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MEMO

TO: Ben F. Dickerson, III, Carole A. O'Brien

FROM: Don White

DATE: December 23, 1985

SUBJECT: Check assays, batches C and D, between Iron King Assay, Inc. and Skyline Labs, Inc.

The results of check assay batches C and D are tabulated and graphed on the attached. While they do not check as neatly as batches A and B did between the Tucson and Denver Skyline Labs, I believe they are still satisfactory.

The discrepancies are systematic enough to see lab differences more than sampling difficulties. I might add that the Skyline/Tucson lab was found in other studies with extensive checking between three laboratories for another client, to be consistently the lowest in gold and silver. That trend is certainly repeated here with respect to the Iron King lab.

A third lab could be used for the batch C and D pulps but I think it is a moot point with respect to those particular samples and assays. What we should bear in mind if we continue to use Bob Crook's services at Iron King Assay (average 4-day turnaround compared to Skyline's average 15 days) is that high values of possible economic interest should be double-checked at another lab.

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

UVA Assay Checks
Batch "D"

REPORT OF ANALYSIS

JOB NO. UQX 040
December 13, 1985
R-31 TO R-40
PAGE 1 OF 1

A.F. BUDGE (MINING) LIMITED
Attn: Mr. Ben F. Dickerson, III
DMEA Ltd.
7340 E. Shoeman Lane, 111-B (E)
Scottsdale, Arizona 85251

Analysis of 10 Pulp Samples

ITEM	SAMPLE NO.	FIRE ASSAY Au* (oz/t)		AA Au (oz/t)	FIRE ASSAY Ag* (oz/t)	AA Ag (oz/t)	
Original Sample #		ΔAu	IK			IK	ΔAg
1104-3-222-227	1	R-31 -.003	.013	.010	.16	.24	-.08
1104-3-227-229	2	R-32 -.106	.156	.050	.34	.39	-.05
1104-3-236-238	3	R-33 +.029	.001	.030	.27	.35	-.07
244-246	4	R-34 -.164	.204	.040	.23	.37	-.14
246-248	5	R-35 -.025	.070	.045	.26	.39	-.13
266-269	6	R-36 -.041	.096	.055	.18	.16	+.02
292-298	7	R-37 -.041	.081	.040	.31	.43	-.12
1104-3-298-300	8	R-38 -.003	.008	.005	.31	.58	-.27
901-2-367-369	9	R-39 -.001	.006	.005	.13	.06	+.07
901-2-417-420	10	R-40 ∅	<.001	<.005	.12	.19	-.07
		X= -.036	.064	.028	-.23	.32	-.09

Meaning IK assays are, on average 44% higher than Skyline for Au, and 39% higher for Ag for the same pulp and same assay method.

*NOTE: Method of analysis by combination fire assay and atomic absorption based on a one assay-ton sample.

cc: Mr. Don White
521 East Willis Street
Prescott, AZ 86301

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK STATE OF ARIZONA U.S.A.

12/13/85

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

IRON KING ASSAY INC.

10-Dec-85

LAB JOB #: MSC00257

U.V.X. Assay Checks - Babbah "C"

Client name: DMEA Ltd.

Billing address: 7340 E. Shoeman Ln.
Suite 111-B-E
Scottsdale, AZ 85251

Phone number: 778-3140

No. Samples: 10
Date Received: 11-29-85
Submitted by: Don White

INVOICE ATTACHED

ANALYTICAL REPORT

Client ID MSC00257	Lab ID		Iron King Results FA/AA Au oz/ton	Iron King Results FA Ag oz/ton	Skyline Tucson Results Au oz/t	Skyline Tucson Results Ag oz/t	Δ Au	Δ Ag
R-21	901-1-332-335	11-29- 1	0.020	0.33	.015	.40	+.005	-.07
R-22	901-1-335-338	11-29- 2	0.176	0.57	.180	.50	-.004	+.07
R-23	901-1-338-341	11-29- 3	0.195	1.09	.110	.80	+.085	+.29
R-24	901-1-741-344	11-29- 4	0.065	5.26	.045	3.62	+.020	+1.64
R-25	1104-2-578-581	11-29- 5	0.075	0.47	.045	1.45	+.030	-.98
R-26	1104-2-581-584	11-29- 6	0.107	1.76	.070	1.63	+.037	+.13
R-27	1104-2-584-587	11-29- 7	0.039	0.33	.030	.66	+.009	-.33
R-28	1104-2-598-601	11-29- 8	0.126	0.62	.080	.70	+.046	-.08
R-29	1104-2-601-604	11-29- 9	0.066	0.83	.040	.74	+.026	+.09
R-30	1104-2-604-608	11-29- 10	0.197	0.94	.160	.90	+.037	+.04
		$\bar{X}$ =	.107	1.22	.078	1.14	+.029,	+.08

Note greater variability of Ag assays and more systematic difference in Au assays

Meaning Iron King assays a on average, 37% high for Au and 7% high for Ag than the Skyli assay for the same pulp and same analytic method.

U.V.X. Assay Checks
Batches 'C' + 'D'

Gold versus silver for Skyline Lab's Tucson laboratory (⊙) versus Iron King Assay, Inc (△).

Silver Assay (oz/t)

Gold Assay (oz/t)

Change in scale

5.0 4.0 3.0 2.0 1.0 .9 .8 .7 .6 .5 .4 .3 .2 .1 ϕ

.01 .02 .03 .04 .05 .06 .07 .08 .09 .10 .11 .12 .13 .14 .15 .16 .17 .18 .19 .20

Notes: Overall finding is a fairly systematic difference averaging 40% higher Au assays at the I.K. lab relative to those at the Skyline (Tucson) lab. The Ag assays average about 20% higher at the I.K lab.

MEMO

TO: Ben F. Dickerson, III; Carole A. O'Brien

FROM: Don White

DATE: September 25, 1985

SUBJECT: High grade gold of the northern Verde target area and access via the 806 drift

It seems that a possibly important portion of one of our target areas (as outlined in the memo by Hodder and White, August 2, 1985) has been lost in the shuffle. The 901-1 hole now being drilled should, if not lost prematurely, test very important targets within the Verde fault block and adjacent to the Verde fault. But it intercepts those areas quite southerly in the 824-west and 824 stope areas. The intercept was shunted even further south by swinging the hole azimuth to miss the Gold Stope from the revised 901 drill station (as opposed to the more difficult to open 816 station). While the 901-1 hole may be able to reach a point above the reported 15-foot thickness averaging 1.0 oz/t gold, 1.0 oz/t silver (11,500 N, 7,150 E, 903 Intermediate level) it does not test a discontinuous lobe or fault block further northwest with a reported 20-foot thickness of about 0.5 oz/t gold, 3.0 oz/t silver, (11,450 N, 7,020 E, 903 Int. level). This latter target is untestable by drilling from the existing 901 diamond drill station because of the intervening Gold Stope. The accompanying cross section D-D' shows the best drilling approach from the 806 drift on the 800-level, about 600 feet west of the Edith shaft.

The 806 drift is open at least 400 feet and only partially caved where our forays ceased because of bad air. What the writer would like to do is have a small fan installed on the 800 shaft station and vent bags hung far enough out the 806 drift to allow inspection further west. This would fairly cheaply allow the better appraisal of the merits of this drill station. It would also allow sampling by hand of the cherty lithology crossing the 806 drift between 7,340 E and 7,420 E and maybe the smaller occurrences further west.

The scale of the northern Verde area target is best put in perspective with a tonnage and grade estimate. In Table I of the Aug. 2, 1985 memo Hodder and the writer figured about 292,000 tons of 0.12 oz/t average gold grade or 35,000 contained ounces of gold for the Verde area overall. The writer believes this northern area now being overlooked may represent half

of that estimate. Even a block only 10 feet thick, 200 feet high (700 level to 903 level) and 300 feet long, if averaging 0.4 oz/t gold will contain 20,000 ounces in a 50,000 ton body. That is larger but similar average grade to the mined-out Gold Stope. These estimates are realistic with respect to the level plans, cross section, and reported assays.

I look forward to your reaction to this proposal and hope that we may at least ventilate the 806 drift enough to see how big a budget is necessary to consider drilling there.

DMEA

M E M O

TO: Ben F. Dickerson, III and Carol O'Brien

FROM: Don White

DATE: May 29, 1985

SUBJECT: Update on the U. V. X. Project, May, 1985

The compilation of U.V.X. data has involved a number of approaches recently. Each approach is an attempt to glean all the useful information from the voluminous but poorly organized and totally unsynthesized data. The latest efforts have focused on a large number of old precious metal assays identified by stope, Phelps Dodge's two drill cores and their reported geochemistry, the fragmented geology as recorded by various mine geologists and consultants, and the rock suites collected by same.

Karl Budge located the U.V.X. assay reports in the vault files. They are a chronological listing of about 20,000 samples assayed over two and one half decades. The great bulk of them have never been plotted on any map, section, or otherwise, as best we can tell. About 3,000 of the samples include precious metal assays and it was these we zeroed in on. Karl listed about 2,700 samples assayed for gold and silver by stope number. The remaining odd assays were very low values for deeper levels. We focused on the 800 level thru 1400 level. From the listings by stope, the attached statistical summary was compiled. It includes 56 stopes, their average Au and Ag grade, Au-to-Ag ratio, maximum grades reported, and the number of samples upon which the averages are based. We have located virtually all of these stopes on level plans now (no easy task on old maps without stopes or numbers) and will produce a map version of all these statistics.

The outcome of this exercise is a highlighting of areas for our further attention. The 1206 stope (N of and on strike from the Gold stope) is an example, as are the 1307-A and 903 stopes (in a southerly direction from the Gold stope) and the Maintop area. All these have more modest gold grades, about 0.1 oz/t, than the Gold stope which ran about 0.4 oz/t average.

Because about 1,000, or over one third at the available precious metal assays, apply to the Gold stope, there was no difficulty in compiling the longitudinal and cross sections already provided. Unfortunately, the data is not complete enough for the Maintop or other auriferous bodies to provide such detail. Some rough sections with

grades are being attempted but contouring is not possible.

The bonanza silver values occur within the cupola of the main orebody (1300 level).

Another exercise has been the study of Phelps Dodge's two drill cores U.V.X.-1 and-2. We were provided with John DuHamel's drill logs and, via CoCa Mines, the writer obtained Dale Armstrong's logs. The writer also logged both holes himself and compiled the attached logs incorporating everyone's contributions. It seems clear that a felsic pile with an intermittently auriferous exhalitive chert cap is what we have. What is not clear is the cause and import of the chert's brecciation. It is a finely banded chemical precipitate type of chert, not a primary fragmental. The intense brecciation is post deposition. It looks like in-place hydrofracturing as though by a later pulse of volcanic activity. One possible explanation is the adjacent diorite which may be a late stage subvolcanic intrusion.

One of the key questions is: does the gold occur in the clasts or the matrix? Following the writer's careful crushing and hand sorting of a series of samples to answer this question, the U.S. Postal Service lost the package enroute to Tucson. It may show up yet but if not within a few more days (it was posted May 8th) new core selections will be made and sent to Skyline's Denver office for their crushing, separation, and assay.

CoCa Mine's files also contained much more thorough geochemistry on the P.D. cores than we were provided. Furthermore, with the original reports available, the writer was able to correct numerous errors of commission and omission on the assay list we had been given earlier. Profiles for both holes with all the helpful geochemistry are attached. In addition to corrected gold and silver profiles, it's useful to see the gold-to-silver ratios, the trace elements, arsenic, antimony, bismuth, vanadium, molybdenum, tin, and base metals, copper, lead and zinc. Each of the elements listed shows a high correlation to gold. None of them, however, appears to be any more useful than gold assays themselves for locating gold! Nickel and boron were the only elements reported which did not mimic the gold profile.

The gold-trace metal correlations in the P.D. drillholes and the contoured grade patterns and gold-to-silver ratio patterns in the Gold stope sections suggest a dominance of hypogene over supergene ore controls. It is more likely that volcanic/plutonic mechanisms could produce the metal suite we see and the bull's-eye patterns of grade in the sections, than could any weathering phenomenon. So while we know we're in a system where sulfide oxidation has occured in the extreme to produce the U.V.X. main orebody, it seems that the gold zones are less altered. We will continue to focus on this issue because it is so crucial to directing our efforts.

Another continuing effort is the gathering of geological notes on level plans. Bits and pieces of the efforts by company geologists and consultants to U.V.X. are available. They are gradually being synthesized for the 800 through 1400 levels.

Reproduceible base maps for the 800 through 1400 levels are also being worked on. A master (mylar) will be produced at 1"=40' covering all of the lease area with fully annotated mine grid, claim boundaries, lease boundary, and shafts. From that a mylar master for each level will be made incorporating all the workings and stopes. Then less costly sepias can be used to compile geology, sample locations, assays, or anything desired and we will have the capability to make copies easily.

This is not an easy task since the U.V.X. folks left no up-to-date level plans, never put their stopes on the level plans, and did not even leave a complete set of out-of-date maps for all levels. The drafting is being done evenings by Mark Bunn in Prescott. He charges $10.00/hr. plus materials.

Karl Budge has plotted the locations of all the rock samples available to us for 800 through 1400 levels. Of the several hundred samples, the largest specimens and most complete coverage are those taken in 1948-49 by G.W.H. Norman, geologist for Mingus Mountain Mining Company. They are adequate size and from scattered enough locations that they are worth cutting and assaying. About half or a total of about 150 samples are planned for assaying. A suite of 26 800-level specimens has already been cut and sent to Skyline Labs (May 28th). Another batch of 40 950-level and 26 1100-level samples have been selected for cutting. Rock sawing is being done by Beth Nichols-Boyd, the Yavapai College geology instructor, using the college rock saw. We are paying her $10.00/hr., and $1.00/rock to the college for our use of their saw. Skyline Labs in Tucson is doing the assays for gold and silver, using fire/A.A. and one-assay-ton. Also, since the samples are small, thumb size to fist size, I have requested that they be crushed entirely to minus 2 mm prior to splitting.

Some corrections of information provided by Paul Handverger are in order. The P.D. core geochemistry has already been noted and a corrected sheet is attached. Of particular note there are the two values deep in U.V.X.-2 which were erroneously noted as 0.1 oz/t higher in gold than they really are. His Appendix A is attached with the corrected Edith shaft collar elevation. He was off by over 300 feet, having used the 550 level elevation by mistake (the 550 level is so named for its position in the Little Daisy shaft).

Of considerable trouble has been Paul's plate 10 with lables for the Gold stopes and the Maintop orebody. First, there has been only one Gold stope. It is principally the 905 and 1125 stope. It is a vertical sheet-like body. It is <u>not</u> the orebody so labelled on Paul's plate 10 for the 1200 level. That is a separate body known as the 1205-veins.

The greater enigma, until resolved by much effort, has been the location of the Maintop orebody. It is wrong on both plate 10 and in the mine grid coordinates provided in U.S.G.S. Bulletin 308 (page 149). That orebody is the 1344/1354 stope which is a lithologic continuation of the Gold stope and often mistaken, through propogation of these errors, for the Maintop. The actual Maintop is clearly referred to in U.S.G.S. Bulletin 308 (in conflict with their own later stated grid location) as being within the Maintop claim. That is off to the west. Lindgren too refers to it as being cut by the Maintop claim boundary. On that basis, the Maintop is the 1210 stope with its connected 1202, 1112, 1302, and 1310 stopes.

Further support for this location for the Maintop is provided by its structural setting, its gold assays, its mining date, and old U.V.X. cross sections. Lindgren and others refer to the Maintop as lying within the hanging wall zone of the Verde fault. Only the western site fits this criterion. While the 1344 stope has some gold (highest report is .24 oz/t) its average is only .02 oz/t. The 1210 stope at the westerly site, however, has more consistent gold values averaging .13 oz/t. The Maintop was known to be an auriferous polymetallic body including 1 to 5 oz/t silver and 3 to 13 percent copper. These values match the westerly orebody. The Maintop is variously reported as being mined very early. This is compatible only with the western location mined in 1917 to 1922 (as determined by old maps). The eastern site with the 1344/1354/1101/1296 stopes was not mined until 1926-1933. The final evidence is a series of crude U.V.X. cross sections from about 1918. They clearly show the Maintop on the west side of the diorite body which can only be the 1210/1202 stope. A marked-up copy of the plate 10 is attached to highlight this change and ascertain that the error is not propogated with our work.

Planning toward our drilling effort, we need to make core storage. There is space in a ground floor side room of the U.V.X. Engineering office for up to 10,000 feet of core. It occurs in two juxtaposed locations with room for a 5,000 foot core rack in each. The writer recommends construction of one rack as soon as any commitment is made to drilling. The rebar and 4"x4" design used for other racks in that building should be adequate. No action will be taken on this until it is approved by both Paul Handverger and the reader.

A final attachment is a personnel listing mainly of historical interest but somewhat useful in identifying authors of old papers, maps, etc.

Bob Hodder's arrival and advice is anticipated for a few days hence. The items regarding the P.D. geochemistry, the Gold stope, and the geologic compilations will all be reviewed with him for his input. In addition, the rock samples now being cut can be studied. The cut faces which are lacquered display composition and structure very well.

Other than that, activities in the next few weeks will focus on the rock sample geochemistry results as they come in, and the geologic compilation.

U.V.X. Precious Metal Assays by Stope

Karl Budge + Don White – May 1, 1985

Stope		Average grade (oz/t) Au	Ag	Ratio Au/Ag	Maximum grade (oz/t) Au	Ag	# Precious metal assays	Remarks
728		.01	1.1	.01	.05	2.5	35	
819		.01	0.4	.02	.18	4.9	38	
821		.02	1.5	.02	.02	3.2	51	
824		.04	2.3	.02	.60	19.1	65	
826		.03	1.4	.02	.05	2.3	7	
828		.04	2.0	.02	.04	2.0	1	
901	Upper N end Gold stope	~.50	~3.0	~.17	2.32	7.2	~30	
903		.12	1.8	.07	2.08	6.3	72	
905	Upper third Gold stope	~.30	~2.5	~.12	1.36	8.4	~200	
906		.03	2.1	.01	.48	10.2	160	
911		.06	2.1	.03	.09	4.8	14	
956		.02	2.1	<.01	.10	3.0	44	
1102		.01	0.8	.01	.12	1.5	38	
1105	Lower N. end Gold stope	~.50	~3.0	~.17	1.22	3.2	~30	
1107		.01	2.0	<.01	.04	2.8	16	
1112	Upper Maintop	.02	1.0	.02	.02	1.0	3	
1119		.01	0.7	<.01	.02	1.4	24	
1125	Main Gold stope	~.70	~3.0	~.23	5.82	7.1	~700	
1202	Maintop	.02	0.8	.02	.04	1.1	25	
1204		<.01	0.6	—	<.01	1.0	6	
1205	'Veins'	.03	1.0	.03	.12	1.4	19	
1206	N of Gold stope	.10	1.0	.10	.72	1.9	34	
1207		.03	1.6	.02	.16	3.2	17	
1210	Maintop	.13	2.8	.05	.17	5.6	11	
1244		.01	1.3	<.01	.02	1.6	8	
1246		.01	1.0	.01	.01	1.2	14	
1303		.02	0.9	.02	.02	1.0	25	
1307		.03	0.6	.05	?	?	6	
1307-A		.12	0.8	.15	?	?	9	
1308		.04	5.4	<.01	.22	15.8	109	
1309		.02	1.0	.02	.02	1.1	16	
1312		.05	~100.	<.01	.26	~1235.	105	
1316		.03	17.2	<.01	.40	~86.	45	
1317		.03	6.8	<.01	.06	15.1	14	
1320		.02	11.8	<.01	.12	~120.	98	
1321		.05	1.4	.04	.40	3.3	11	
1323		.03	4.4	<.01	.03	4.4	1	
1325		<.01	<0.1	—	<.01	0.2	6	
1326		.07	~52.	<.01	.36	~620.	47	
1344		.02	1.6	.01	.24	2.6	61	
1353		.05	7.0	<.01	.38	~49.	54	
1405		.01	3.3	<.01	.14	~54.	42	
1413		.02	1.1	.02	.03	1.5	49	
1414		.02	1.5	.01	.04	5.0	49	
1417		<.01	1.0	—	.01	1.8	18	
1420		.01	0.8	.01	.03	4.6	100	
1425		.01	0.5	.02	.02	0.8	26	
1426		~1.00	~20.	~.05	2.80	~56.	3	
1427		.01	0.9	.01	.02	1.1	3	
1428		.02	1.1	.02	.03	1.4	46	
1429		.02	1.9	.01	.26	~22.	36	
1430		<.01	2.1	—	<.01	2.1	1	
1432		.02	1.4	.02	.03	2.3	30	
1440		<.01	0.7	<.01	<.01	0.9	5	
1444		.04	2.0	.02	.04	2.0	5	
1508		.06	0.4	.15	?	?	11	
Σ 56 Stopes	Arithmetic averages only =	~.08	~5.2	~.02	~5.82	~1235.	~2700	

PARTIAL CHRONOLOGICAL LISTING OF U.V./U.V.X. PERSONNEL

1916-30's	James S. Douglas	Pres., U.V.X. Mining Company
1916 +	F. A. Provot	Geologist, U.V.X.
1918 +	J. R. Finlay	Geologist, U.V.X.
1918-30's	R. W. Hart	Geologist, later mine mgr., U.V.X.
1920's	L. E. Reber, Jr.	Geologist. U.V,X.
1920's	George Kingdon	Mine Manager, U.V.X.
1920's-30's	R. Louis D'Arcy	Chief Mine Engineer, later Mine Superintendant and Manager, U.V.X.
1924-25	J. L. Fearing, Jr.	Geologist, U.V.X.
1926	Waldemar Lindgren	Geologist, U.V.X. (consultant)
1927-28	F. L. Ransome	Geologist, U.V.X. (consultant)
1920's-49	P. C. Benedict	Geologist, U.V.X. & later Mingus Mt. Mining Company
1930 +	Mayer G. Hansen	Geologist, U.V.
1931 +	Fred Searles, Jr.	Geologist, U.V.X.
1947-70's	G.W.H. Norman	Geologist, Mingus Mountain Mining Co.
1958-70's	C. A. Anderson	Geologist, U.S. G.S.
1958-70's	S. C. Creasy	Geologist, U.S.G.S.
1958-70's	J. T. Nash	Geologist, U.S.G.S.
1960's-80's	Paul A. Handverger	Geologist, Verde Exploration
1970's	Ira Jeroloman	Geologist, Copper Range
1970's	Norm Duke	Geologist, Callahan
1970's-80's	Paul Lindberg	Geologist, Anaconda, Coca Mines, & Indep.
1983 +	Robert Rivera	Geologist, V.P. Explor., Coca Mines

D.C.W.
May, 1985

M E M O

TO: Ben F. Dickerson, III, Carole A. O'Brien

FROM: Don White

DATE: December 23, 1985

SUBJECT: Update on U.V.X. geology and gold mineralization

Some impressions have developed as a result of several exercises lately. The exercises include detailed logging of the 1104 cores for the Florencia zone (copies sent you a couple weeks ago and included herein again) compiling thoughts for the A.E.S. paper on U.V.X. gold distribution (being proofed now; I'll get a copy to you soon) and going over the cores and sections with Bob Hodder during one day of his week in Arizona for the Vulture project.

While I wish I could say I had conclusions or findings with certainty, I'm afraid we can still only classify the following thoughts as observations and educated guesses:

1) The immediate hanging wall and footwall clay alteration and distant hanging wall carbonate alteration continue to be the two key indicators of proximity to the fragmental (hydrothermally brecciated) chert.

2) Gold is not necessarily confined to silica-healed microfractures in clasts. While clast supported breccia does correlate well with the mineralized zone in D.D.H. 1104-2, (which is the hole we spent a lot of time on when originally suggesting the partiality of gold for clast supported breccias) subsequent holes have had good gold grades in matrix supported breccia as well.

3) A series of two to four episodes of explosive volcanism is evident in cores of the Florencia zone chert breccias. The detail logs, if studied in terms of clast versus matrix support, clast percentage, and clast size parameters, reveal a "graded bedding" of sorts. For instance, in 1104-3, one can start with the thick interval from 282' to 323' which is clast supported with ~ 95% clasts and clasts of large dimensions. Lithologies accumulated sequentially up-section from that are less clast rich and have smaller average clast sizes until one gets to a matrix supported chert breccia with only 50% clasts and many of them very small. Then another event can be postulated which yields another cycle from clast rich to matrix rich, and from larger to smaller clasts.

One can theoretically use the number of cycles revealed in the three 1104 holes, and their relative thickness or clast sizes to try to work out the direction to the vent source. To me, however, it's not conclusive simply because the spread in our fan of holes is only 100 to 150 feet. There is the suggestion, though, that more than one vent played a role as chert breccia sources.

4) The more limonitic portions of the chert sequence seem to more regularly carry gold. The more limonitic cherts, as opposed to hematitic, are closer to the footwall in the Gold stope area and closer to the hanging wall in the Florencia area. The significance of this is not clear.

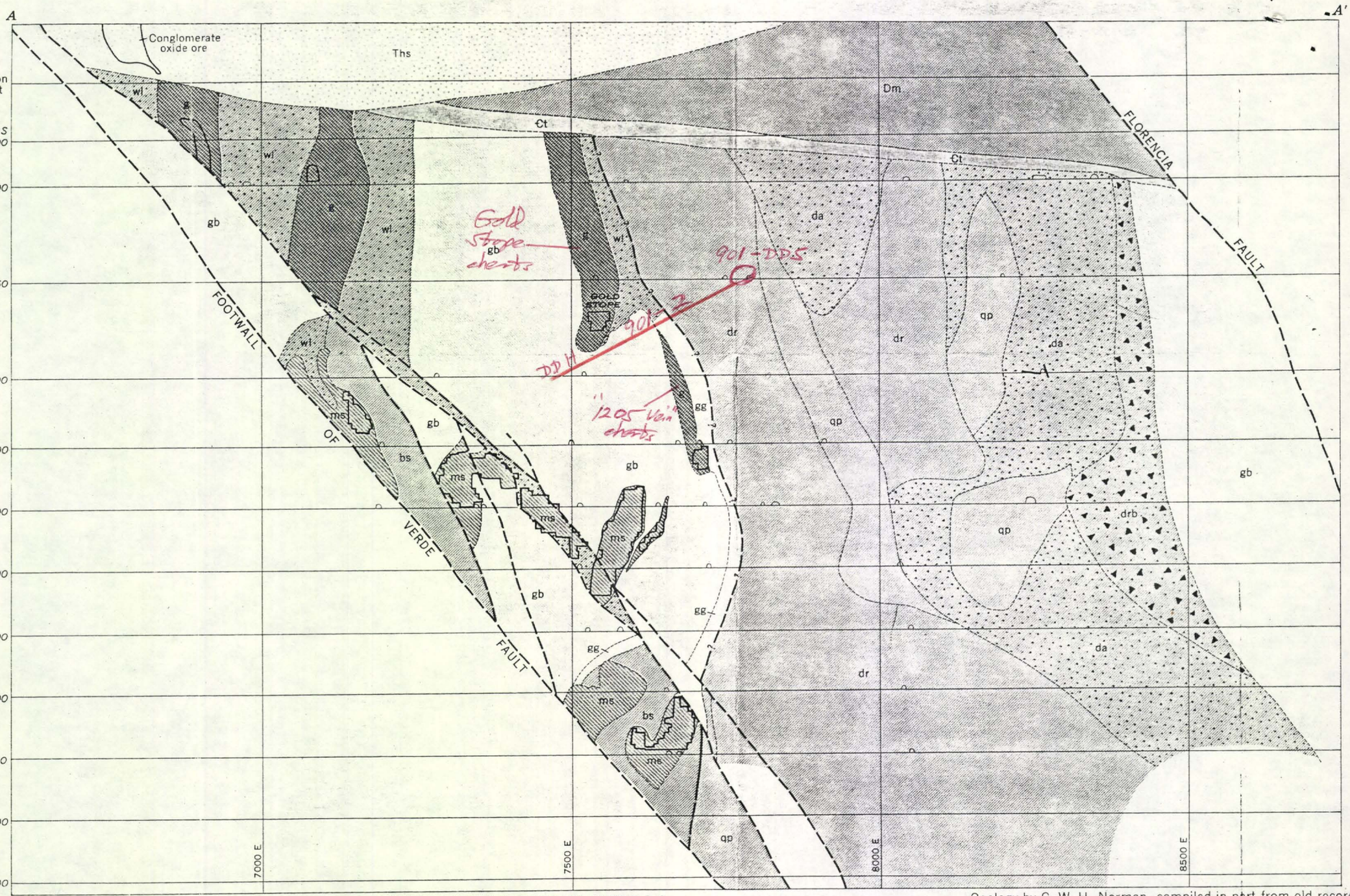
5) The "silica grit" noted in the drill logs is indicative of quiescent intervals or time lags in the volcanic activity. They often mark the stratigraphic top of the chert, before burial by tuffs. Its absence at the top of 1104-3 may indicate erosional activity as expected with slumping on the steeper portions of vent slopes.

6) The Gold stope area seems to represent a separate chert pile from that of the Florencia area. This comes from the lithologic contrasts and the structural findings. Of course D.D.H. 901-2 confirmed the lack of a connection between the true "1205 veins" and the Gold stope area (see revised section C-C' and attached section from Anderson and Creasey, 1958). Whether offset between those two zones reflects a paleo-scarp or something else is not clear. Perhaps the Gold stope cherts, which are finer grained (smaller clast sizes throughout) more silver rich, locally more manganiferous, and more gold rich, are indeed from a different vent tapping a geochemically more auriferous fluid than that which yielded the Florencia and 1205 cherts.

7) We need Gold stope grades and thicknesses (e.g., 15 feet of 0.4 oz/t Au) and thus must focus on Gold stope type targets rather than the likes of the Maintop or 1205 ore bodies. While the latter are auriferous, they are only 0.1 to 0.2 oz/t Au grades and narrow zones. We must continue to figure out what made the Gold stope.

8) It seems clear that not all the so-called diorite is intrusive. At least at its sourthern extremity intersected in D.D.H.'s 1104-1 and 2, it looks texturally like tuff and ignimbrite. In D.D.H.'s 901-2 and 3 it seems to be partly a flow rock with possible pillows, and partly a pyroclastic but also exhibits some coarser grained massive zones suggestive of an intrusive. Only now are we penetrating the core of the so-called diorite in D.D.H. 806-1. Much of it is massive, coarse grained and intrusive looking but I wonder whether much of that shown on the level plans isn't really extrusive andesite flows and agglomerate, etc. Perhaps more evidence will come out of the presently drilling 806-1 and/or the thin-section work by the Univ. of Arizona folks or from the A.G.S. visitors.

All of these issues are probably important to the overall understanding of gold distribution at the U.V.X. Which of them are pivotal to the finding of other Gold stopes is what we don't know. I shall continue to try to figure out some answers for the sake of the project, our profession, and my own edification.



INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.
MR 0449

Geology by G. W. H. Norman, compiled in part from old records

ORKINGS OF THE UNITED VERDE EXTENSION MINE, YAVAPAI COUNTY, ARIZONA

1000 Feet