NTS: 92P/2W
Lat: 51 04 59N
Long: 120 52 06W
Elevation: 915 M

GEOLOGICAL GEOCHEMICAL REPORT ON THE PUMICE CLAIM GROUP

Clinton M.D, B.C

BY

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SUMMARY

The Pumice claim group is comprised of nine contiguous mineral claims (Pumice 1-7and Pumice 28-29). The claim group lies approximately 60 kilometers northeast of the town of Cache Creek, in south-central British Columbia.

Geologically the property is underlain by massive rhyolite ash of the Miocene Deadman River Formation (Chilctin Group). The Miocene volcanic ash occurs in flat-laying beds, and are soft and poorly consolidated, composed of sandy pebbly; white-light gray to buff colored, fine to very fine- grained lapillii tuffs.

Sherwood Creek Ash was previously tested for its pozzolanic properties. All chemical and physical results met the American Society for Testing Metals (ASTM) specifications. The ash is proved to be pozzolanic and can be used as a mineral admixture in concrete.

Previous investigation indicated that the ash is a quality absorbent for oil and oil products.

Recently, Sherwood Creek Ash was investigated as a Hi-Tech environmental product (Vitrolite).Such a product offers thermal conductivity and hardness values to all plastic products. Vitrolite can significantly reduce the mold cycle times, increase productivity and improve quality. Ultimate cost savings can be enormous in manufacturing plastic products.

The 2002 detailed work program has proved that the average glass content of the Sherwood Creek deposit is not high enough to be good source of Vitrolite. The average glass content of the lower unit is 61.1% and the average glass content of the upper unit is 34.7%. However, two layers of pure chalky ash hosted by the lower unit proved to be of top quality glassy ash. The glass content of the chalky ash within these two layers ranges between 85% and 90%, indicating high quality volcanic ash and an top quality source of Vitrolite.

A third layer of chalky ash was not tested during the 2002 field work due to the steepness of the west section of the deposit. This layer is located at the top of the upper unit. A sample collected from this layer returned a high glass content of 88.9%.

The property enjoys an excellent location in south-central British Columbia, with good road access and is a short distance from the Canadian National Railways.

The good potential expected for Vitrolite in three high quality ash layers, supported by the excellent road access suggests that the property has good potential for developing an economic Hi-Tech deposit of Vitrolite.

A second phase exploration program consisting of 400 meters of diamond drilling is highly recommended to test the extension of the glassy ash in order to determine the commercial value of the Vitrolite deposit. The drilling program will cost approximately $68,000.00.

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1.0 INTRODUCTION

This report presents the results of the 2002 fieldwork program completed on the Pumice Claim Group. The main purpose of this report is to evaluate the physical and chemical characteristics of the volcanic ash of the property, also to test the capability of the ash to be used as a Hi-Tech Vitrolite product in the plastic industry. The report also describes the regional geology and the past exploration in the area and outlines a budget proposal for the next phase exploration program. Three geologists and a field geotechnician performed the fieldwork in two trips, the first from August 31 to September 1st, and the second from October 19 to October 22, 2002.

This report is based upon the geological and geochemical results of the 2002 exploration activities on the property, previous work, and on a review of government assessment reports, regional geological maps, and claim data from the Mining Recorder's office. The writer was on the property between August 20th, and October 22nd, 2002.

2.0 LOCATION AND ACCESS

The Pumice Claim Group is located in south-central British Columbia, approximately 60 Km northeast of the town of Cache Creek.

Access to the property is via the Trans-Canada High-Way going east from Cache Creek, then follow the well maintained all weather Deadman Road going northeast for thirty-eight kilometers up to the property.

3.0 PROPERTY STATUS

The Pumice Claim Group consists of nine contiguous mineral claims, totaling nine units. The property lies in the Clinton Mining Division and is wholly owned by Fayz Yacoub of Surrey, British Columbia.

The pertinent claim data is as follows:

Claim Name	Record #	No of units	Expiry Date
Pumice 1	370958	1	Aug 17/2008*
Pumice 2	370959	1	Aug 17/2008*
Pumice 3	380955	1	Oct 02/2005*
Pumice 4	380956	1	Oct 02/2008*
Pumice 5	380957	1	Oct 02/2005*
Pumice 6	380958	1	Oct 02/2005*
Pumice 7	380959	1	Oct 02/2005*

... CLAIM GROUP (GENERAL LOCATION MAP)

SCALE 1 : 10,000,000

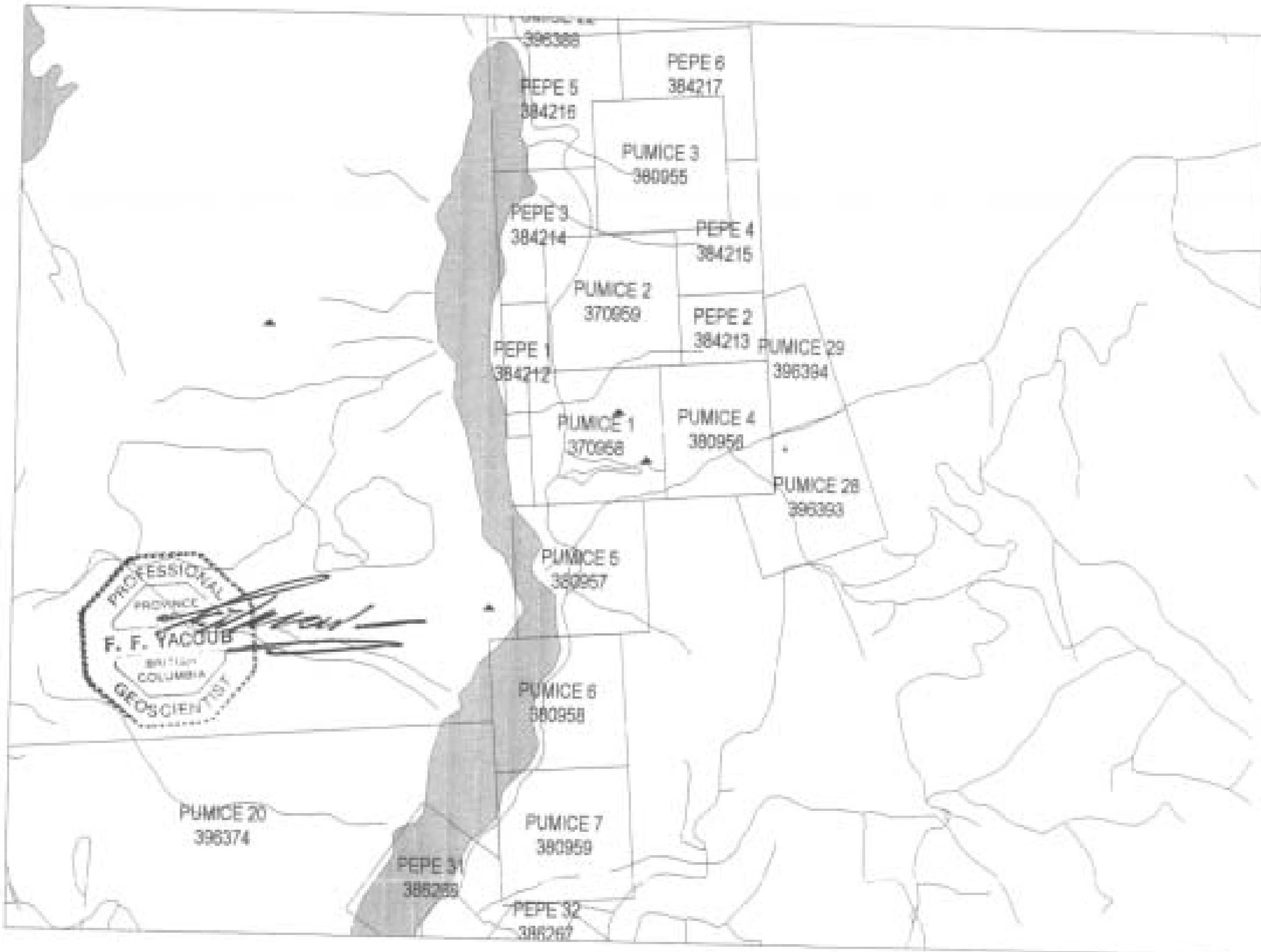
100 0 100 200 300
MILES

N

Fig 1

2

PUMICE CLAIM GROUP (CLAIM MAP)



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2,000 0 2,000 4,000 6,000
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Fig 2

N

Pumice 28	396393	1	Sep11/05*
Pumice 29	396394	1	Sep11/05*

* **Date up to which 2002 assessment report is accepted by the Gold Commissioner to be applied to the claims.**

The total area of the claims is 2.25 square kilometers, 225 hectares; 555.7 acres.

4.0 PROPERTY HISTORY

The Sherwood Creek occurrence was known for so many years as a good possible source of pozzolan. An attempt was made to exploit the deposit in 1959.

In June 1959, a little development work was done on the main exposure north of Sherwood Creek and a tractor road was put in for approximately 250 meters along the bottom exposure of the chalky white ash, and a shallow trench had been bulldozed northward up the slope. At approximately 90 meters west of the first trench a second trench was dug in horizontally for 60 meters and exposed 10 meters of white ash. At approximately three hundred meters north of the second trench a third trench was put in for thirty meters and exposed a buff colored ash. White ash was found extensively at the main deposit and in another outcrop approximately 1.5 kilometers south of the Sherwood Creek deposit by the main road. The ash is very uniform in color and extremely fine grained. Previous test showed that 83.6 % of the ash material passed through a 200 mesh screen.

The following shows a screen analysis of a sample from the white fine ash

Retained on (mesh)	%
35	0
48	0.10
65	0.30
100	0.60
150	0.80
200	14.50
Through 200	83.60

A Petrographical analysis indicated that the ash consisted mainly of angular fragments of clear volcanic glass

Three representative samples were previously analyzed to determine the chemical composition of the ash. The results are as outlined below:

	(1) Wt %	(2) Wt %	(3) Wt%
SiO_2	73.10	71.70	70.10
Al_2O_3	12.46	13.88	14.31
Fe_2O_3	1.74	1.82	2.69
CaO	nil	nil	1.60
K_2O	3.46	3.09	2.66
Na_2O	2.98	1.80	1.64
MgO	0.46	0.38	0.47
H_2O	1.90	4.01	2.27
Organic matter	3.86		
	------	-----	-------
Total	99.96	99.78	100.04

1. Finest material (80%-200 mesh)
2. Medium fine material
3. Coarsest bed

To test the pozzolanic reaction of the ash, a channel sample was collected over 25 meters above the top white bed at the main outcrop of the Sherwood Creek deposit

Chemical Analysis

Test	A.S.T.M. Requirement	Sherwood Creek Deposit
$SiO_2+AlO_2+Fe_2O_3$	Min. Per cent, 70.0	84.80
MgO	Max .Per cent, 5.0	0.49
SO_3	Max .Per cent, 3.0	0.10
Ignition loss	Max .Per cent, 10.0	7.25
Moisture content	Max .Per cent, 3.0	3.23

Physical Tests

Test	A.S.T.M. Requirement	Sherwood Creek Deposit
Specific gravity		2.44
Fineness: %	Max 12%	1.00
Activity index with cement % of control at 28 days	Min 75	84
Activity index with lime at 7 days	Min 600psi	709
Water requirement% of control	Max 115	97
Drying Shrinkage	Max.0.03	-.008
Autoclave expansion %	Max 0.5	0.06

The test results meet the chemical and the physical requirements to be used as a mineral admixture in concrete. Tests have also indicated that the white ash is suitable for cream glazes on ceramic ware and as an ingredient for certain ceramic bodies.

In 1987, Veto Resources Ltd completed a drilling program consisting of six drill holes to test the Sherwood Creek deposit. Reserves of 10,000,000 tons were indicated and more ground acquisition to the east was recommended.

In 1993, Mr. Michel Dickens, the previous owner of the claims, conducted a limited prospecting program to test the quality of the ash to absorb oil and eliminate odor. His home testing results indicated that Sherwood Creek volcanic ash has a remarkable quality to absorb crude oil and to eliminate ammonia odor.

In 2001, a previous fieldwork program was conducted to test the capability of the ash to absorb oil and oil products. Results indicated that Sherwood Creek ash is a high quality absorbent for oil products.

5.0 REGIONAL GEOLOGY

After P.B.Read

Basalts of the Miocene Chasm Formation (Chilcotin Group) are the most abundant rocks in the region, however The massive rhyolite ash of the Miocene Deadman River Formation is exposed beneath the basalts as outcrops and cliffs on the east side of the Deadman Valley for a length of 6.5 kilometers.

The Miocene succession consists of up to 350 meters of fluviatile rhyolite ash and fine clastic sediments underlying a minimum thickness of 500 meters of olivine basalt flows. These rocks belong to the Chilcotin Group.

Rocks of the Deadman River Formation underlie parts of the valley walls of Deadman River. White to buff-weathering of massive rhyolite ash dominates, and white tuffaceous sandstone and shale occur near the top of the sequence. In the Deadman River valley, Campbell and Tipper
(1971) suggested that diatomaceous layers up to 4 meters thick occur near the bottom of the succession.

Cross-section of the Miocene Deadman channel (Mio-Deadman) is 2 kilometers wide and 380 meters deep with the lower 200 meters filled mainly with rhyolite ash of Deadman River Formation (Read 1988).

Bevier (1983) noted that the present courses of the Fraser and Chilcotin Rivers were established during the late Miocene. The near coincidence of the Mio-Bonaparte channel and present Bonaparte River, Mio Deadman and present Deadman, and Mio-Snohoosh with Snohoosh Lake may have the same implication of the Late Miocene development.

PUMICE CLAIM GROUP (REGIONAL GEOLOGY MAP)

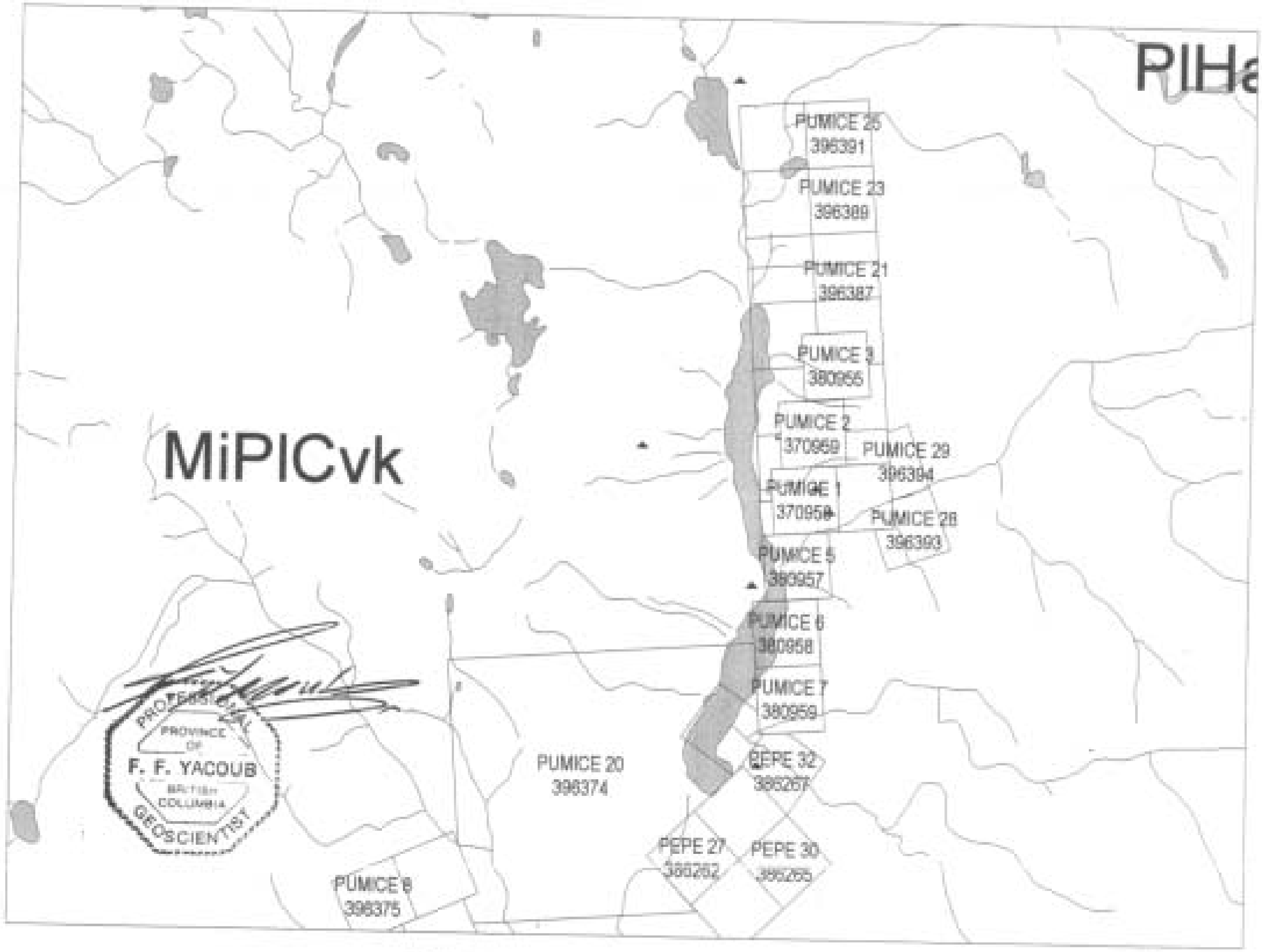

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Fig 3

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Geology Legend

PLEISTOCENE TO HOLOCENE

PlHal alluvium, till

MIOCENE TO PLEISTOCENE

CHILCOTIN GROUP

MiPlCsc coarse clastic sedimentary rocks

MiPlCvk alkaline volcanic rocks

LATE TRIASSIC TO EARLY JURASSIC

LTrJgd granodioritic intrusive rocks

UPPER TRIASSIC

NICOLA GROUP

uTrNvb basaltic volcanic rocks

Source: *Open File 1994-7 Geological Comilation of the Cariboo-Chilcotin area south-central BC*
Author (s): *P.Schiarizza, A. Panteleyev, R.G. Gaba and J.K Glover*
Source: *Open File 1996-20 (East Part)*
Author (s): *P. Schiarizza and N. Church*

This Database Last Updated: January 1998.

British Columbia Ministry of Energy and Mines
Geological Survey Branch

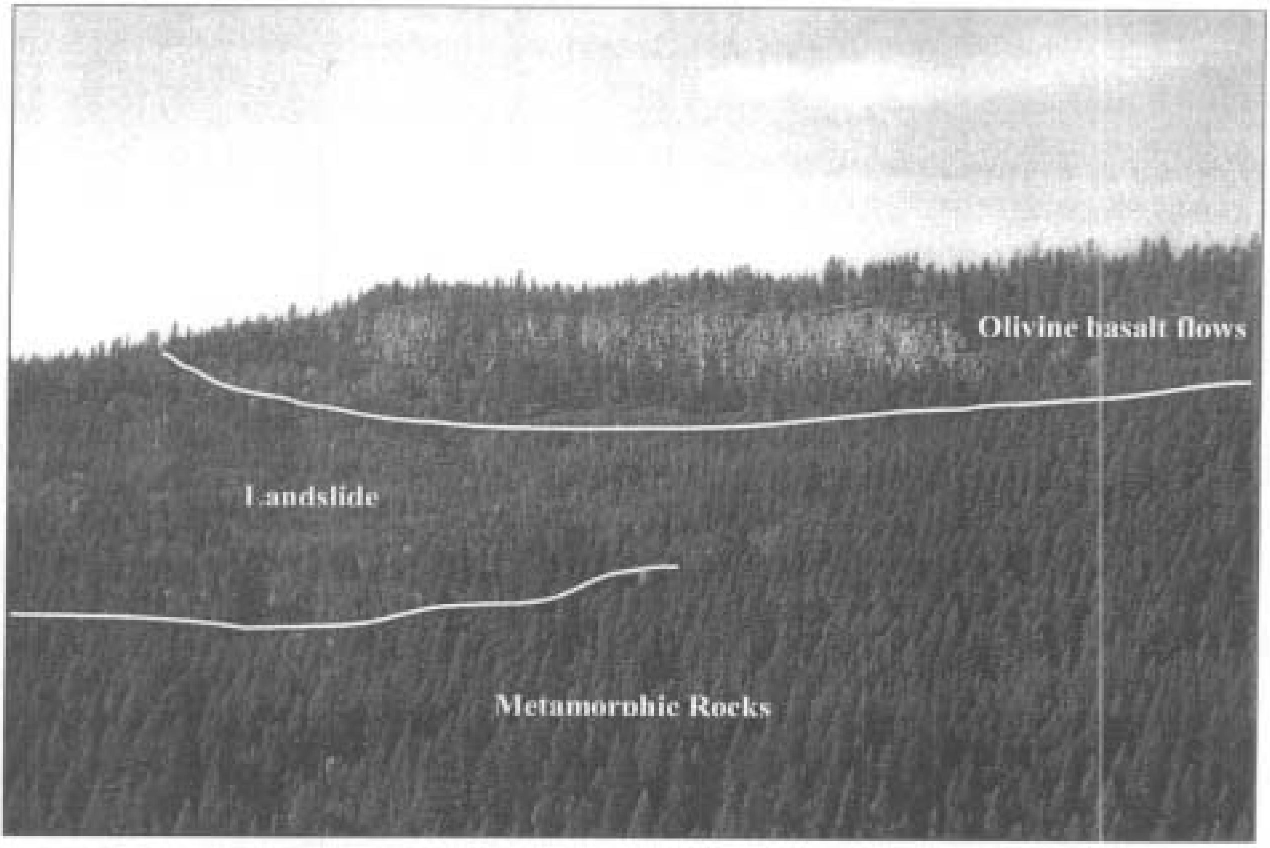


Figure4. Olivine basalt flows of the Chasm Formation overly the Deadman River Formation and cap most of the area.

6.0 THE 2002 FIELDWORK PROGRAM

6.1 Scope & Purpose

Between August 30th and October 22nd 2002 a four-man crew consisting of the writer, two geologists and one geotechnician carried out a fieldwork program on the Sherwood Creek Claim Group. The purpose of the program was to

A) Conduct detailed geologic investigation on the Sherwood Creek ash deposit located on the Pumice 1 claim. The investigation was focused on the quality of the ash to be used as **Vitrolite.**

B) To measure section and obtain detailed descriptions of the ash deposit; retrieve samples for visual analysis and X-ray diffraction analysis; and make recommendations for future development of the property.

6.2 Methods &Procedures

Prospecting and rock sampling was performed over the area of the Sherwood Creek volcanic ash. Control was established using G.P.S. A total of 24 rock samples were collected from the Sherwood Creek occurrence during the field visits (see figure # 6 for sample locations).

Four N-S trending sections (HD-1, HD-2, HD-4, HD-5) were measured with a five foot staff from the exposed base of the ash deposit along the north side of Sherwood Creek to the top of the deposit that is capped by the olivine basalt (Figure 6).

7.0 2002 RESULTS

7-1 WHAT IS VITROLITE

Vitrolite is an inert off-white material used to improve the physical properties of all plastic polymers. It is produced by a proprietary process from a natural amorphous aluminosilicate glass (high quality volcanic ash with high glass content).

The advantages of using Vitrolite in plastics are unmatched by any other single processing aid on the market today. Vitrolite

- Reduces costs by reducing cycle time and often reduces operating temperature

- Achieves increased impact strength and other physical properties for higher quality products.

- Increased production throughout by 20% based upon the application
- Lower viscosity for better mold fill, fewer short shots, and les rejects.
- Enhanced dispersion, increases effectiveness of additives and possibly reduces pigment load.
- Temperature and molding pressure are often lower, creating less energy consumption and more durable products.

Vitrolite is also a new product that contains special reinforcements which permit very rigid and light material widely used by the leading manufactures of motorhomes in the USA with high success.

The market price for quality Vitrolite ranges from $7 to $8 per pound.

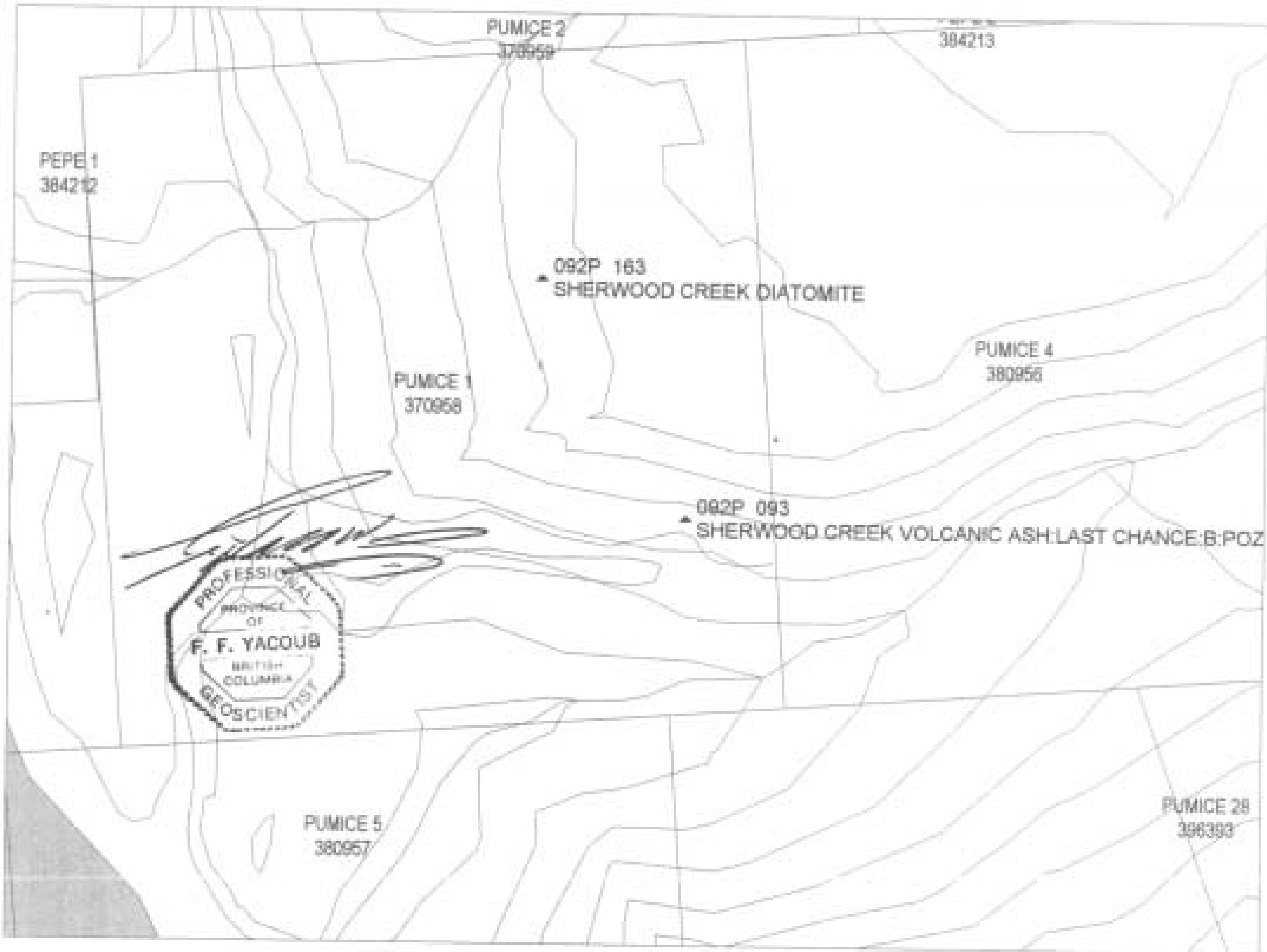
7.2 PROPERTY GEOLOGY (Figure 5, 6 & 7)

The area of the property is underlain by massive rhyolite ash of the Miocene Deadman River Formation (Chilctin Group). The Miocene volcanic ash occurs in flat-laying beds and are soft, poorly consolidated, and composed of a sandy pebbly; white-light gray to buff colored very fine to fine- grained lapillii tuffs with varies size cavities.

The Sherwood Creek volcanic ash occurs as large, fairly well exposed outcrops located on the Pumice 1and Pumice 4 claims, 250-300 meters north of the Sherwood Creek, and measures about 400 meters long, 250 meters wide, and 100 meters in depth. Exposures can be seen in an easterly direction for at least 400 meters. In some places the weathering of the tuffs has left isolated pinnacles 10 to 15 meters high. Within these tuffs are three horizontal beds of pure white, highly siliceous material, three to four meters thick and separated from one another by 10 to 30 meters of tuffs. The finest material at the bottom of the section, located along the old bulldozer road cut has the appearance of pure white chalk.

The volcanic ash of Sherwood Creek is capped by olivine basalts of the Chasm Formation. The ash is typically tan-brown on both fresh and weathered surfaces. Although, two layers of white, friable ash are found within the exposed section. The ash forms steep slopes (inclination of 50º) that are covered by loose soil, small bushes, and scattered pine trees (Figure 7).Overall, exposure of the ash on the property is limited, but the Sherwood Creek Deposit has an excellent exposure on the north side of Sherwood Creek.

SHERWOOD CREEK ASH DEPOSIT (MINFILE LOCATION MAP)



SCALE 1 : 5,000

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Fig 5

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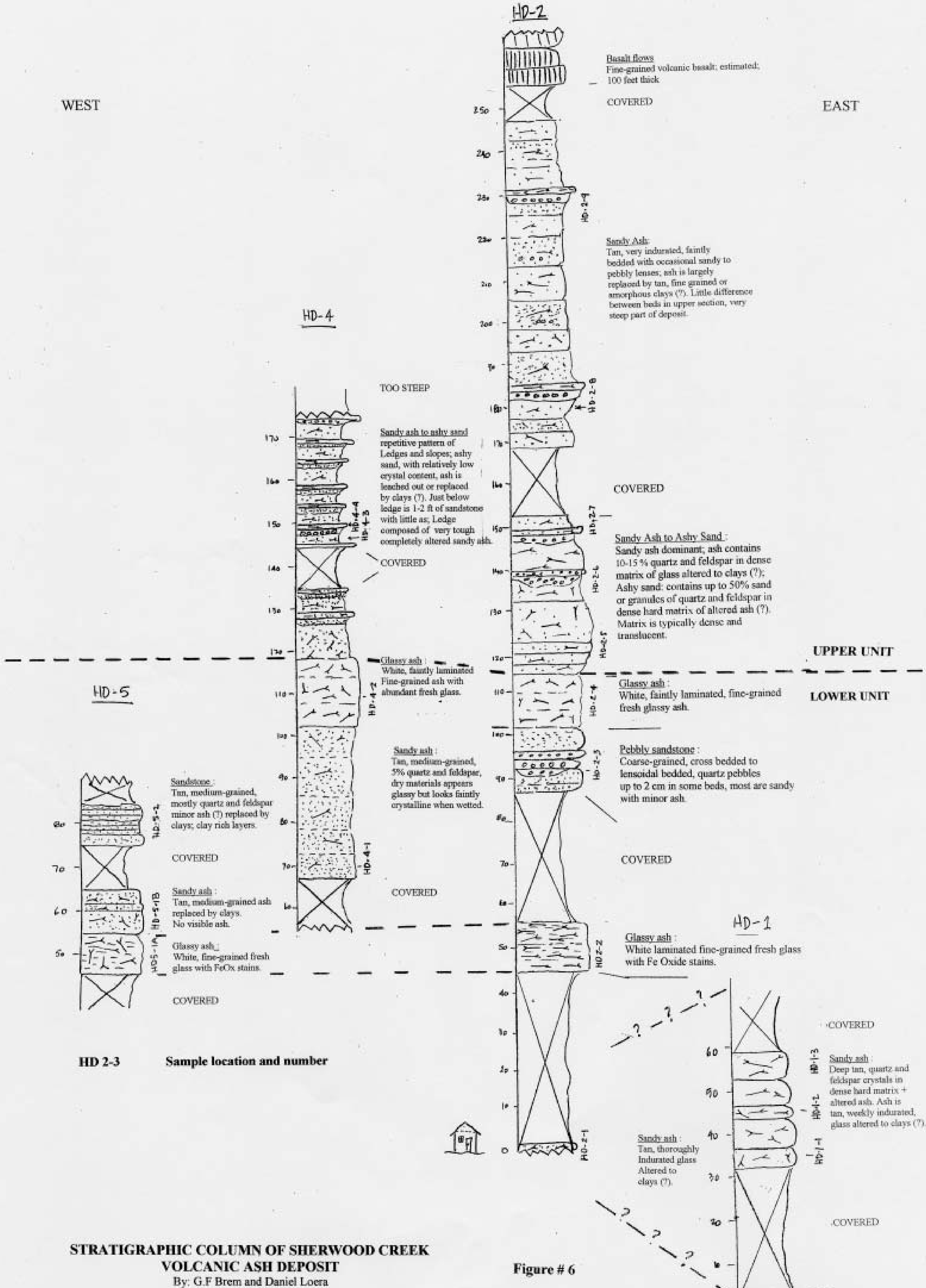

STRATIGRAPHIC COLUMN OF SHERWOOD CREEK VOLCANIC ASH DEPOSIT

By: G.F Brem and Daniel Loera

October, 2002

Figure # 6

Figure 7. The ash deposit on the Pumice 1 claim forms steep slopes that are mostly covered by soil, grasses, and scattered pine trees.

7.3 MEASURING THE SECTION OF THE ASH (Figure 6)

After Daniel M. Loers

Four N-S trending sections (HD-1, HD-2, HD-4, and HD-5) were measured with a 5-foot staff from the exposed base of the ash deposit along the north side of Sherwood Creek to the top of the deposit that is capped by the olivine basalt (Plate 1). Since soil cover limited outcrop exposure, it was impossible to measure a complete section from the exposed base to the overlying olivine basalt. However, four partial sections were measured and then correlated to one another by means of distinctive layers (Plate 1). From this we were able to derive an approximate minimum total thickness of 315 feet as well as indications of lateral variation in ash characteristics. Since it was not possible to sample at regular intervals due to soil cover, the samples were collected at every 10 to 20 feet where the ash was exposed. The samples were sequentially numbered from the base of a section to the top of a section, and the four sections were labeled as HD1, HD2, HD4, and HD5. Three samples were collected from the HD1 section, eight samples were collected from the HD2 section, four samples were collected from the HD4 section, and three samples were collected from the HD5 section. The total number of sample collected was eighteen.

7.4 DESCRIPTION OF THE ASH BASED ON MEASURED SECTION

Modified after Daniel M. Loers

Based on the field descriptions, the 315- foot thick ash is divided into two units: a lower unit and an upper unit (Figure 6). This division is based on a change (mid-section) from altered sandy ash layers to predominantly altered sandy ash layers, sandstone, and pebbly sandstone.

The lower unit is approximately 175 feet thick and is composed primarily of tan, sandy ash. The volcanic glass is extensively altered to clays and an unidentified amorphous material (not volcanic glass) coats the exposed surfaces. At 45 feet and 105 feet above the exposed base in column HD2, two pristine white, glassy ash layers are well exposed. The lower of the two glassy ash layers is 10 feet thick, located at 45feet above the exposed base in column HD2, Figure 6). The upper glassy ash layer is 15 feet thick and is located 105 feet above the exposed base in column HD2, and caps the top of the lower unit.

The upper unit is approximately 140 feet thick and is comprised of a series of ashy sandstone layers that lie between the upper ash layer of the lower unit and the overlying basalt flow. The lower 70 feet of the upper unit is composed of tan sandy ash that is thoroughly altered to clays and an unidentified amorphous material. The upper 70 feet of the upper unit is composed primarily of interbedded sandy ash, ashy sandstone,

Figure 8. Lower of the two layers of white, glassy ash found in the lower unit on the Pumice 1 claim.

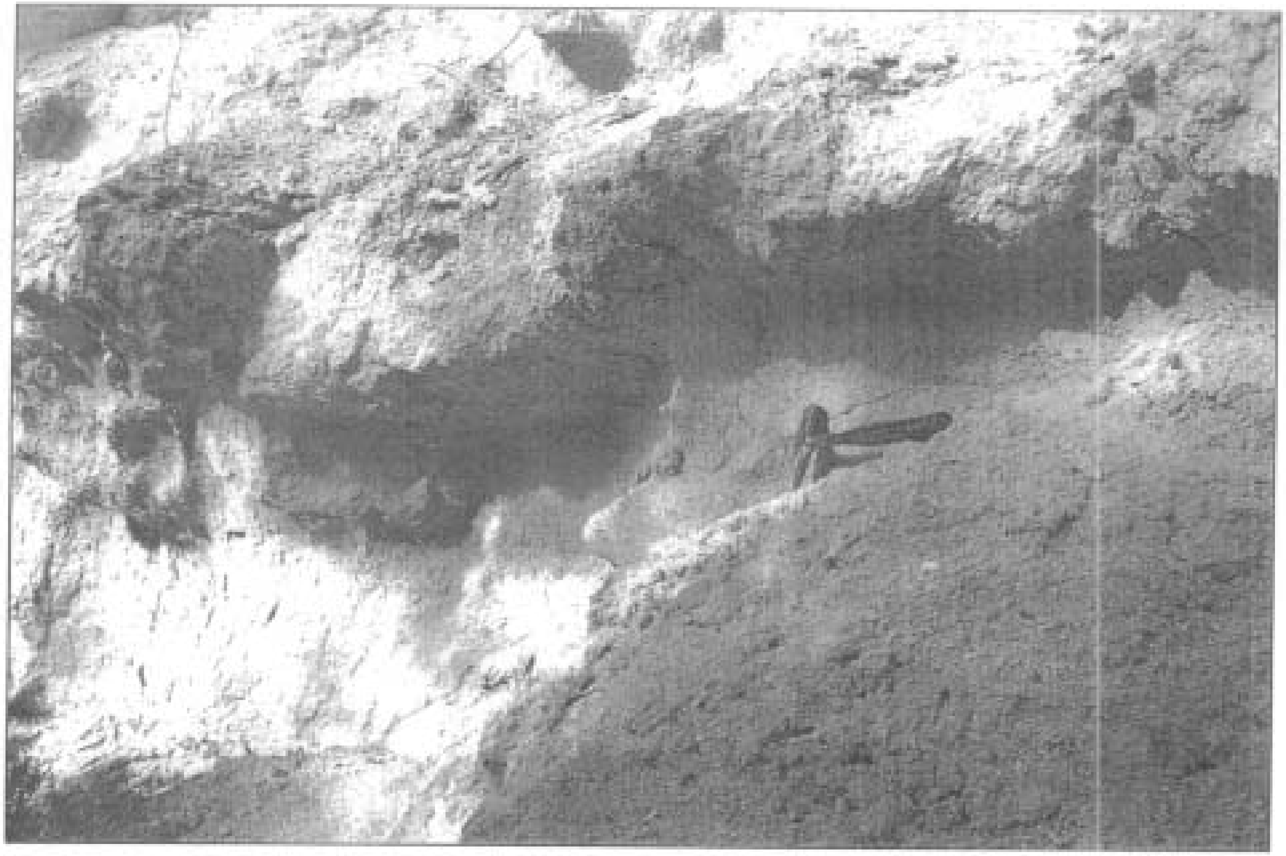

Figure 9. The upper unit is composed primarily of interbedded sandy ash, ashy sandstone, and pebbly sandstone layers.

and pebbly sandstone layers (Figure6). There are no glassy ash layers present in this upper unit and the ash is not clearly visible in any of the outcrops.

7.5 VISUAL DESCRIPTIONS OF HAND SPECIMEN (Appendix 1)
Modified after Daniel M. Loers

Binocular microscope examination of the hand samples indicates the ash has been extensively altered to clay and amorphous material (Appendix 1). In most cases, clay and amorphous alteration account for well over 50% of the sample (Table 1 and 2). Furthermore, many of the ash layers are contaminated by significant amounts of quartz and feldspar sand and/or pebbles. Of the eighteen samples described, only three of the samples have visual glass content above 60%, suggesting that glassy ash is not abundant in the exposed section.

The samples collected from the lower unit have very low visual glass content, with the exception of the three samples collected from the two glassy ash layers of this unit (Table 1). The samples collected from the upper unit have visual glass content that is generally slightly higher than those of the lower unit, however, the visual glass content of these samples is still relatively low (Table 2).

Table 1

Visual examination of glass content and abundance of clay and amorphous alteration of samples collected from the lower unit during the second trip

Sample	% Alteration	% Volcanic Glass
HD2-4	5	90 (u)
HD4-2	9	85 (u)
HD2-3	15	10
HD5-2	68	10
HD4-1	34	60
HD5-1B	87	7
HD5-1A	84	10
HD2-2	10	87(L)
HD1-3	65	25
HD1-2	48	45
HD2-1	91	5
HD1-1	88	5

(u) Upper glassy ash layer of the lower unit (L) Lower glassy ash layer of the lower unit

Table 2

Visual examination of glass content and abundance of clay and amorphous alteration of samples collected from the upper unit.

Sample	% Alteration	% Volcanic Glass
HD2-9	64	25
HD2-8	64	15
HD4-4	58	15
HD4-3	44	50
HD2-7	72	20
HD2-6	73	10
HD2-5	78	15

7.6 ANALYSIS BY THE X-RAY DIFFRACTION METHOD (Appendix 2)

Sample Preparation

Samples for x-ray analysis were prepared by grinding a small amount of rock in a mortar and pestle until the powder no longer felt gritty. Two-gram samples were prepared by thoroughly mixing 1.8 grams of rock powder and 0.2 grams of corundum standard and then gently packing into a stainless steel sample holder.

Analysis and Results

Samples were x-rayed with a Philips X'Pert PW3040 Pro x-ray diffractometer at 45 KV and 40 mA at a rate of 0.6º/ min. Mineral identities were determined using the High Score program and mineral abundances were determined by Rietveld analysis in the X'Pert Plus program. Both software programs are proprietary packages developed by PANalytical. Only fourteen samples were analyzed by x-ray diffraction because visual comparison of the four remaining samples to the analyzed samples conclusively indicated very low or non-existent glass content.

XRD analysis of the thirteen samples (Appendix 2) provides a general representation of the mineral composition and mineral variation within the ash deposit on the Pumice 1 claim. Typical mineral compositions identified by the XRD analysis are quartz, feldspar, sanidine, cristobalite, erionite (and other zeolites), and smecitite group clays. Significant mineralogical variation between the lower unit and the upper unit is noted below:

Lower Unit

- The overall glass content of the ash (excluding the two ash layers) in the lower unit is relatively low, averaging 61.1% (Table 3).

- The glass content as determined by XRD analysis is generally higher than visual estimation. However, the glass content as determined by the XRD analysis includes the amorphous material is substantially lower than reported by x-ray diffraction analysis. In this case, visual estimation provides a more reasonable estimation of the glass content of samples from the lower unit.

- Significant clay and amorphous alteration is present in all of the samples, except for the three samples from the two glassy ash layers, HD2-2, HD5-1A, and HD2-4 (Table 3). However, we currently do not have a method to determine the abundance of clay and amorphous alteration in these samples. Until such methods are developed, clay mineral abundances are included in the glass abundances.

Upper Unit

- The overall glass content of the ash in the upper unit is uniformly low, averaging 34.7% (Table 4).

- The glass content as determined by XRD analysis is generally higher than visual estimation. However, the glass content as determined by the XRD analysis includes the clay and amorphous material, so the volcanic glass content is substantially lower than reported by x-ray diffraction analysis. In this case, visual estimation provides a more reasonable estimation of the glass content of samples from the upper unit.

- Substantial amounts of quartz and feldspar were identified in all of the samples from the upper unit; thus suggesting that the upper unit is heavily contaminated with quartz and feldspar sand and/or pebbles. Most of the samples contain over 10% quartz and all the samples contain over 40% feldspar (Table 4).

- Clay and amorphous alteration is present in all of the samples from the upper unit. The amount of clay and amorphous material in samples from the upper unit is generally less than found in the samples from the lower unit, but only because the upper unit contains such a high abundance of quartz and feldspar.

Table 3 X-ray diffraction data for samples collected from the lower unit of the Sherwood Creek Ash.

Sample	%quartz	%Feldspar	% Cristobalite	%Erionite%	% Mika	% Clay	% Amorphous Glass&Clay
HD2-4	0.8	4.1	--	0.1	--	Unknown	95.0
HD2-3	39.3	59.7	--	0.1	2.4	Unknown	1.5
HD4-1	2.3	19.0	--	0.1	4.6	Unknown	74
HD5-1B	1.8	18.6	0.03	0.2	--	Unknown	79.5
HD5-1A	1.8	12.4	0.06	0.1	--	Unknown	85.7
HD2-2	2.5	11.1	0.2	0.1	2.8	Unknown	83.3
HD1-3	2.4	20.3	0.02	0.1	--	Unknown	77.2
HD2-1	1.6	22	--	0.1	--	Unknown	76.5

-- indicates mineral not present in sample

Table 4 X-ray diffraction data for samples collected from the upper unit of the Sherwood Creek Ash.

Sample	%quartz	%Feldspar	% Cristobalite	%Erionite%	% Mika	% Clay	% Amorphous Glass&Clay
HD2-9	13.3	48.4	--	0.1	3.6	Unknown	34.6
HD2-8	14.3	46.9	0.3	0.1	3.8	Unknown	34.6
HD2-7	13.7	52.3	--	0.1	5.2	Unknown	19.8
HD2-6	22.1	56.9	--	0.1	1.1	Unknown	19.8
HD2-5	3.3	41.0	--	0.1	--	Unknown	55.6

-- indicates mineral not present in sample

Sherwood Creek X-Ray Data for Samples collected from the lower layer of Glassy Ash
August 31-September1st 2002
(See sketch Map for sample location)

Sample	% Quartz	% Feldspar	% Cristobalite	% Erionite	% Mica	% Clay	% Glass
P1-C	-	-	-	-	-	-	-
P1-M	0.3	2.4	-	0.1	-	-	97.2
A3-M	1.0	3.1	0.2	0.2	-	0.3	95.2
A3-C	0.6	10	-	0.1	0.1	1.0	88.2
P2-C	0.7	5.6	-	0.1	-	0.2	93.4
P2-F	0.5	3.6	-	0.1	4.7	-	91.1
P4-FL	1.0	9.1	-	0.1	3.0	0.1	86.7
P4-FM	1.9	13.7	-	0.1	2.9	0.3	81.1
P4-F	0.4	3.1	0.1	0.1	-	-	96.3
P4-M	0.5	1.4	-	0.1	1.6	-	96.4
Road 5	1.1	6.6	-	0.2	0.4	-	91.7
P7-M	0.3	2.0	-	0.1	1.1	0.2	96.3
P7-F	0.5	1.9	-	0.04	-	0.06	97.6
Top layer	0.1	9.9	0.3	0.1	-	0.7	88.9
Upper Road	1.2	6.6	-	0.3	2.2	0.1	89.6

Feldspar = Albite, Anorthoclase, and/or Sanidine
Mica = biotite or muscovite
Clay = smectite (saponite, nontronite, montmorillonite)

Pumice Claim Group (Sample Locations August 31-September 1st, 2002))

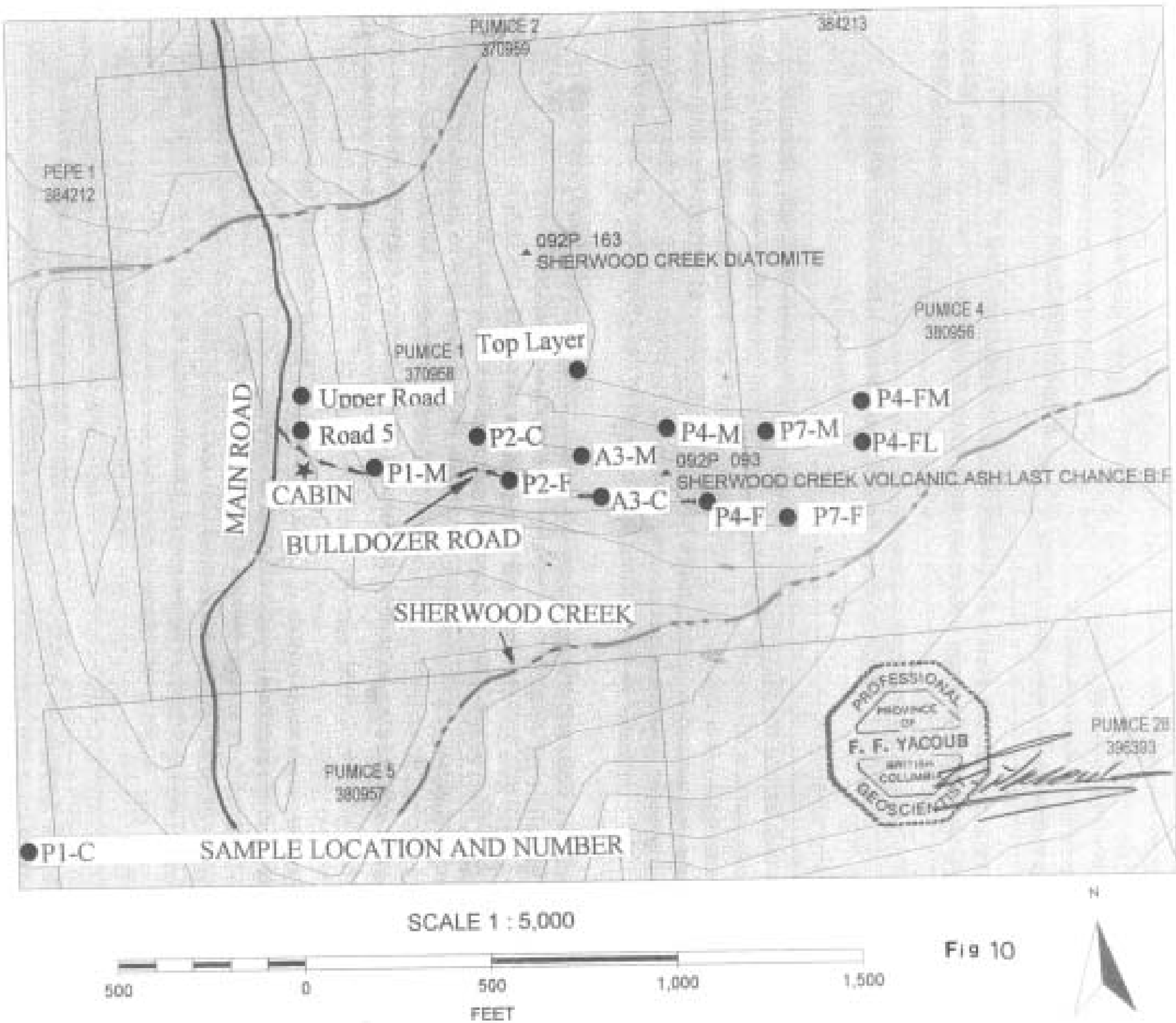

Fig 10

8- DISCUSSION AND CONCLUSION

The Sherwood Creek volcanic ash occur as large, fairly well exposed outcrops located on the Pumice 1 and Pumice 4 claims, 250-300 meters north of the Sherwood Creek and measures about 400 meters long, 250 meters wide, and 100 meters in depth.

According to the American Society of Testing Materials, the deposit meets the chemical and physical requirements for N class pozzolanic material and can be used as a mineral admixture in concrete

Previous work proved that the ash deposit is also a quality absorbent and can be used in several cleaning applications.

Recently, the 2002 detailed work program on the property has proved that the average glass content of the lower unit of the deposit is 61.1% and the average glass content of the upper unit is 34.7%. The glass content of the deposit is not high enough to produce quality Vitrolite. However, the lower unit of the deposit is hosting two layers of high quality ash. The glass content of the ash of these two layers ranges between 85% and 90% indicating top quality ash to be used as a good source of Vitrolite.

The first (lower) layer is three meters (10 feet) thick of white chalky ash, very uniform in color and extremely fine-grained. This layer is overlain by approximately 18 meters (60 feet) of buff ash. The white chalky ash of the lower layer is well exposed along the old bulldozer road cut for at least two hundred and fifty meters (800 feet). The average glass content of this layer is 87% which is considered a high quality source of Vitrolite. At least 18,000 tonns of this material can easily be mined along the old road. **Based on today's market price of $7 per pound, the economic value of the lower layer alone would be enormous.**

The second (middle) layer is approximately 3 ½ meters thick and is white fine – grained ash with chalky appearance, exposed at approximately 18 meters (60 feet) above the top of the lower layer. Although the quality of the second layer is as good as or even better than the first layer (90% glass content), this layer is covered by 18 to 20 meters of altered poor quality ash with low glass contents. Therefore more investigation is needed to determine the lateral extent of this layer, the average grade, the tonnage, and the mining method that should be applied to mine it out.

A third (upper) layer is exposed at the top west corner of the deposit. This layer was never measured during the 2002 program due to the steepness of that section. The physical and the chemical characteristic of the ash at the top layer are similar to the first and the second layer. A sample collected from this layer returned a high glass content of 88.9%. More investigation is needed to determine the extent and the quality of this layer.

The volcanic ash of these three layers is considered a natural commodity, environmentally friendly, and can be presented to the local and the international markets as a multi purposes Hi- Tech products of considerable values due to its high performance and high market price of ($7-$ 8/ lb).

9.0 RECOMMENDATIONS

1- A resource evaluation program should be initiated on the property focusing on evaluating the mineral potential and the market value of the high quality ash in the three layers.

2- Test and evaluate the quality of the ash and the extent of the first, second and third layers by diamond drilling.

3- A 400 meters of diamond drilling program should be initiated to investigate the quality and the extension of the chalky ash of the Sherwood Creek Deposit.

Based on the drilling results a reserves estimate of the high quality ash should be investigated by more drilling to determine the commercial value of the quality ash.

10.0 PROPOSED BUDGET

Phase 2: 400 METERS OF DIAMOND DRILLING (FOUR VERTICAL HOLES, 100METERS EACH)

(Project geologist and two geotecnicians-10 days).

Project Preparation		$1,600.00
Mob/Demob		2,550.00
Field Crew		8,000.00
Field Costs		4,825.00
400 meters of diamond drilling (four holes 100 meters each)		40,000.00
Lab Analysis		2,800.00
Petrograghic Analysis		400.00
Data compilation and report		3,000.00
	Subtotal	63,175.00
G.S.T@ 7%		4,422
	TOTAL	**67,597.00**
	APPROXIMATELY	**68,000.00**

Respectfully Submitted

Fayz Yacoub, P. Geo., F.G.A.C.

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CERTIFICATE OF QUALIFICATIONS

I, FAYZ F. YACOUB, of 6498-128B Street, Surrey, British Columbia, V3W 9P4, do hereby declare that:

1) I am a graduate geologist with a bachelor degree from Assuit University, Egypt (B.Sc., 1967), and diploma in Mining Exploration Geology from the International Institute for Aerial Survey and Earth Sciences (I.T.C.), Holland (Diploma 1978):

2) I am a fellow in good standing with the Geological Association of Canada;

3) I am a professional geologist and a member of the Association of the Professional Engineers and Geoscientists of British Columbia.

4) I have actively pursued my career as a geologist for the past twenty-two years;

5) The information, opinion, and recommendations in this report are based upon fieldwork carried out by myself, and on published literature. I was present on the subject property between August 20th, and October 15th, 2002.

6) I am the registered owner and have 100% interest in the Pumice Claim Group.

____

Fayz Yacoub, P.Geo. F.G.A.C.

October10, 2003

THE PUMICE CLAIM GROUP
THE 2002 FIELDWORK PROGRAM

COST STATEMENT

Mob/Demo, Transportation, Car rentals, and fuel (four-man Crew)		3,100
Food &Accommodation		
Four-man 5 days @ 100/day/ person		2,000
Field Crew		
Project Geologist @ $400/day x 5 days	2,000	
Two geologists @ $350/day x 5 days	3,500	
Geotecnician @ 200 /day x 5 days	1,000	
	-------	6,500
Field supplies include: flagging, thirds, sample bags, etc		500
Analytical cost		
Binocular visual examination (24 samples @ $200/sample)	4,800	
X-Ray Diffraction Analyses (13 samples @300/sample)	3,900	
	-------	8,700

Report writing includes:

Data interpretation, maps, report writing,
word processing, photocopying, and binding.
3,500

TOTAL COST **24,300**

APPENDIX 1

VISUAL DESCRIPTIONS

HD1-1

	Grain Composition %
Glassy Ash	5
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	88

Comments: This sample is tan in color and contains very little glass. It appears to be highly altered to smectite (clay) and/or an unknown amorphous mineral. The only distinguishable crystals in this sample are transparent quartz grains and occasional grains of feldspar.

HD1-2

	Grain Composition %
Glassy Ash	45
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	48

Comments: This sample is yellow-tan in color and contains a moderate amount of glass. The glass in this sample mainly occurs as white pumice fragments as well as smoky-gray glass shards. Crystals are not common in this sample since most have been altered to smectite (clay) or other secondary minerals such as iron oxides.

HD1-3

	Grain Composition %
Glassy Ash	25
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	3
Lights *(quartz, feldspar, sanidine, cristobalite)*	7
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	65

Comments: This sample is yellow-tan in color and contains individual glass shards as well as white pumice fragments. Transparent, angular quartz grains are the most common crystal in this sample, however, feldspar is also present. An opaque, pale yellow- to honey-colored mineral is abundant in the sample and may be an amorphous alteration of the volcanic glass.

HD2-1

	Grain Composition %
Glassy Ash	5
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	3

Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	91

Comments: This sample is yellow-tan in color and highly altered. The only glass present in this sample is yellow-white pumice fragments, many of which have a dull appearance rather than a glassy luster. The opaque, pale yellow- to honey-colored mineral makes up at least 90% of the sample and appears to be an amorphous alteration of the volcanic glass.

HD2-2

	Grain Composition %
Glassy Ash	87
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	2
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	10

Comments: This sample is off-white in color and contains a high percentage of very fine-grained volcanic glass. The contrast between the off-white glass and reddish-brown jarosite grains gives the sample a slightly speckled look when viewed under a binocular microscope. Crystals are not easily distinguishable, but are assumed to be present in a minor percentage.

HD2-3

	Grain Composition %
Glassy Ash	10
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	73

Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	15

Comments: This sample is a light tan pebbly sandstone. The sand consists of medium- to coarse-grained, sub-rounded quartz and white feldspar(?). The pebbles are 3- to 5 mm and are composed of sub-angular to sub-rounded quartz. The pale yellow- to honey-colored alteration mineral occurs between the sand and gravel. Fine-grained glass is present in a very small amount.

HD2-4

	Grain Composition %
Glassy Ash	90
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	4
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	5

Comments: This sample is light gray in color and contains a high percentage of gray volcanic glass shards. This sample also contains white pumice fragments that are up to 2 mm in length.

HD2-5

	Grain Composition %
Glassy Ash	15
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	5

Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	78

Comments: This sample is light brown in color and highly altered. There is some gray glass shards and white pumice fragments, but the majority of the sample consists of the pale yellow- to honey-colored alteration mineral. Some fine-grained, sub-angular to sub-rounded quartz grains are also present in the sample.

HD2-6

	Grain Composition %
Glassy Ash	10
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	15
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	73

Comments: This sample is yellow-tan in color and highly altered. The few glass shards that are present are often an opaque pale yellow color, suggesting alteration to the opaque pale yellow- to honey-colored alteration mineral. Sub-angular quartz grains are fairly abundant and are transparent when not shrouded by the pale yellow alteration mineral.

HD2-7

	Grain Composition %
Glassy Ash	20
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	7

Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	72

Comments: This sample is light tan in color and highly altered. No large "fresh" glass shards were seen in this sample, however, fine-grained glass is present in a relatively low amount. Medium- to coarse-grained, sub-rounded quartz grains are also found in this sample. The sample is mainly composed of the opaque, pale yellow- to honey-colored amorphous alteration mineral.

HD2-8

	Grain Composition %
Glassy Ash	15
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	20
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	64

Comments: This sample is light tan in color and highly altered. Very few glass shards can be seen in this sample since most of the glass is present as fine-grained particles. Fine- to medium-grained, sub-rounded quartz and white feldspar grains comprise at least 20% of the sample. The sample is mainly composed of the yellow- to honey-colored amorphous mineral.

HD2-9

	Grain Composition %
Glassy Ash	25
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	10
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	64

Comments: This sample is light tan in color and highly altered. It is very similar to sample HD2-8 in that very few glass shards can be seen in this sample since the glass is so fine-grained. Sub-rounded, fine- to medium-grained quartz sand is present in this sample. There are also a few large grayish-brown pebbles (3-8mm in length) scattered throughout the sample.

HD3-1

	Grain Composition %
Glassy Ash	10
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	7
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	82

Comments: This sample is yellow-tan in color and highly altered. Very few glass shards are visible since most of the glass is fine-grained. Some of the glass shards are gray and unaltered, others are opaque and slightly pale yellow due to alteration. Sub-angular, fine-grained quartz grains and angular white feldspar grains are present in the sample. The dominant mineral in this sample is the opaque, pale yellow amorphous alteration mineral.

HD4-1

	Grain Composition %
Glassy Ash	60
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	34

Comments: This sample is tan-white in color and moderately altered. The glass in this sample is very fine-grained, making it difficult to distinguish individual shards. No quartz sand was seen in this sample, only grains of white feldspar is present.

HD4-2

	Grain Composition %
Glassy Ash	85
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	9

Comments: This sample is tan-gray in color and contains a high percentage of volcanic glass. Smoky-gray glass shards make up most of the sample with white pumice fragments scattered throughout. No quartz sand was seen in this sample, however white feldspar grains are present. and alteration is mild.

HD4-3

	Grain Composition %
Glassy Ash	50
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	44

Comments: This sample is light tan in color, highly altered, and contains a moderate amount of volcanic glass. Most of the glass in this sample is very fine-grained making it difficult to distinguish individual glass shards. Very little quartz or feldspar sand is present in the sample.

HD4-4

	Grain Composition %
Glassy Ash	15
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	25

Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	58

Comments: This sample is light tan in color, highly altered, and contains a high percentage of quartz and feldspar sand. Little volcanic glass is present in this sample, since most of the original glass has been altered to the pale-yellow amorphous mineral. This sample contains 25% medium- to coarse-grained quartz and feldspar sand.

HD4-5

	Grain Composition %
Glassy Ash	50
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	20
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	29

Comments: This sample is yellow-tan in color, contains a moderate percentage of volcanic glass, and contains a notable percentage of sand. The volcanic glass in this sample occurs as white pumice fragments and fine-grained glass shards. The sample is composed of 15% fine- to medium-grained quartz and feldspar sand.

HD5-1A

	Grain Composition %
Glassy Ash	10
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	84

Comments: This sample is yellow-tan in color and contains a very low percentage of volcanic glass. This sample is essentially composed of the opaque, pale yellow- to honey-colored amorphous alteration mineral.

HD5-1B

	Grain Composition %
Glassy Ash	7
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	87

Comments: This sample is yellow-tan in color and highly altered. The volcanic glass is very fine-grained and difficult to see due to the opaque, pale yellow alteration mineral that makes up most of the sample. Therefore, the percentage of glass may be somewhat higher than estimated. However, this sample is essentially composed of the opaque, pale yellow amorphous alteration mineral.

HD5-2

	Grain Composition %
Glassy Ash	10
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	20
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	68

Comments: This sample is tan in color and highly altered. No volcanic glass shards or pumice fragments were seen in this sample, however, there is a small amount of very-fine grained glass. Sub-rounded quartz and feldspar sand is also present in this sample.

HD6-1A

	Grain Composition %
Glassy Ash	10
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	7
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	81

Comments: This sample is tan in color and highly altered. Very few volcanic glass shards were seen in the sample since most of the glass is very fine-grained. A small amount of quartz and feldspar sand is present in this sample, but the sample is primarily composed of the opaque, pale yellow alteration mineral.

HD6-1B

	Grain Composition %
Glassy Ash	7
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	1
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	87

Comments: This sample is yellow-tan in color and highly altered. There are a few transparent, angular quartz grains in this sample, but it is mainly composed of the opaque, pale yellow alteration mineral.

HD7-1

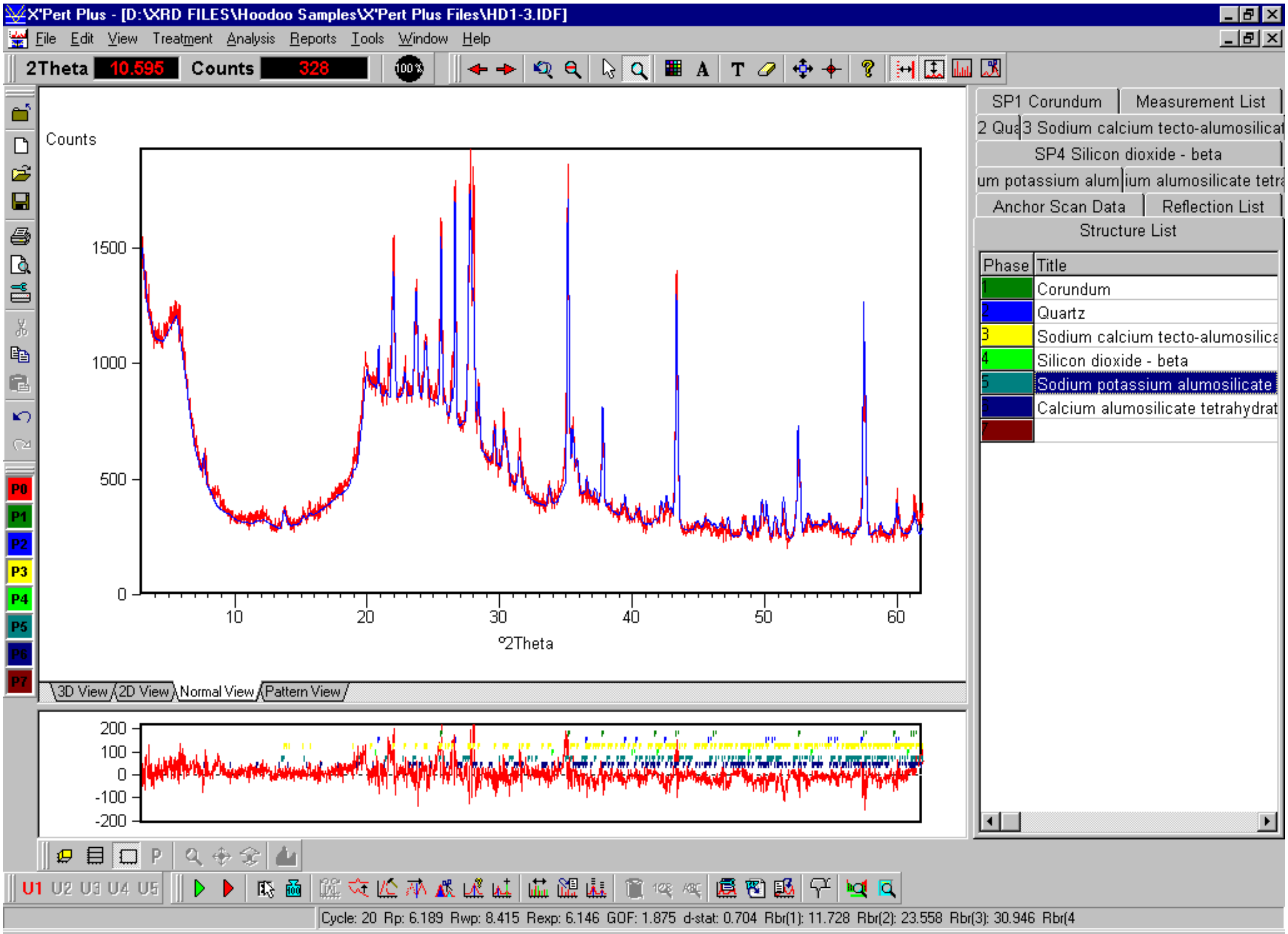
	Grain Composition %
Glassy Ash	50
Coarse-Grained / Non-volcanic / Sandy	
Darks *(biotite, jarosite, FeOx)*	2
Lights *(quartz, feldspar, sanidine, cristobalite)*	5
Fine-Grained Alteration Products *(smectite clay, amorphous alteration)*	43

Comments: This sample is yellowish tan in color and highly altered. Smoky-gray glass shards and white pumice fragments are scattered throughout the sample, but there is still a considerable amount of opaque, pale yellow amorphous alteration present.

APPENDIX 2

X-RAY DIFFRACTION ANALYSES

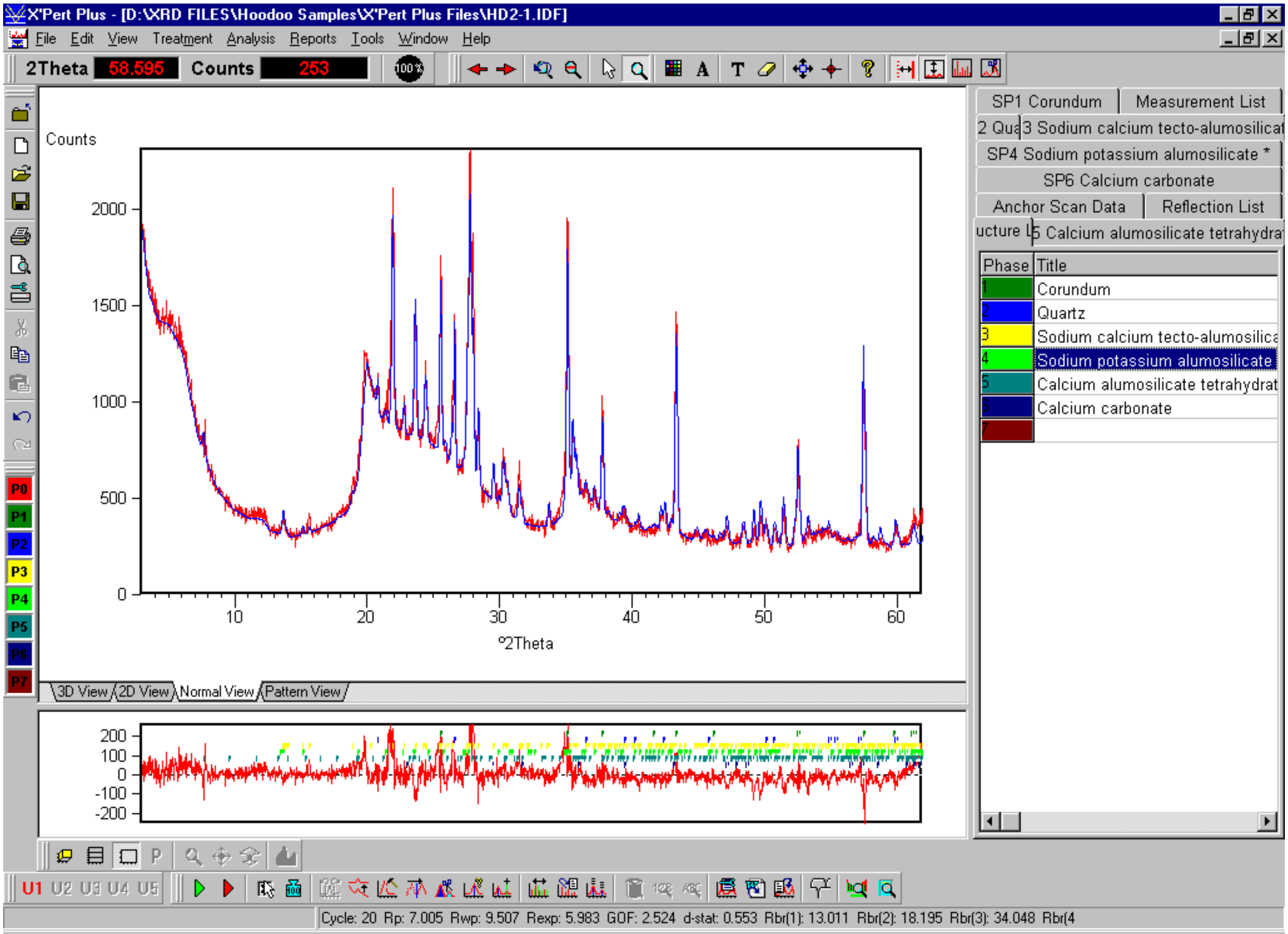
Sample ID: HD1-3



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	2.4
Sodium-calcium tecto-aluminosilicate	Albite feldspar	19.1
Silicon dioxide - beta	Cristobalite	0.02
Sodium potassium aluminosilicate	Sanidine	1.2
-	Nontronite (clay)	No structure available
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
Amorphous	Volcanic glass	77.2

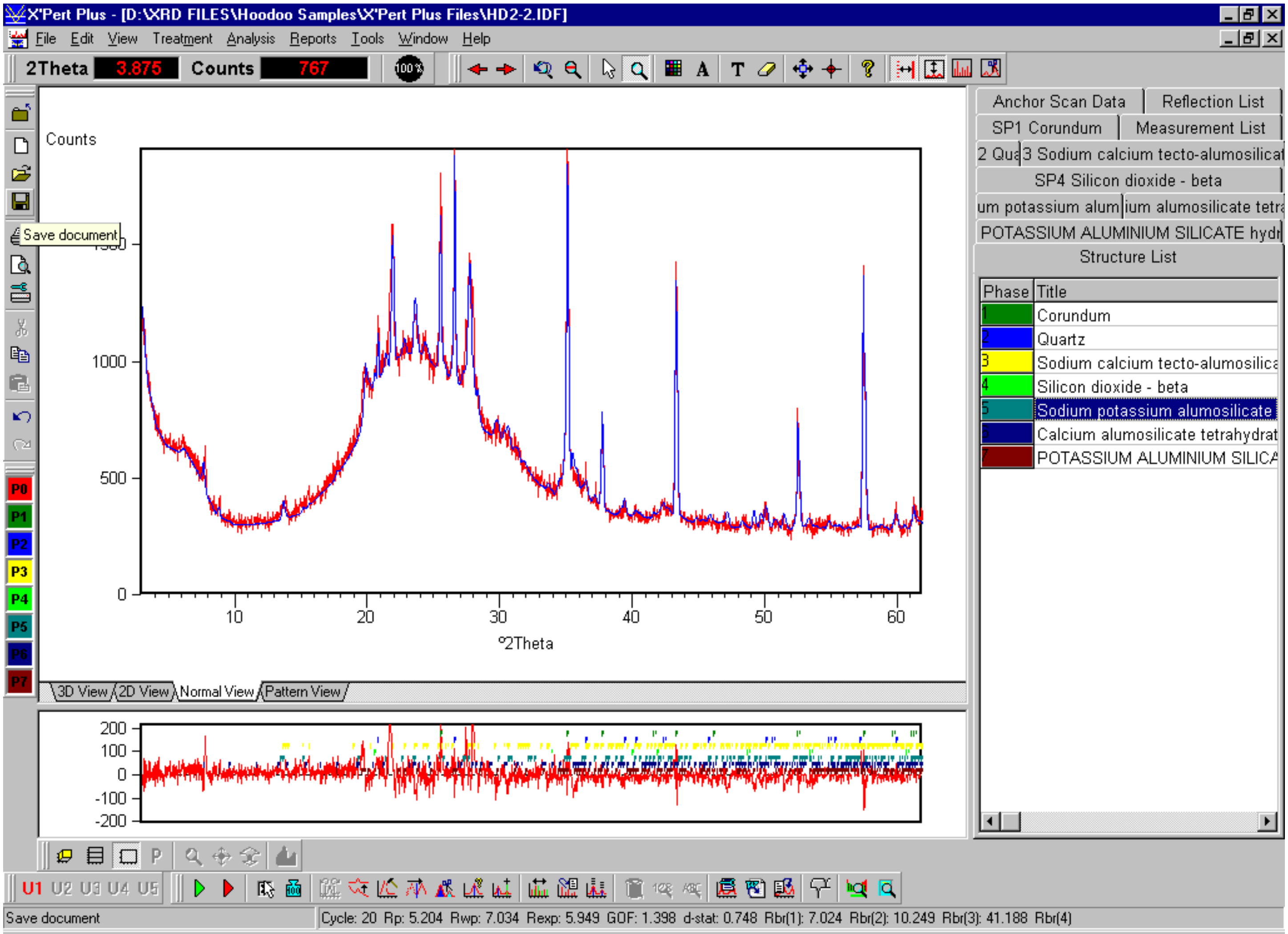
Sample ID: HD2-1



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	1.6
Sodium-calcium tecto-aluminosilicate	Albite feldspar	20.0
Sodium potassium aluminosilicate	Sanidine	2.0
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
Calcium carbonate	Calcite	-0.2
-	Nontronite (clay)	no structure available
Amorphous	Volcanic glass	76.5

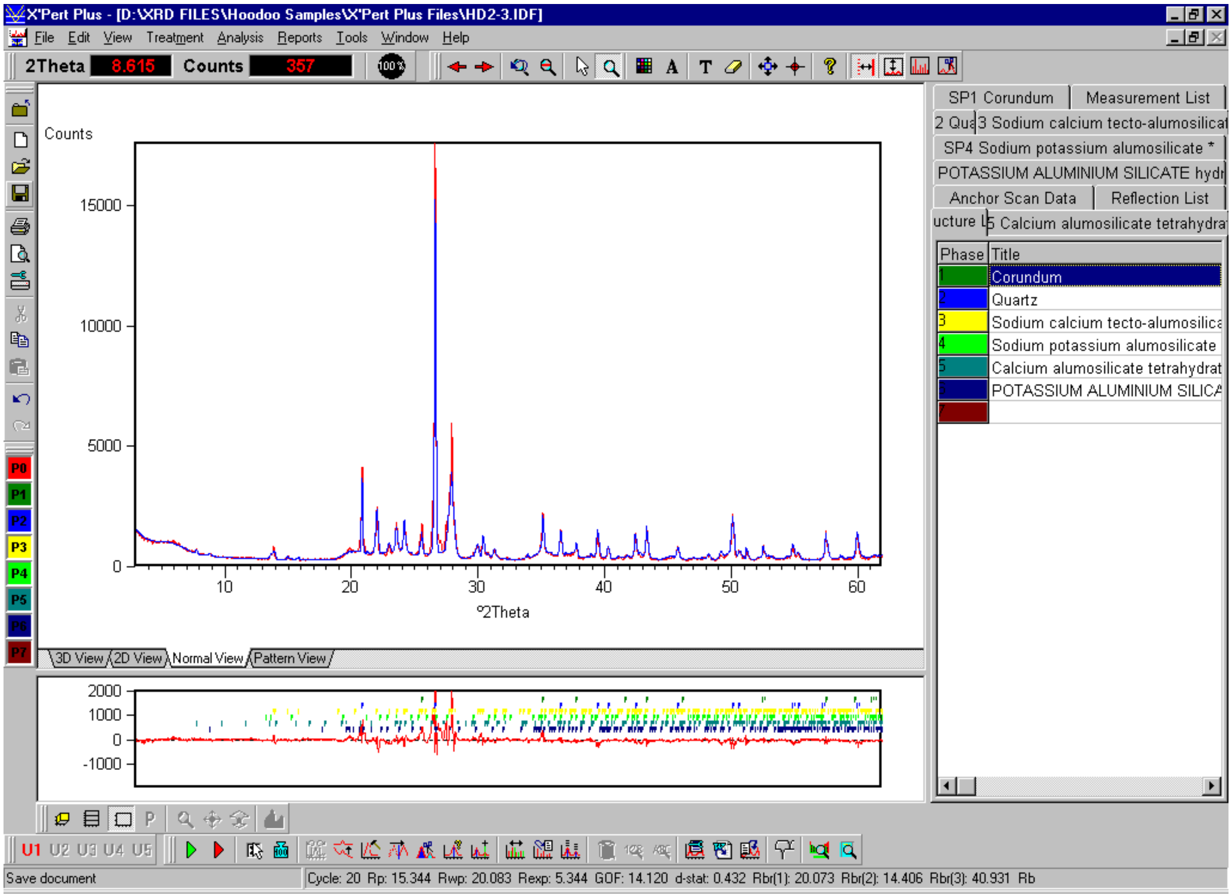
Sample ID: HD2-2



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	2.5
Sodium-calcium tecto-aluminosilicate	Albite feldspar	8.2
Silicon dioxide – beta	Cristobalite	0.2
Sodium potassium aluminosilicate	Sanidine	2.9
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
Potassium aluminum silicate hydroxide	Muscovite	2.8
-	Sericite	no structure available
Amorphous	Volcanic glass	83.3

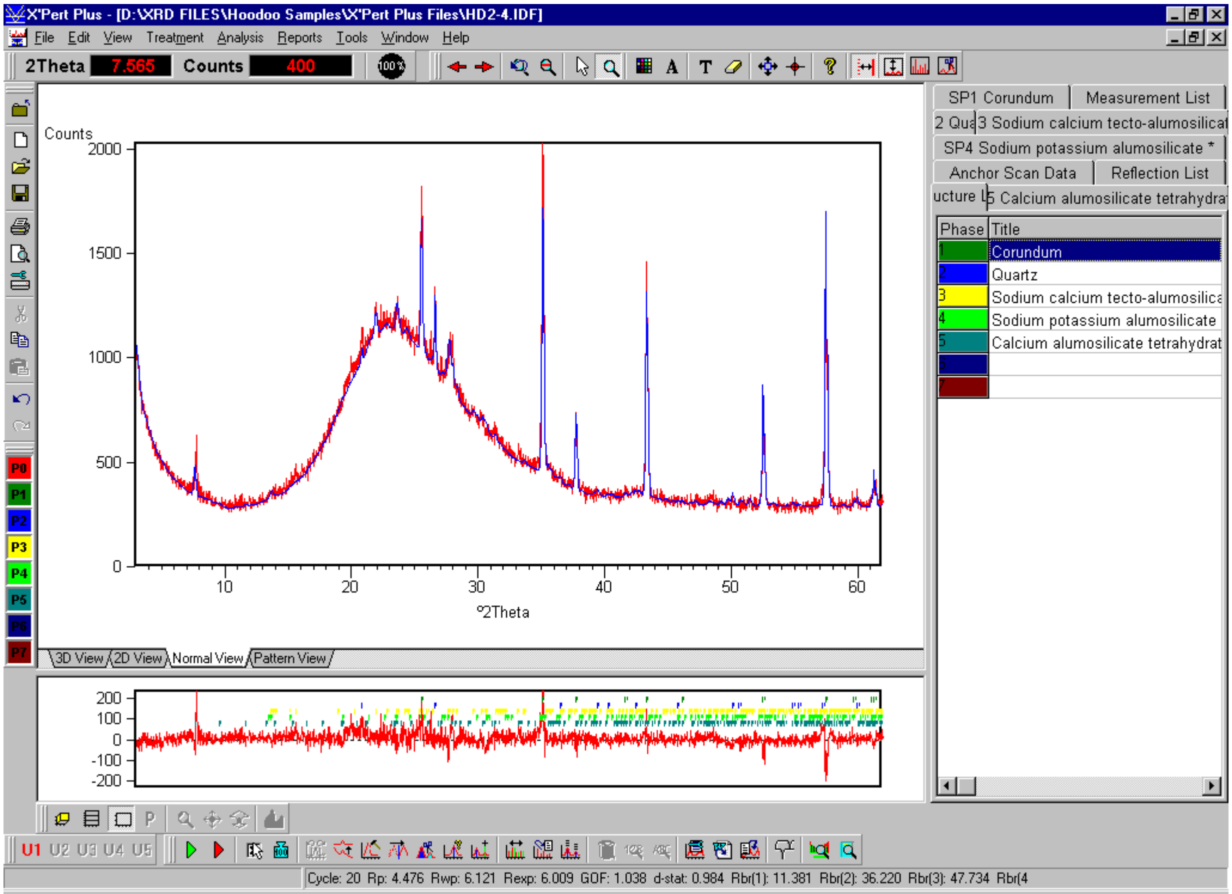
Sample ID: HD2-3



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	39.3
Sodium-calcium tecto-aluminosilicate	Albite feldspar	51.5
Sodium potassium aluminosilicate	Sanidine	8.2
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
Potassium aluminum silicate hydroxide	Muscovite	2.4
-	Saponite	no structure available
Amorphous	Volcanic glass	-1.5

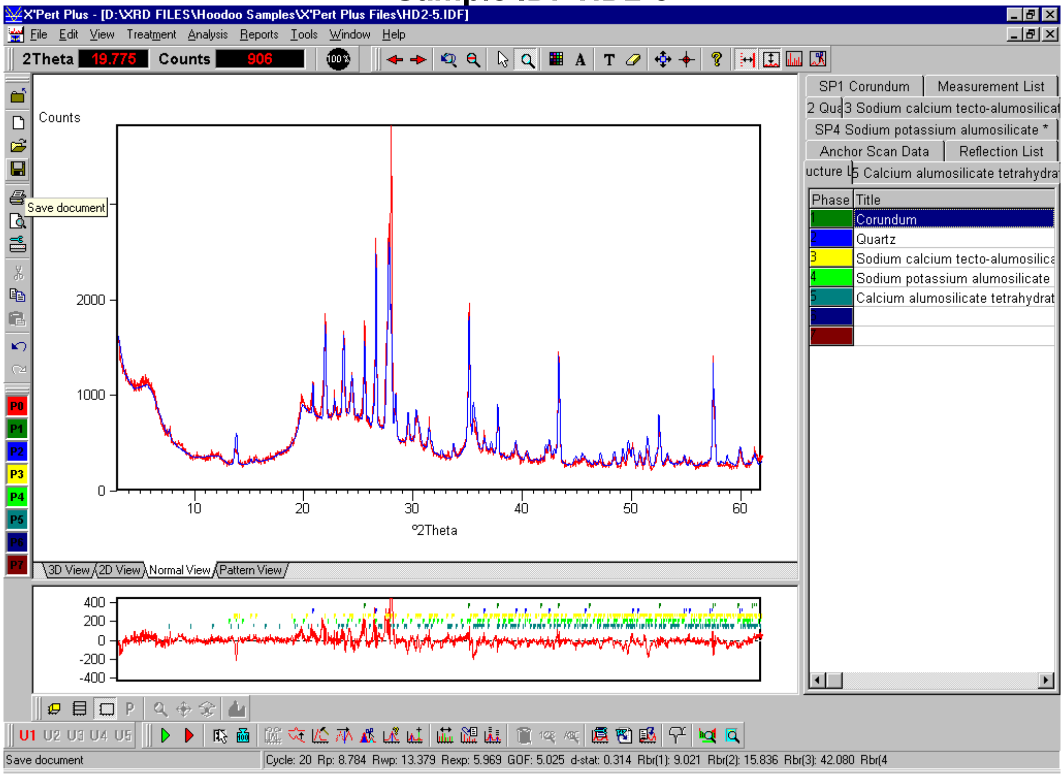
Sample ID: HD2-4



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	0.8
Sodium-calcium tecto-aluminosilicate	Albite feldspar	3.1
Sodium potassium aluminosilicate	Sanidine	1.0
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
Amorphous	Volcanic glass	95.0

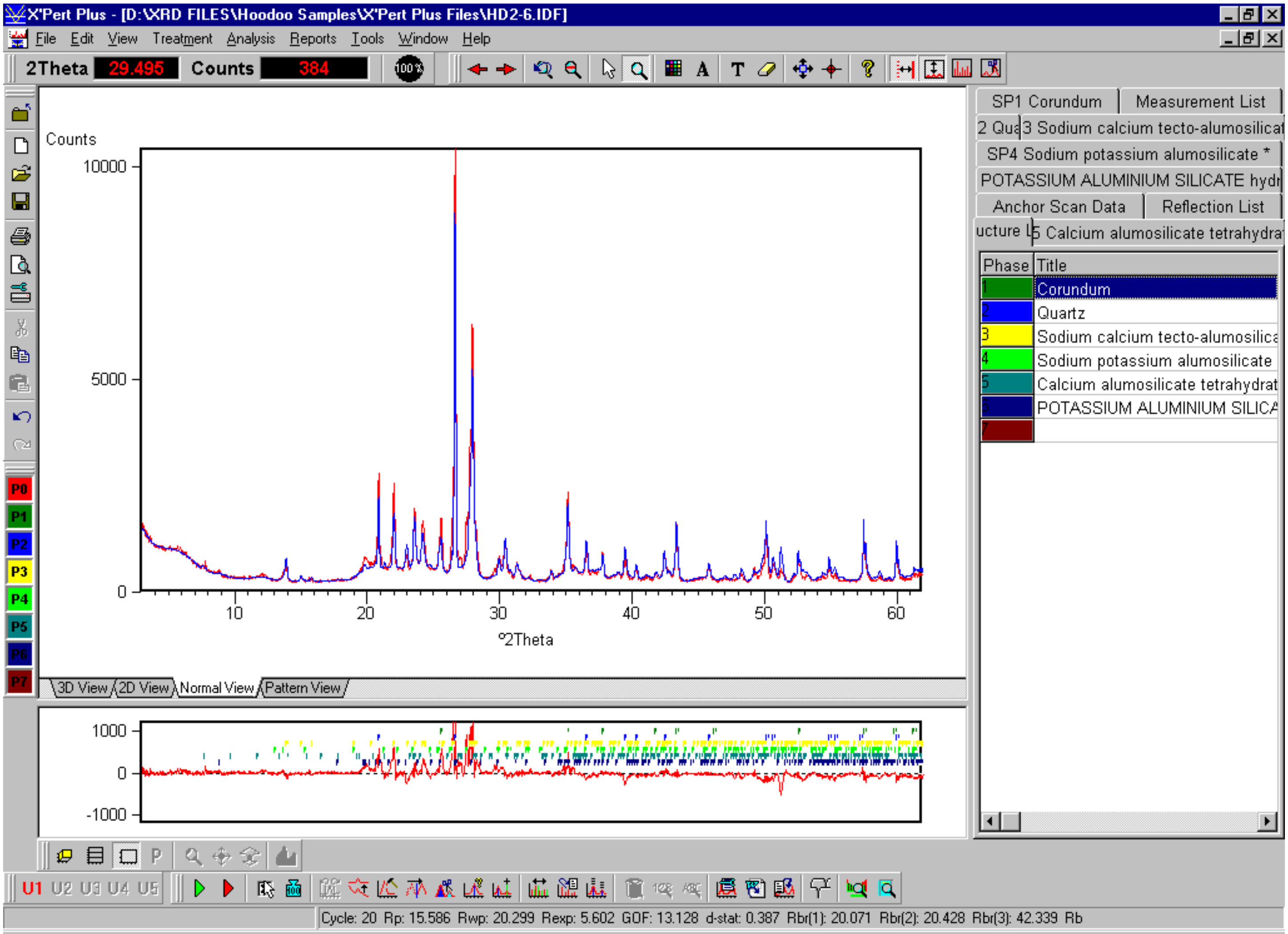
Sample ID: HD2-5



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	3.3
Sodium-calcium tecto-aluminosilicate	Albite feldspar	26.5
Sodium potassium aluminosilicate	Sanidine	14.5
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
-	Nontronite (clay)	no structure available
-	Tosudite (zeolite)	no structure available
Amorphous	Volcanic glass	55.6

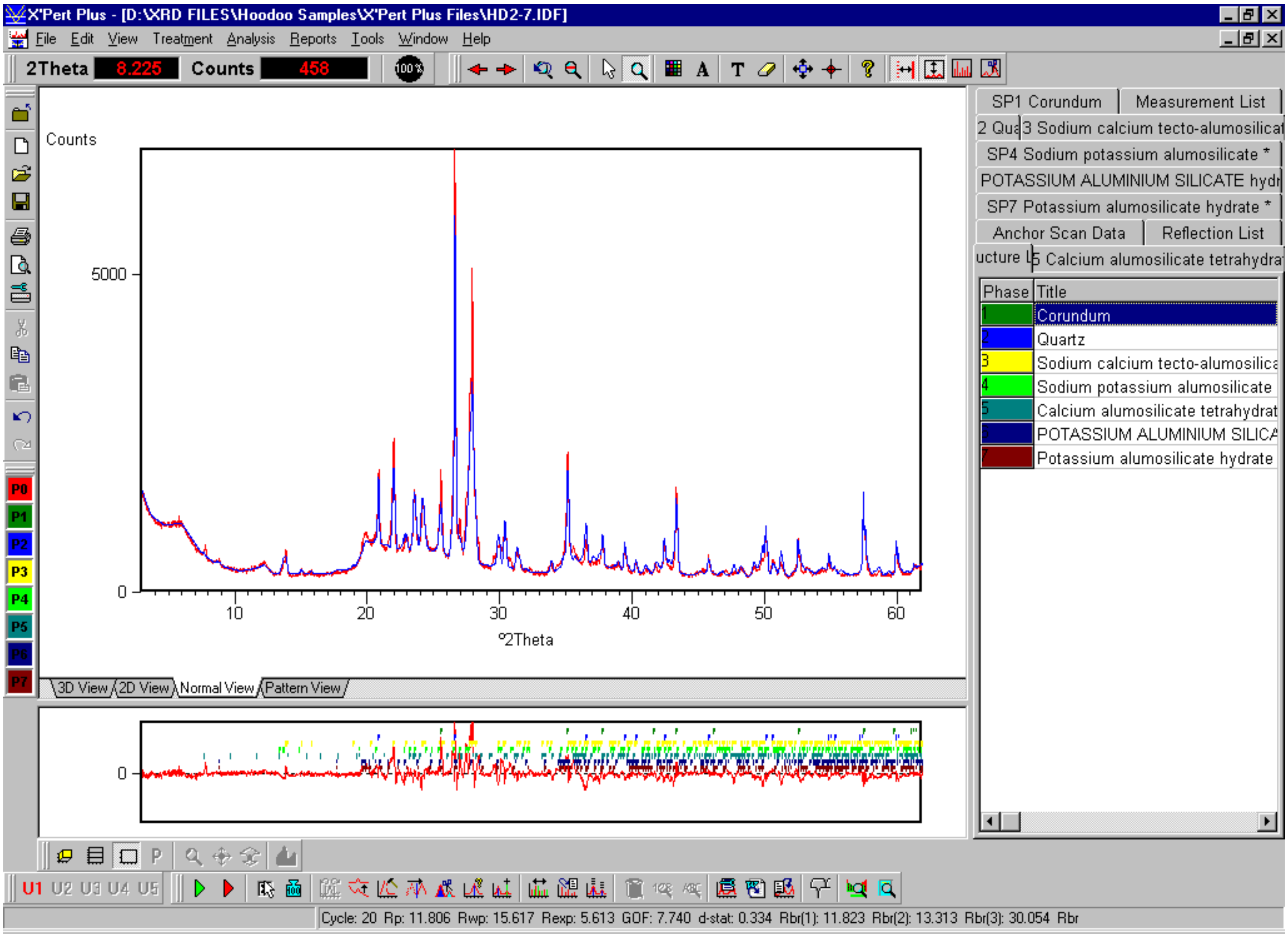
Sample ID: HD2-6



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	22.1
Sodium-calcium tecto-aluminosilicate	Albite feldspar	43.3
Sodium potassium aluminosilicate	Sanidine	13.6
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
-	Nontronite (clay)	no structure available
Potassium aluminum silicate hydrate	Muscovite	1.1
Amorphous	Volcanic glass	19.8

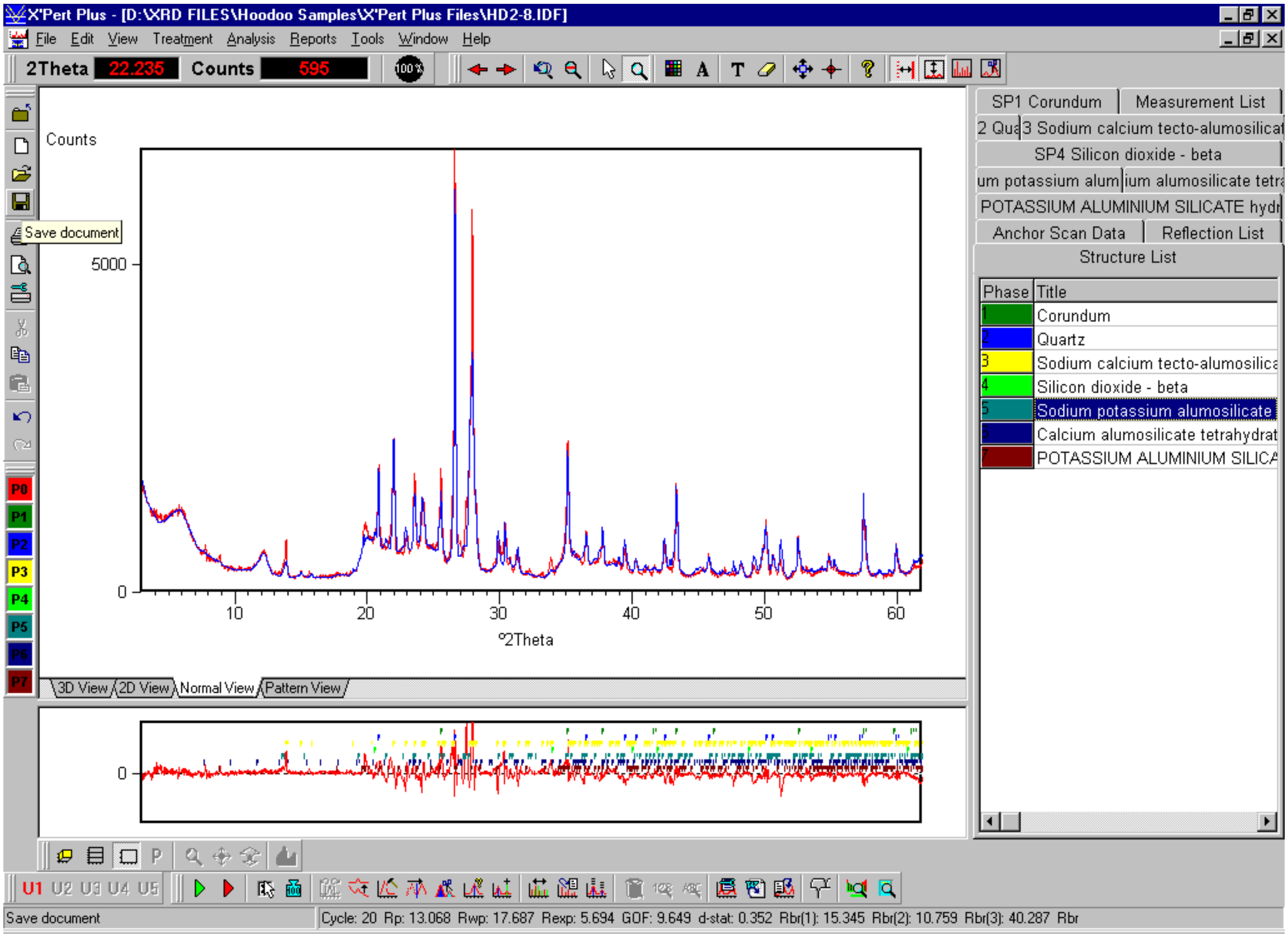
Sample ID: HD2-7



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	13.7
Sodium-calcium tecto-aluminosilicate	Albite feldspar	37.8
Sodium potassium aluminosilicate	Sanidine	14.5
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
-	Nontronite (clay)	no structure available
Potassium aluminum silicate hydrate	Muscovite	5.2
Amorphous	Volcanic glass	29.0

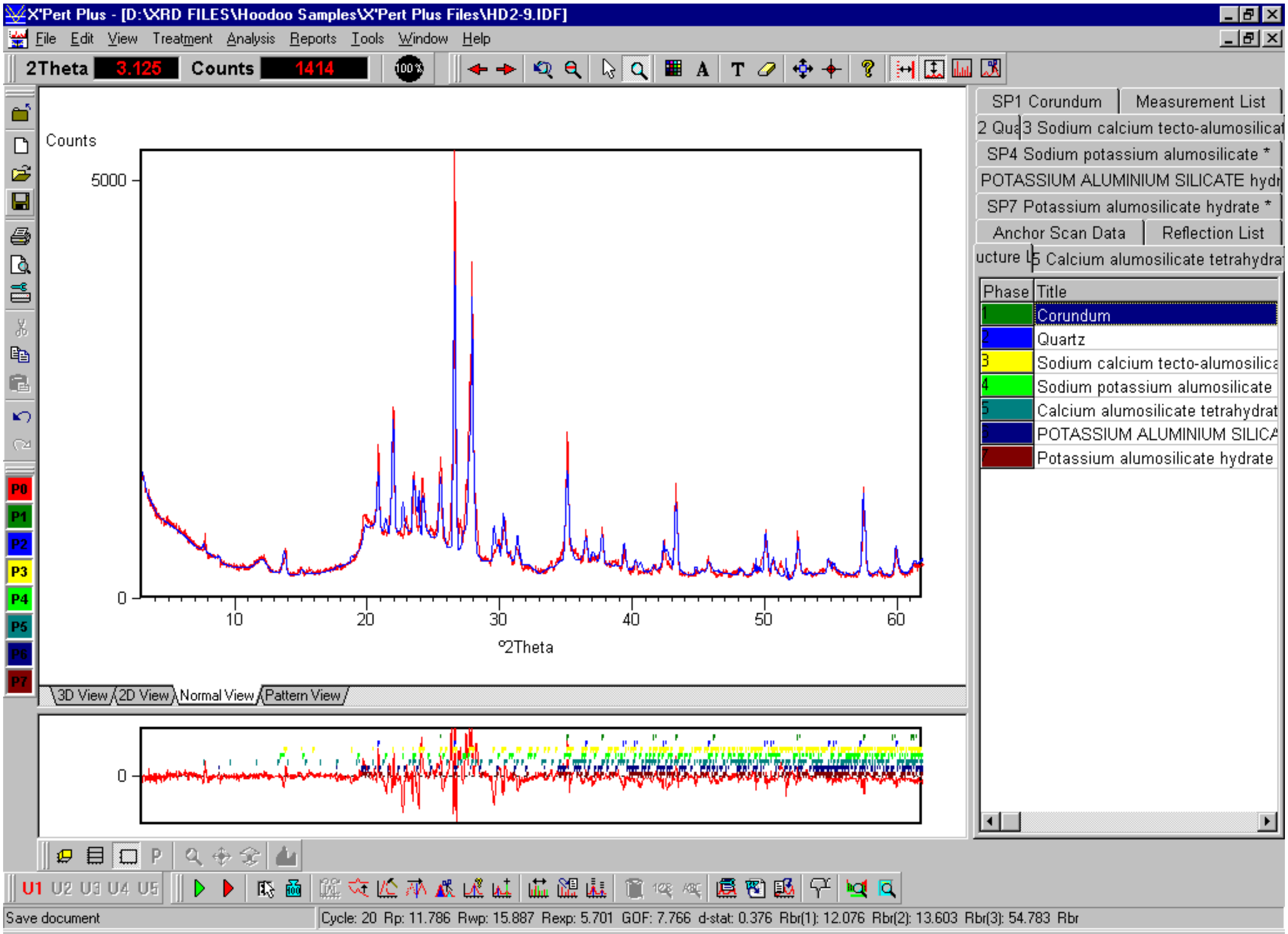
Sample ID: HD2-8



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	14.3
Sodium-calcium tecto-aluminosilicate	Albite feldspar	41.8
Silicon dioxide – beta	Cristobalite	0.3
Sodium potassium aluminosilicate	Sanidine	5.1
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
-	Nontronite (clay)	no structure available
Potassium aluminum silicate hydrate	Muscovite	3.8
Amorphous	Volcanic glass	34.6

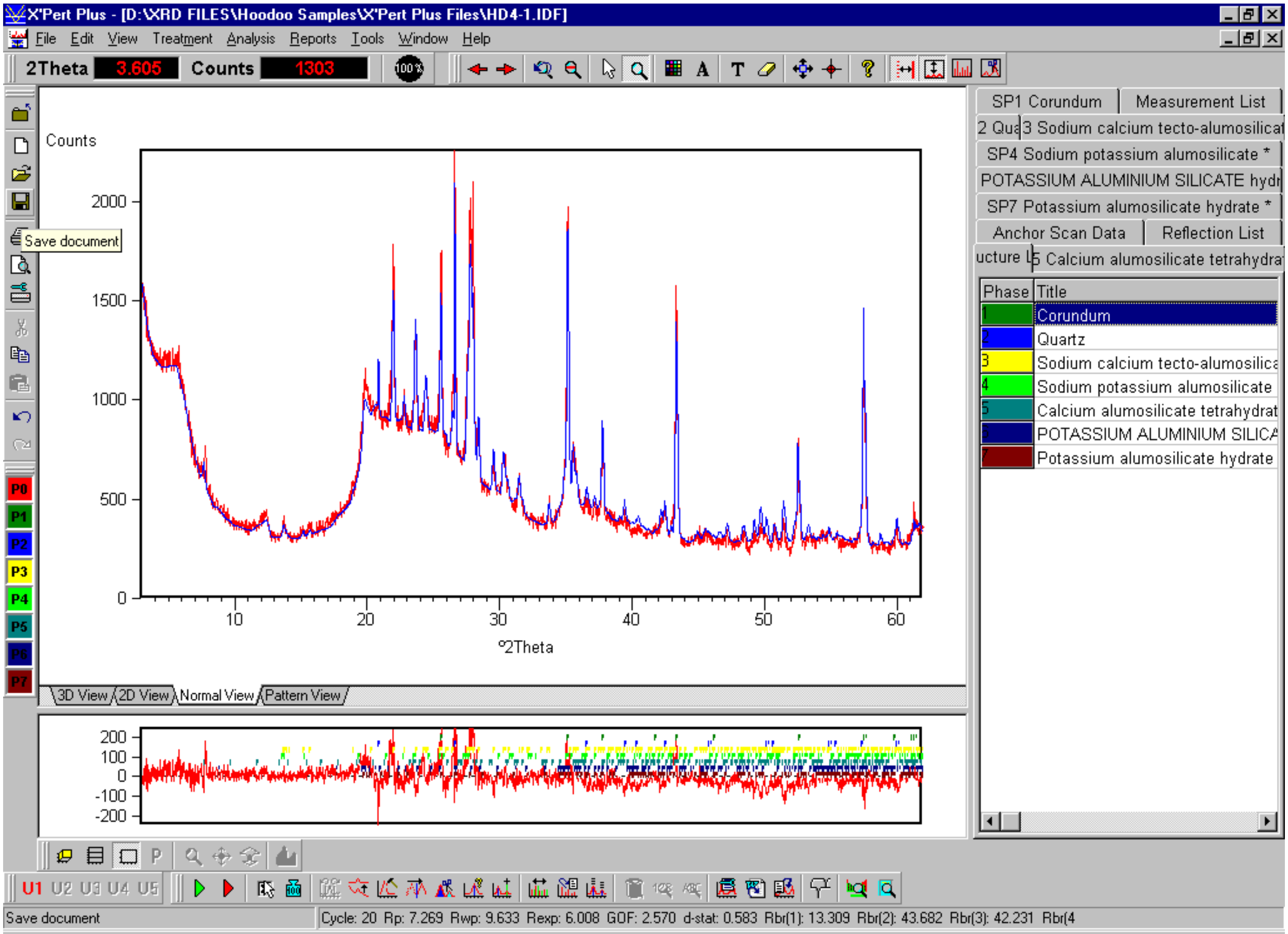
Sample ID: HD2-9



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	13.3
Sodium-calcium tecto-aluminosilicate	Albite feldspar	41.5
Sodium potassium aluminosilicate	Sanidine	6.9
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
-	Nontronite (clay)	no structure available
Potassium aluminum silicate hydrate	Muscovite	3.6
Amorphous	Volcanic glass	34.6

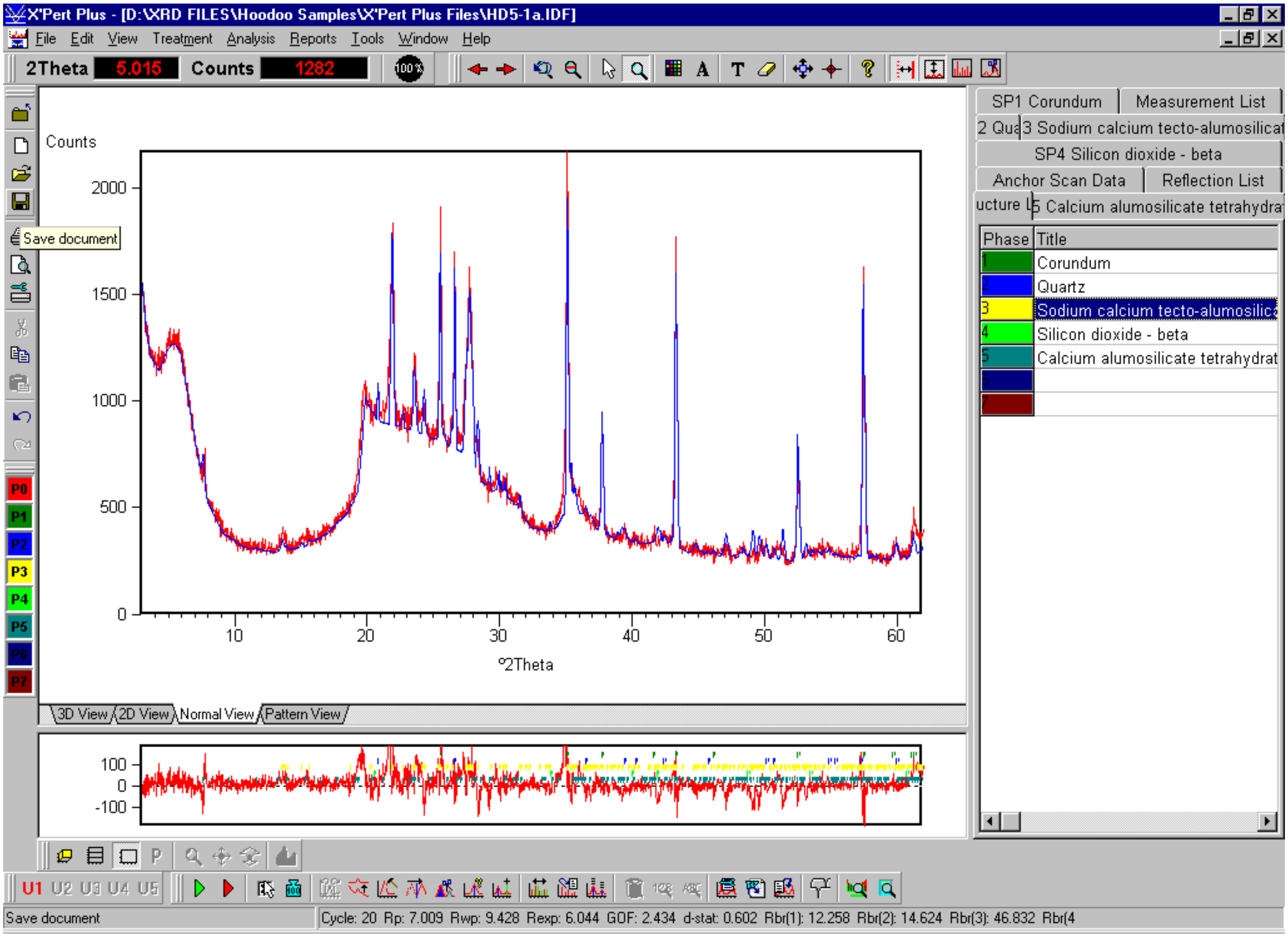
Sample ID: HD4-1



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	2.3
Sodium-calcium tecto-aluminosilicate	Albite feldspar	18.8
Sodium potassium aluminosilicate	Sanidine	0.2
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
-	Saponite (clay)	no structure available
Potassium aluminum silicate hydrate	Muscovite	4.6
Amorphous	Volcanic glass	74.0

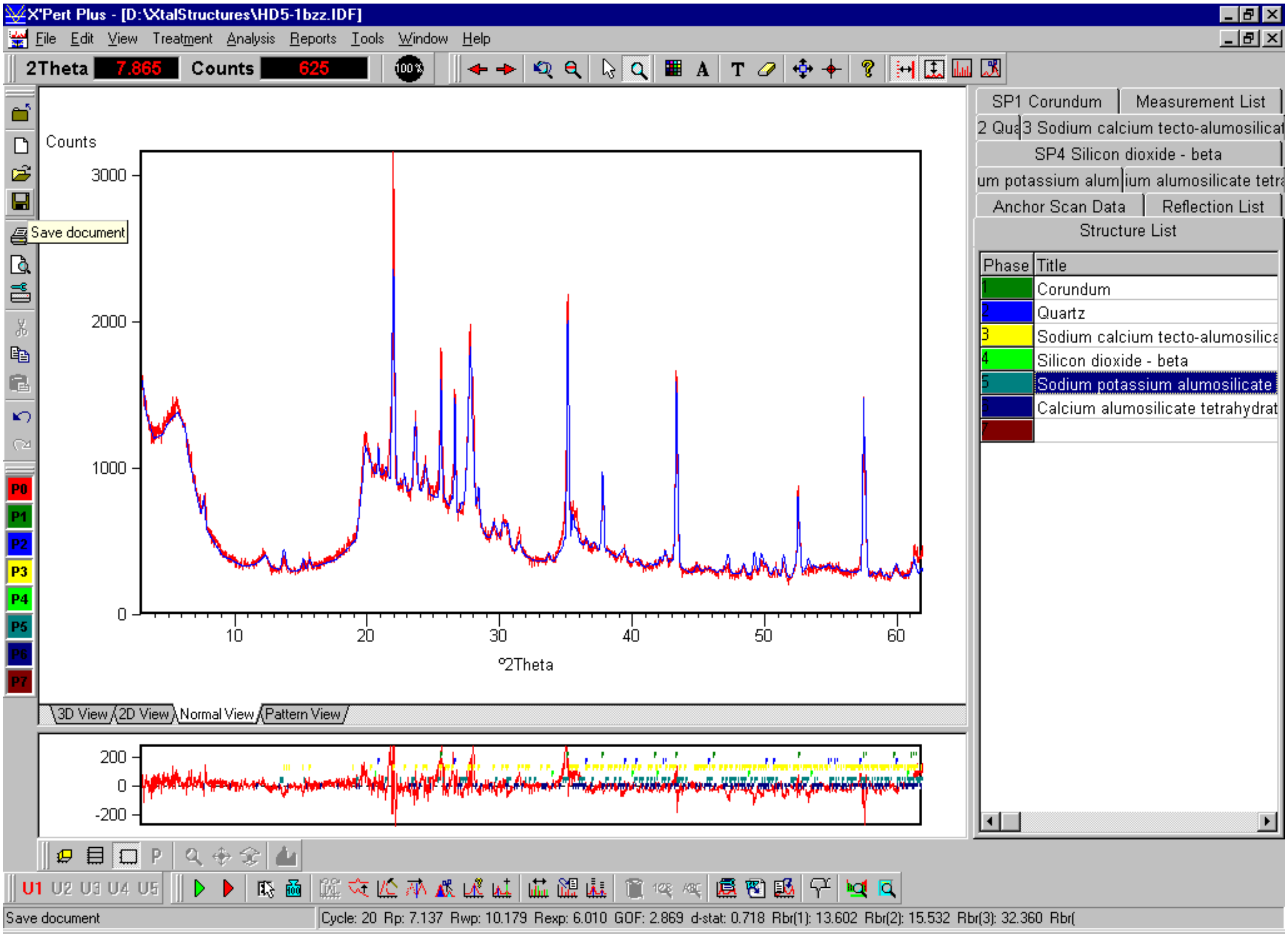
Sample ID: HD5-1A



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	1.8
Sodium-calcium tecto-aluminosilicate	Albite feldspar	12.4
Silicon dioxide - beta	Cristobalite	0.06
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.1
-	Nontronite (clay)	
Amorphous	Volcanic glass	85.7

Sample ID: HD5-1B



MINERAL COMPOSITION

Mineral	Common mineral name	Weight percent
Quartz	Quartz	1.8
Sodium-calcium tecto-aluminosilicate	Albite feldspar	16.4
Silicon dioxide - beta	Cristobalite	-0.03
Sodium potassium aluminosilicate	Sanidine	2.2
Calcium aluminosilicate tetrahydrate	Erionite (zeolite)	0.2
-	Saponite (clay)	no structure available
Amorphous	Volcanic glass	79.5