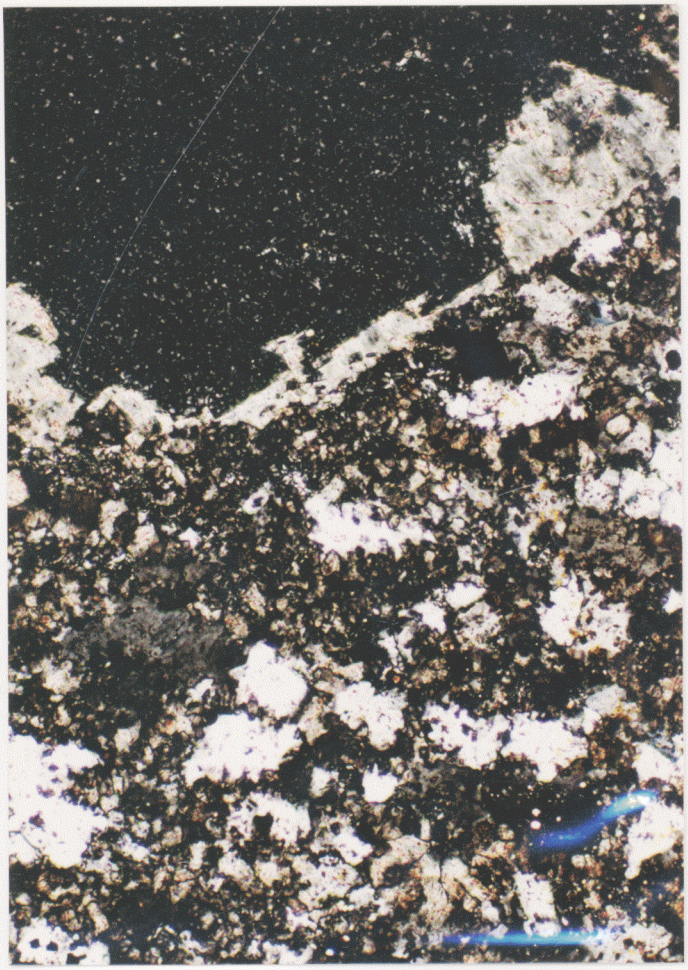


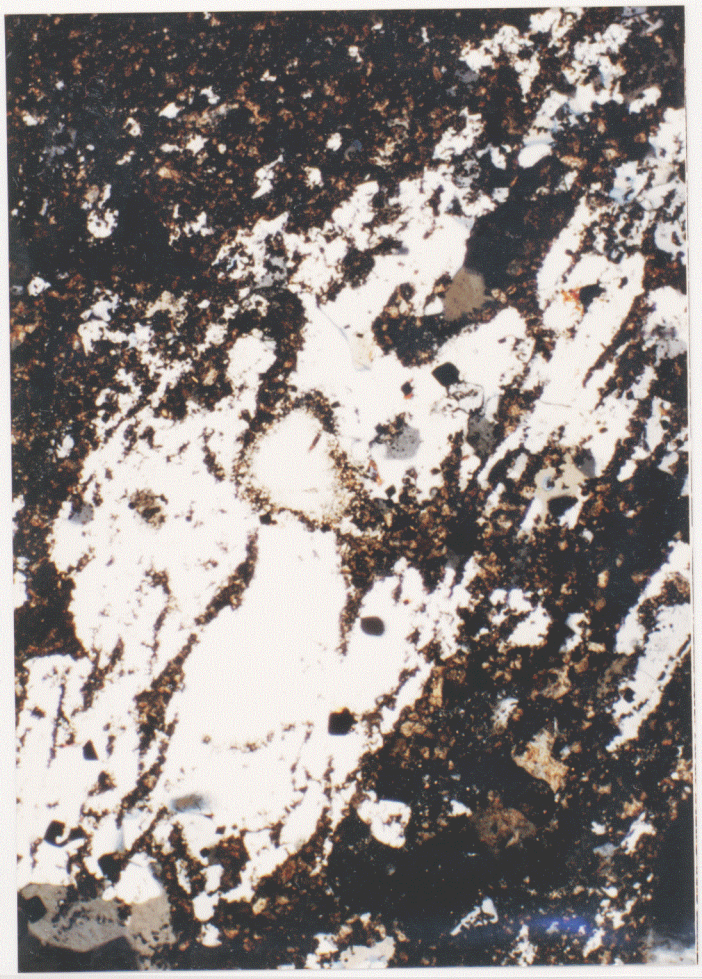


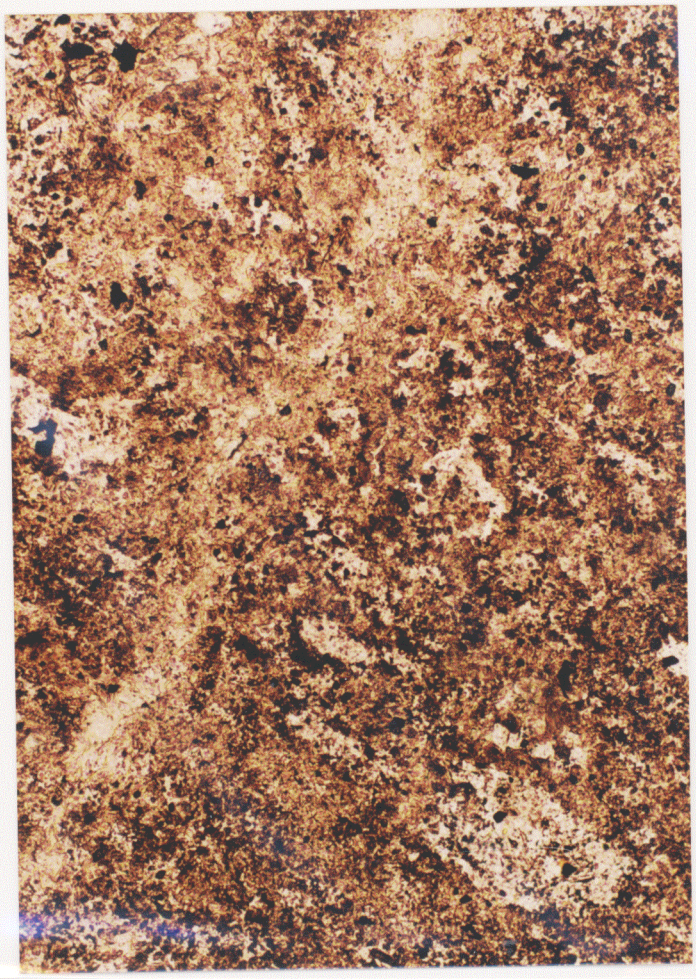


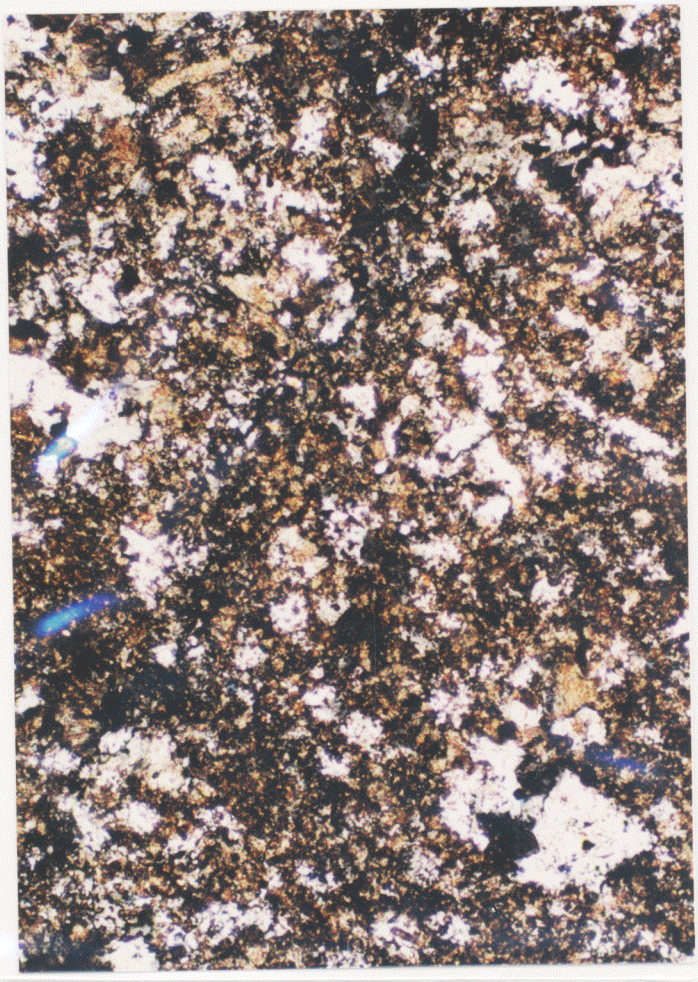












NOPI-ECP-9

PETROGRAPHY

Sample No.: NOPI-ECP-9-TS1

Locality: Sierra Pena 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:

VRFs - 12%

Texture or fabric:

Weakly welded, porphyritic.
In plane light, some vitroclastic texture preserved - ghost like 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.
VRFs 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%

Crypto crystalline 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: 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
	POPI-ECP-9-TS1			
13	VRFs in altered groundmass Calcite replacement.	4X	3.0mm	XN
14	Same as #13	4X	3.0mm	PL
15	Fibrous calcite? replacing VRF in altered groundmass	10X	1.7mm	XN
16	Same as #15	10X	1.7mm	PL
17	Closeup of altered groundmass	10X	1.7mm	XN
18	Same as #17	10X	1.7mm	XN

PHOTOGRAPHY

Photographer: JP
Microscope: Nikon

Type of photography: Standard Thin Section
Camera: Nikon

Date: 5/3/81
Film: Ektar 125

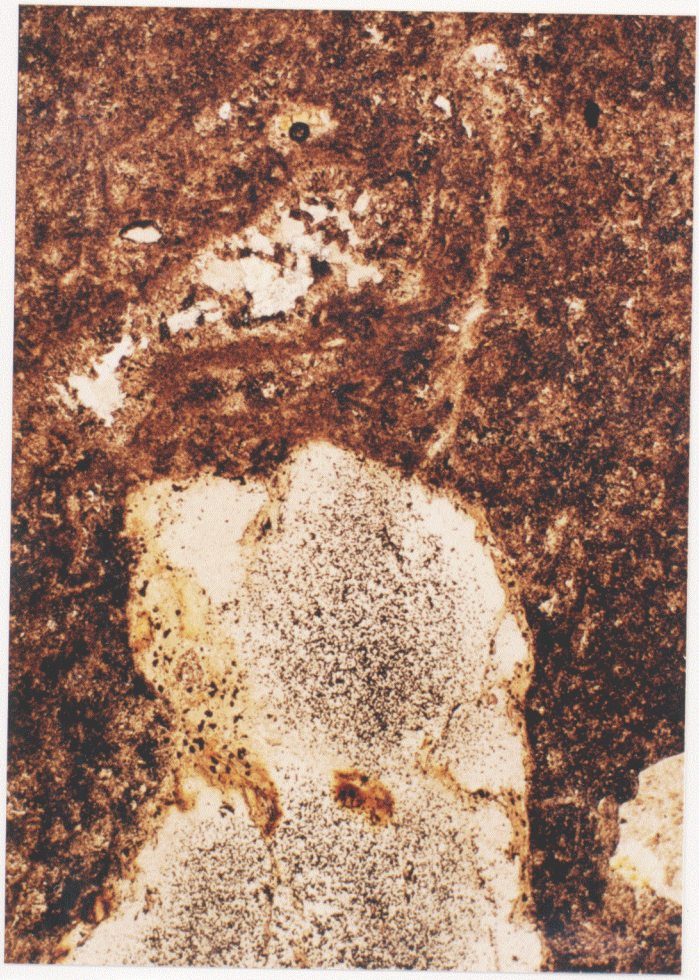
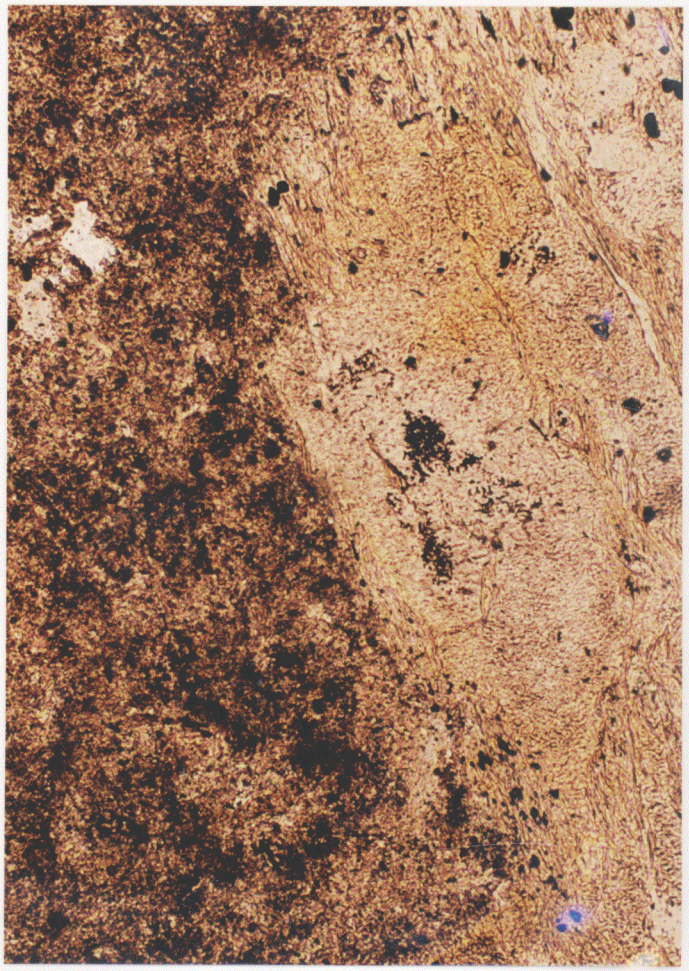
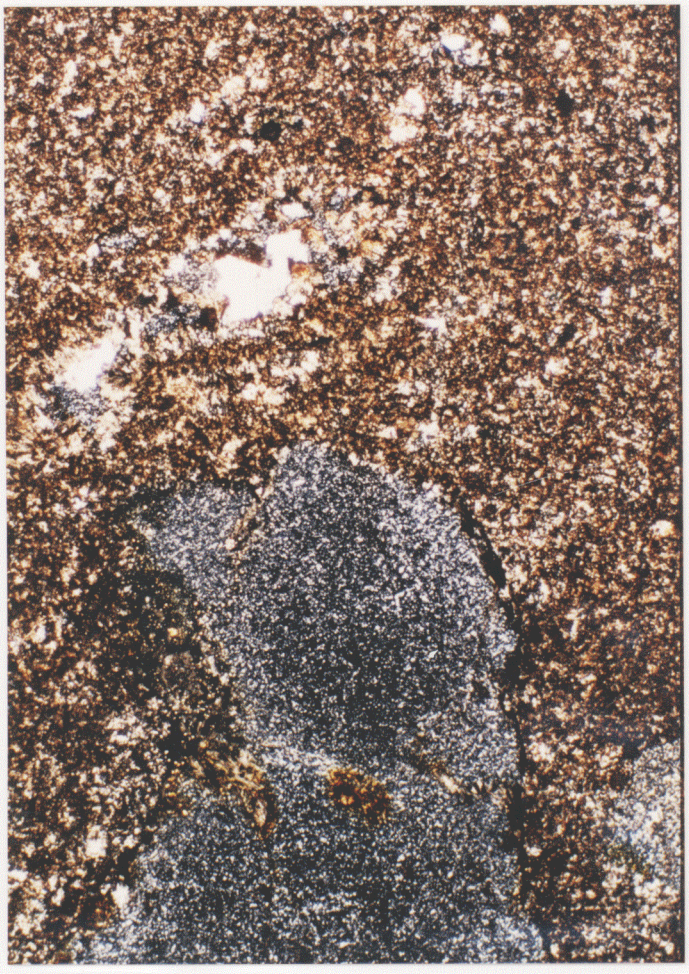
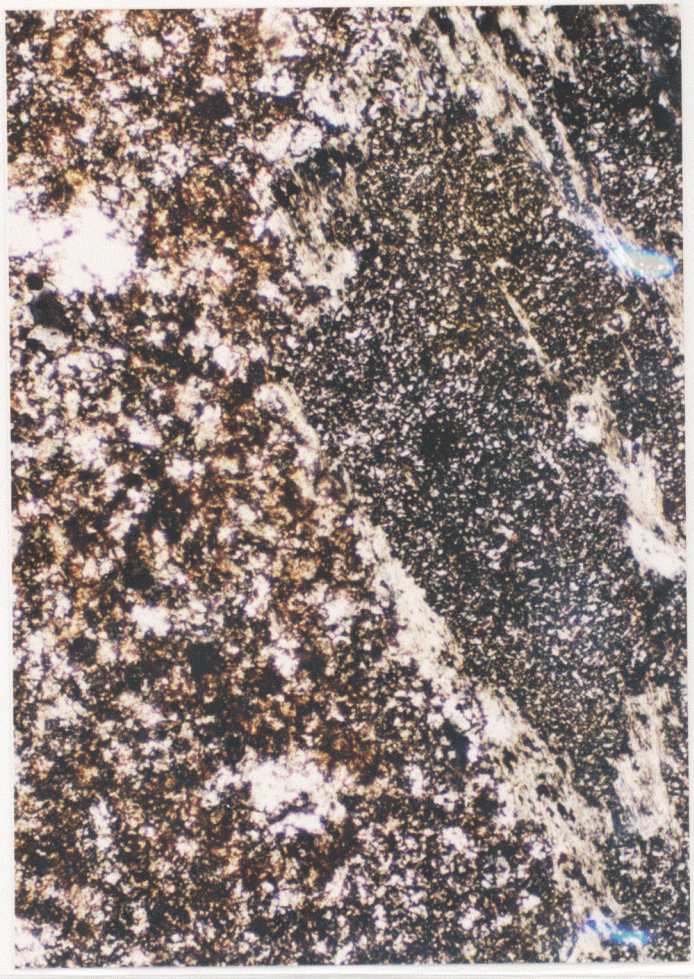
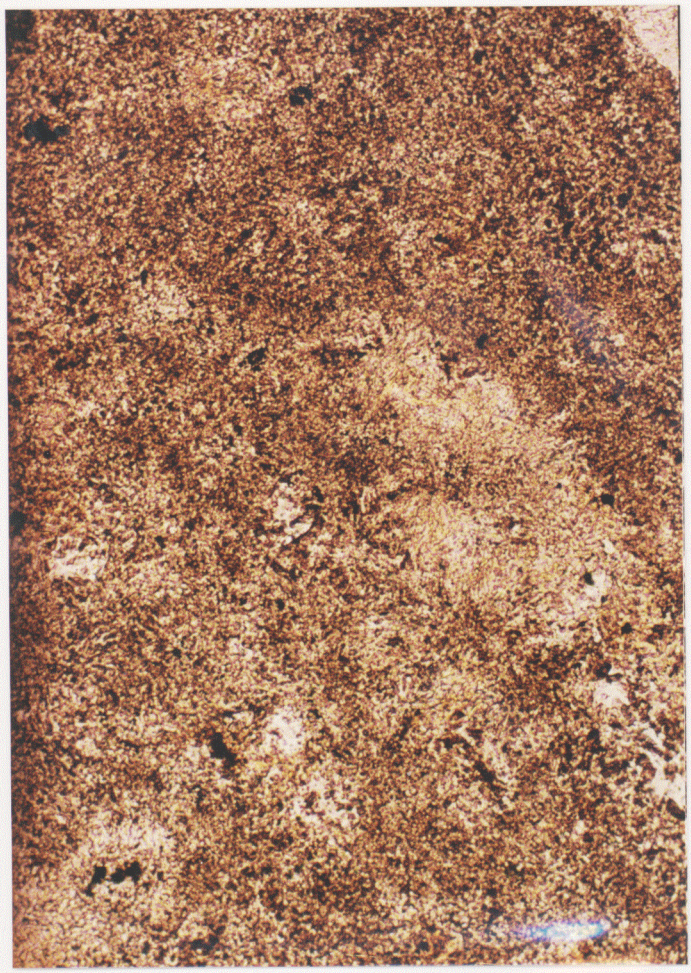
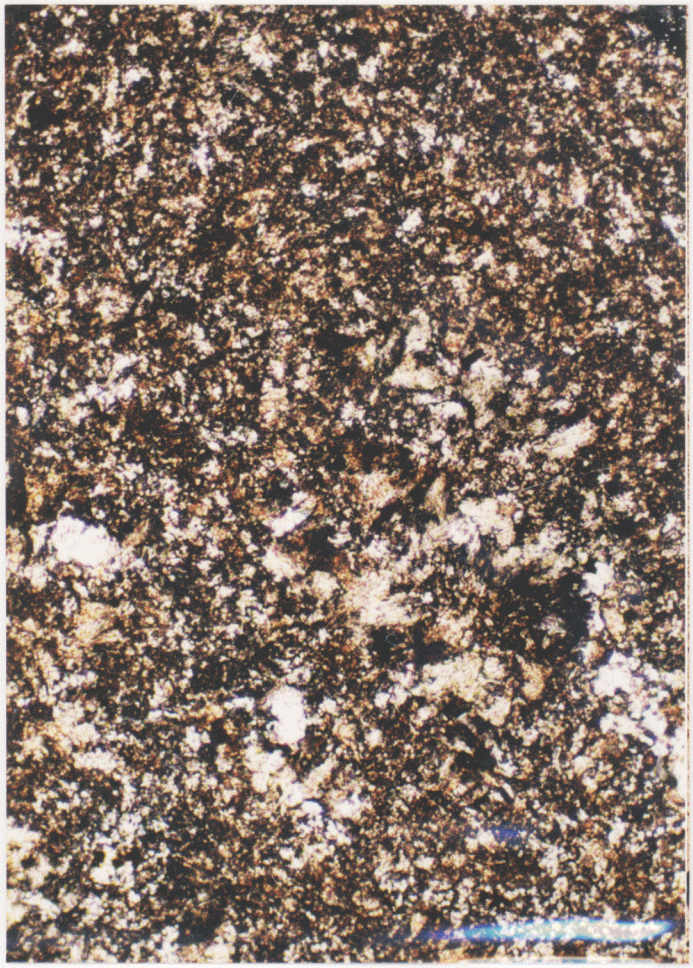
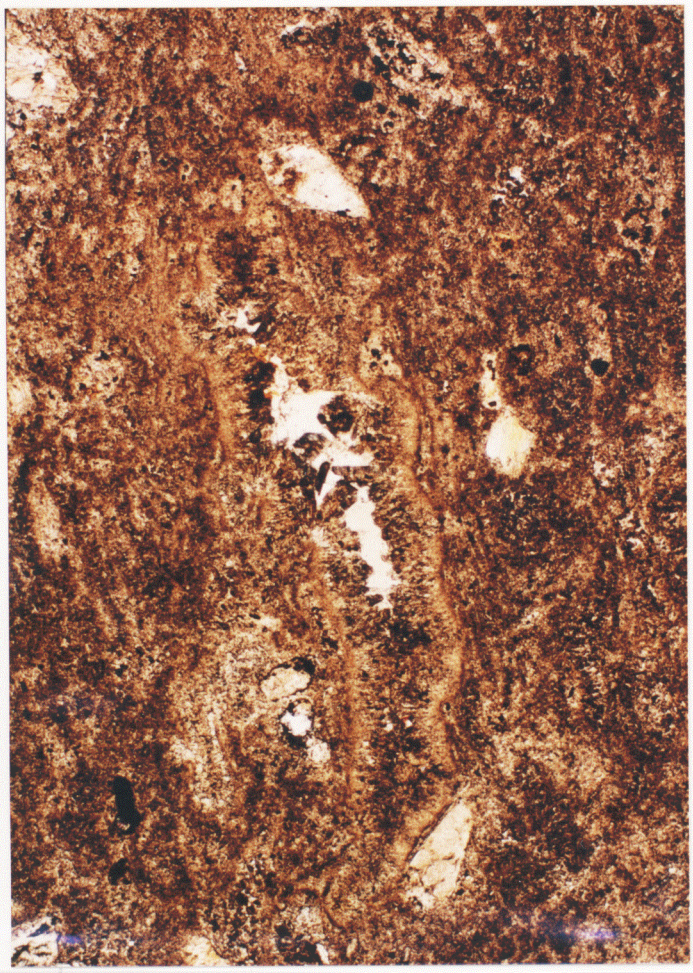
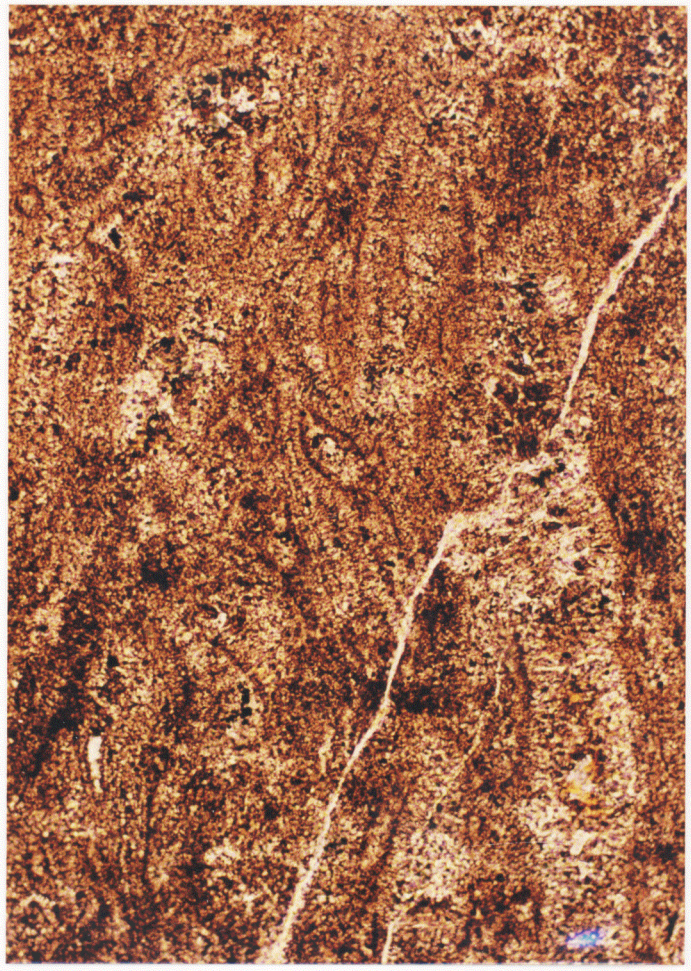
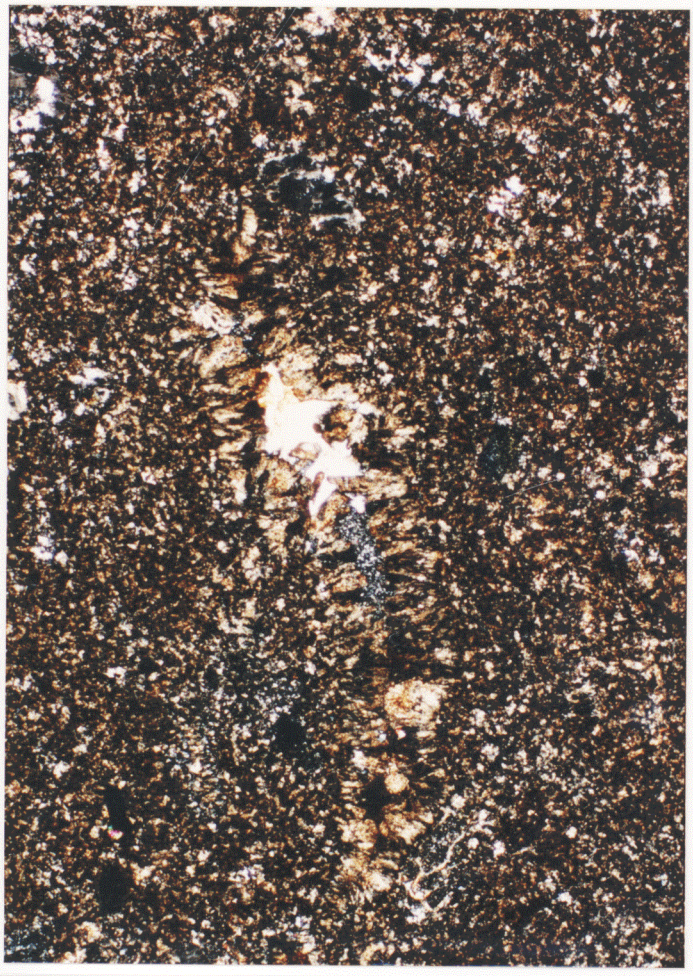
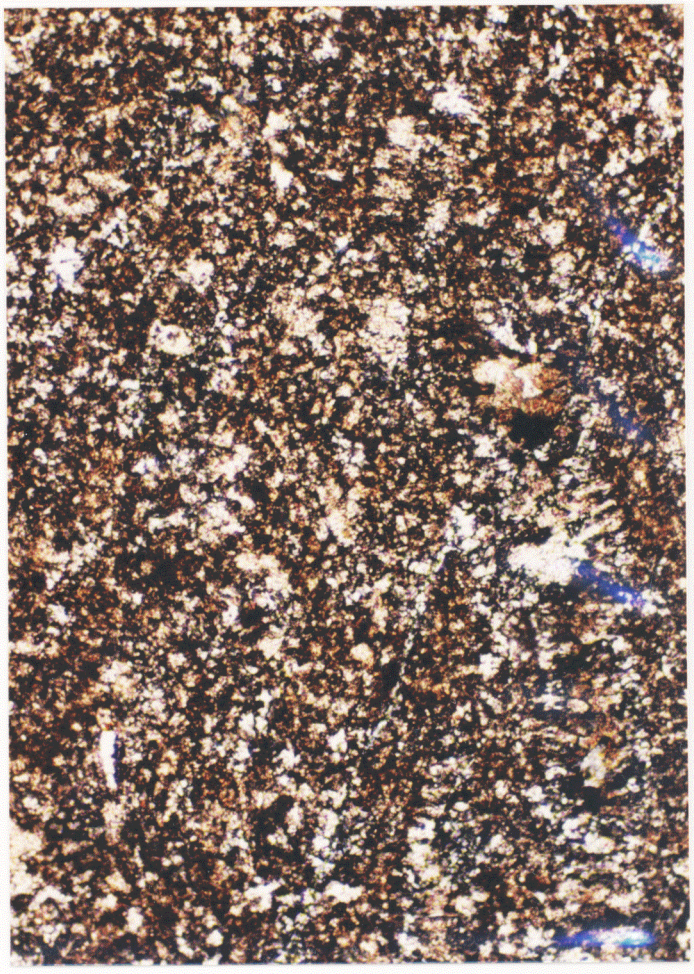



Photo No.	Sample No. and description	Obj.	FOV	Light
	NOPI - ECP-9-TS2			
19	Quartz phenocryst in altered groundmass.	4x	3mm	XN
20	VRFs in altered groundmass	4x	3mm	XN
21	Fibrous calcite replacing a VRF	4x	3mm	XN
22	Same as #21. Native preserved vitroclastic texture	4x	3mm	PL
23	Closeup of altered groundmass	10x	1.7mm	XN
24	Same as #23. Native eutaxitic texture preserved.	10x	1.7mm	PL