protective measures that will reduce the hazardous dust concentrations to safe limits, or otherwise safeguard the health of the worker. The preventive or protective measures proposed must have the approval of the State Department of Labor prior to installation.

Experience has shown that by proper methods of wet drilling and other wet methods, dust can be controlled very satisfactorily under most conditions. Muck and mineral piles should be effectively wet down with water before loading operations are begun and as often as necessary during handling.

XVII. **Mine map:** An accurate map or plan of the workings or excavations of a mine shall be provided and drawn not less than 200 feet to the inch. One copy of the map shall be kept at the mine and shall be available to the Commissioner of Labor, or his duly authorized representative, at all times.

XVIII. **Checking in and out of mine:** A check-board shall be provided and all persons entering or leaving the mine shall check in and out.

XIX. **Drainage:** Adequate equipment for drainage of all working places shall be provided.

XX. **First aid supplies—first aid training:** At each mine there shall be maintained—conveniently located where employees may have individual access to them in case of accident or injury—a tight fitting first aid cabinet. The cabinet shall be marked "FIRST AID" and contain the following supplies:

FIRST AID SUPPLIES

INSTRUMENTS

1 pair scissors
thumb forceps
tourniquet
graduated medicine glass

DRUGS

2 oz. aromatic spirits of ammonia
2 oz. 4 per cent boric acid
2 oz. alcoholic iodine solution, half strength (for external use)
2—3 oz. collapsible tubes of bicarbonate of soda mixed with vaseline (3 per cent for burns)
2 oz. castor oil (for eye injuries)

DRESSINGS

1 doz. assorted sizes sterile gauze bandages
1 spool Z. O. adhesive plaster, 1 inch by 5 yards
3—½ oz. packages of absorbent cotton
3—1 yard packages of sterile gauze
Splints of assorted sizes for fractures
Wooden applicators wound with cotton
Wooden tongue depressors

The Department of Labor accepts standard unit type kits as complying with the first aid regulations.

There shall be maintained one stretcher and blanket properly stored in a convenient storage marked "STRETCHER".

At least one person who has been properly trained in first aid application shall be on duty at all times. If first aid training is desired, application should be made to the Department of Labor.

XXI. **Explosives—safety in transportation, handling, storage, and use:**

(1) **Location of magazines:** Where possible, all magazines in which explosives or detonators are kept or stored, and erected after October 1, 1942, shall be located at a distance from buildings, railroads, and highways in conformity with the QUANTITY AND DISTANCE TABLE FOR BARRICADED MAGAZINES. Where such magazines are not barricaded, the distance shown in the table shall be doubled.

The table of distances will be found in Part II of this code.

(2) **Construction of magazines:** The principal magazine, referred to as CLASS "A" MAGAZINE shall be bullet and fire resistant, weatherproof, dry and well ventilated.

The CLASS "B" MAGAZINE shall be a substantially constructed wooden box marked properly and equipped with proper lock. It shall be located so as to be safe from fire or from flying stones. If the daily supply magazine is close to buildings or highways, it must be made bulletproof by using a double box with a six inch space between the outer and inner walls and the space filled with sand, clay or mine waste or "fines". The exterior of the magazine must be covered with No. 26 gauge galvanized iron or its equivalent.

(3) **Marking the magazine:** At a distance of not less than six feet and at right angles to the sides of the magazine a sign shall be posted with the words "EXPLOSIVES—KEEP AWAY" printed in letters not less than six inches high.

(4) **Separate storage for detonators:** Blasting caps shall not be stored in the same magazine with dynamite, powder, or other high explosives, but shall be stored in a magazine of similar construction to that of the high explosive magazine.

(5) **Opening packages of explosives:** Cases of dynamite, black blasting powder or other high explosives shall not be opened in the magazines.

Wooden, fibre or hard rubber tools shall be used in opening cases of high explosives.

(6) **Transporting explosives:** All blasting caps, detonators and electric squibs used in a day's work shall be carried into the mine in the containers in which originally packed by the manufacturer; except that a quantity less than one full container shall be carried to the place it is to be used in wooden or fibre boxes without interior exposed nails or other fastenings. Separate containers shall be used for explosives and detonators.

(7) **Warning signals:** A warning signal such as a whistle, siren or bell shall be sounded before and after each blast. Sufficient time shall be allowed for persons in the danger area to retire to a safe place. Persons shall not be permitted to stand in exposed places while a blast is being made, nor shall any person return to the place of the blast until the return signal has been given by the shot firer.

Where travelways approach the danger area, a designated person shall be stationed in a safe location for the purpose of stopping traffic. If there are resilences located within the danger zone, the inhabitants shall be advised as to the time of the blast.

(8) **Firing in gassy mines:** In all mines where locked safety lamps are used, an adequate test for gaseous conditions shall be made and no blast shall be fired until test has been made and found to be safe.

(9) **Examination of face:** After the firing of every blast and before commencing work on the face or immediately adjacent thereto, a competent person shall examine the face, sides and roof of each working place that has been shot. No person except the person making the examination shall enter any working face until such examination has been made.

(10) **Loading holes:** 1. Primary blasts: No work should be carried on immediately in front of the section being loaded. The number of persons in the immediate vicinity of a hole being loaded shall be kept to a minimum.

2. Hammer drill holes: Only wooden tamping poles shall be used. Loading shall be done with great care. Smoking or carrying lights while handling explosives is strictly forbidden. The use of black powder and higher explosives in the same hole is prohibited.

Never force a primer cartridge into a drill hole. Either remove the obstruction or make up a smaller primer which can be inserted without force.

Explosives should not be handled during an electric storm. Bore holes for electric firing should not be connected or loaded during the approach of a thunderstorm. If charges are already loaded and connected, all persons should be kept at a safe distance from them while the storm is in progress. If necessary to leave over night, the ends of the wires should be twisted together and coiled.

3. Block holes: Where fuse and cap are used to explode charges, the cap shall be attached to the fuse by means of a crimper. Caps shall not be crimped within a dynamite magazine or within ten feet of such a magazine.

Any brand of fuse not previously used shall be tested by the blaster to determine its rate of burning before it is used in actual work.

Only freshly cut ends of fuse shall be inserted into blasting caps. When starting to use a new coil, one inch shall be cut from the end and discarded.

In lighting shots primed with fuse and cap, a signal device shall be used to notify the men when to cease lighting and to return to the shelter provided for them.

be tested at regular intervals by a competent person. Hemp rope, in lengths of 6 or 8 feet, looped over the power cable is considered a safer means of moving it.

An approved fire extinguisher should be placed near each electric motor.

The following safety rules shall be complied with in all electrical work:

Do not change any wiring or connections while the power is on. All electrical work, when possible, shall be done on days when the plant is not in operation. Whenever circuits are opened for repairs, alterations or examinations, the disconnecting switches shall also be opened. The workman responsible for having the circuit opened shall place on a controlling switch a tag bearing his name and a notice that the switch shall not be closed until the tag is removed; also, the switch should be locked out with the workman holding the key. No person, other than the workman tagging the switch, shall be allowed to remove the tag. Whenever it becomes necessary for the person tagging a switch to leave before the work is completed, he shall go to the switch, accompanied by the man who is to assume the responsibility, and remove the tag and unlock the switch; his successor shall then lock the switch and attach a similar tag to the switch before he begins work.

XII. **Guards:** All belts, gears, pulleys, shafts, wheels and other moving parts of machinery shall be adequately guarded. If the guards are removed for any reason, they should be replaced before the machine is put in motion.

XIII. **Protective clothing and equipment:** All persons working around or subjected to flying particles of hard materials shall be provided with and required to wear goggles which afford adequate protection.

All persons working underground shall wear protective hats or caps.

Safety shoes should be worn by all persons handling materials.

XIV. **Scaffolds and platforms:** All scaffolds and platforms shall be safely constructed.

XV. **Ventilation:** An adequate supply of pure air shall be provided, and shall be circulated to all working places underground. When underground workings have reached a depth or distance of 500 feet from the surface or opening, some approved means of mechanical ventilation will be required.

For ventilation required for coal mines, refer to Sections 6902, 6903 and 6904 of the Consolidated Statutes of North Carolina.

XVI. **Dust control:** Where harmful dust conditions exist in work places, there shall be preventive or control measures installed in such work places that will effectively reduce the dust concentration to a safe limit as defined by the Commissioner of Labor.

Wherever in the opinion of the legal representative or authorized agent of the State Department of Labor there exists atmospheric dust conditions that exceed the safe limits or threshold concentrations as defined by the State Board of Health, or which are detrimental to the health of the worker as confirmed by technical studies of the State Board of Health, or by the State Department of Labor, there shall be installed preventive or

All hoists shall be equipped with an efficient brake capable of stopping and holding the loaded car at any point on the slope or shaft. Where practicable, they shall also be equipped with approved devices which will bring the hoist to rest upon failure of power and will permit lowering of the load by brakes.

Every drum used for hoisting or lowering persons in any mine shall be equipped with flanges or drum guides of sufficient dimension to allow a height of two inches above the cable at all times.

At all shafts and slopes where men are hoisted or lowered, adequate protection against overwind by means of an automatic stop or other approved device shall be provided.

The design and construction of each cage shall be such as to support safely five times the maximum dead load it will be required to carry and ten times the live load.

Every cage used for hoisting or lowering men in shaft shall be provided with a substantial cover. The entrance of each cage should be protected by a door five and one-half feet high. The sides shall be substantially enclosed to the top of the cage. There shall be an adequate number of hand holds.

All slopes or inclines in mines shall be provided with derail switches or automatic car stops near the top of the incline or slope.

The hoisting equipment shall be housed in a suitable shed or building which will furnish protection to the operator and equipment. An efficient signal system shall be provided for every hoisting engineer operating on a slope or shaft.

IX. **Boiler inspection:** Every steam boiler shall be inspected as required by the North Carolina State Boiler Inspection Law.

X. **Pressure tanks:** All compressed air tanks, cylinder, or other vessels and their safety valves and other attachments should conform to the latest A. S. M. E. Code for Unfired Pressure Vessels.

XI. **Electrical installations and fixtures:** All electrical wiring shall be strung on standard insulated supports 5 feet or more above the floor or travelway. In the event this height is not available, the wiring shall be placed on the opposite side of the haulageway from the traveling space and shall be properly guarded.

Electric circuits, equipment, frames and bed plates of generators, transformers, compensators, rheostats, motors, and switches shall be effectively grounded. All metallic coverings and conduit shall be grounded.

All electric light and power lines, regardless of voltage, shall be insulated and properly strung on standard insulators.

Drop cord extension light lines shall be flexible with heavy rubber insulation, equipped with heavy wire light globe shield and hook and heavy rubber handle.

If employees are required to handle heavy and high voltage rubber covered power lines, they shall be provided with and required to wear rubber gloves and rubber boots, or electrician's shoes. The gloves should

(11) **Firing blasts:** Rubber covered, No. 14 copper leading wire, or its equivalent, is recommended for firing blasts. All untaped connections shall be kept off the ground and care shall be taken to keep all wires from contact with pipe lines, rails, wire fences, etc.

A person shall be stationed at the firing switch or blasting machine and connections shall not be made to the leading wires until just prior to the time of the blast and shall be in the presence or under the direction of the blaster. For a primary blast a two minute signal shall be sounded five minutes prior to the blast.

(12) **Defective explosives:** Defective caps or explosives shall be stored separate and apart from other explosives, and plainly marked "DEFECTIVE". It is recommended that when such products are found, the factory representative of the manufacturer, or other competent person, destroy them. This is a very particular job and should not be attempted by anyone not familiar with its hazards.

XXII. **Report of accidents:** The report of all serious or fatal accidents is required under Section 6906 of the Consolidated Statutes of North Carolina, as amended by C. 223 Public Laws of 1939. Accident report blanks will be furnished on request.

XXIII. **General safety:** All unsafe or dangerous conditions in any part of the mine and accidents occurring in the course of the operations shall be promptly reported.

Talking to the hoistman or signalman while they are on duty shall not be permitted.

Mushroom heads on chisels, points and traces shall be properly conditioned before using.

Every injury should be reported immediately to the foreman and the proper first aid given before the employee returns to work.

Safety meetings should be held weekly for all supervisors and at least monthly for all employees.

Underground workings and the surface should be connected by telephone.

driven fan for ventilating purposes provided the fan is housed in non-combustible material and the air duct leading to the opening is also built of non-combustible material. This particular rule concerning structures around mine openings shall not apply to any shaft or slope until the work of preliminary development and subsequent hoisting of material mined has commenced.

A. **Exceptions:**

This requirement shall not apply to structures erected prior to October 1, 1942.

For means of ingress and egress required for coal mines, refer to Section 6900 of Consolidated Statutes of North Carolina.

II. **Fencing:** The top of each shaft, slope or incline and every intermediate level or station thereof shall be adequately fenced to prevent persons or animals from falling into them. Signs shall be placed at intervals, reading: "DANGER—KEEP OUT."

III. **Room and pillar method of mining:** When the room and pillar method of mining is engaged in, pillars of sufficient size shall be left in place to support the roof or overburden. This does not prohibit later extraction of pillars nor do the pillars take the place of timbers as the rooms are advanced.

IV. **Roof inspection:** In the parts of the mine where persons are employed or travel frequently, the roof shall be kept free of loose material.

V. **Timbering:** Every shaft, incline, slope, adit, tunnel, level or drift and any working place in the mine shall be properly secured by timber.

VI. **Hoisting requirements in shafts being sunk:** Over all shafts, as they are being sunk, there shall be erected not les sthan 20 feet above the dump landing, a substantial structure to support the sheaves and pulleys. This structure shall be erected as soon as a substantial foundation is obtained and in no case shall a shaft be sunk to a depth of more than 50 feet without such structure.

No hand powered windlass hoist, winch or derrick shall be used unless equipped with a positive means of holding the load in any position.

VII. **Rules to be observed in shafts being sunk:** In a shaft or winze which is being sunk, the bucket or skip shall not be lowered directly to the bottom of the shaft where men are working, but shall be held at least 15 feet above the bottom until the signal to lower has been given.

While shafts are being sunk, all blasts therein shall be exploded by an electric battery.

After a suspension of work and after the firing of each blast in a shaft, the bottom of the shaft shall be examined and tested for gas by a competent person before the workmen are allowed to descend.

After each blast in a shaft, all loose material shall be swept down from the timbers before the workmen descend.

VIII. **Haulage and hoisting:** The use of gasoline engines in mines is forbidden.

RULES AND REGULATIONS

I. **Means of access:** Safe means of access shall be provided to all working places.

Where ladders are used, they should be constructed in lengths not in excess of 20 feet each and they shall be erected in a staggered line with a landing between lengths. The ladders shall be of steel or suitable wood construction.

Where stairs are used, the treads should be at least 1¾ inches in thickness and combined tread and riser distance shall not exceed 18 inches. The tread width shall not be less than 7 inches and shall be uniform in width. Riser heights shall be uniform for any given stair including both top and bottom step. All stairs shall be guarded on open sides by substantial handrails. Where long flights of stairs are used, landings shall be provided not more than 30 feet apart. Landings between flights of stairs shall be a flat platform, the width of the stairway, and not less than 3 feet in length.

1. **Mine outlets:** There shall be at least two outlets to the surface from every seam, bed or vein actually being worked. Both outlets shall be readily accessible from every section of the mine. This provision shall be enforced without exception if any shaft, slope or drift shall have been advanced 300 feet or more from the mouth. These outlets shall be separated by a stratum of not less than 100 feet in breadth underground and at the surface. It shall not be necessary for these two openings to belong to the same mine if the persons employed have safe, ready and available means of ingress and egress.

A. **Exceptions:**

No second outlet shall be required:

(a) When opening a new mine while it is being worked for the purpose of making communications between the two outlets.

(b) When opening a new lift or level in a mine while being worked for the purpose of making communication between two outlets.

2. **Lining of mine outlets:** For a distance of 30 feet beyond the surface, and at all other places where the strata are not safe, every shaft, slope and other mine opening shall be securely cased or lined.

3. **Places of refuge:** A clearance space of not less than 2½ feet on one side of the tramway shall be maintained at all times where mechanical haulage is used. Where such space cannot be maintained, refuge places shall be provided at not more than 60 foot intervals, which shall afford a clearance space not less than 4 feet wide, 5 feet high and 8 feet long. The roof and sides shall be made secure, using lagging if necessary. All such places of refuge shall be conspicuously marked.

4. **Structures around mine openings:** No inflammable structure shall be erected nearer than 200 feet to any entrance; and no structure of any description shall be erected nearer than 50 feet to any mine opening unless the building plans have been approved by the Commissioner of Labor or his duly authorized representative. Nothing in these regulations shall be construed to prohibit the erection of a mechanical or electrically

PART II
GENERAL SAFETY RECOMMENDATIONS

1. **Means of access:** Where a single shaft affords the regular means of ingress and egress to persons employed underground, such shaft shall be divided into at least two compartments by solid partitions. One of these compartments shall be set aside for use as a ladderway and no hoisting conveyance shall be allowed therein.

In the construction of ladders, stringers should not be less than 2 inches by 4 inches, notched or mortised full depth into the stringers. The width of the ladder shall not be less than 12 inches, with the rungs uniformly spaced and not more than 14 inches center to center. The minimum clearance back of the rungs should not be less than 6½ inches from any fixed object.

All fixed ladders shall be of sufficient length to extend at least 3 feet above the landings. The top of the ladder shall be firmly secured to the ledge.

In stopes with square sets, the working floors shall be closely and securely lagged over. Openings in the floors shall be protected by standard railings.

II. **Timbering:** No split props shall be permitted in any mine to support the sides or roof unless it is a cross-section equal or greater than a six inch round or square prop.

No hemlock, chestnut, poplar, cypress, or other soft, brittle, or elastic wood shall be used as collars in any mine.

Mud sills of ample size shall be used to support the legs, collars and lagging when the floor of the drift or gangway is soft. All legs for timber shall be set in notches in the mud sill. The notch or juggle cut in the sill shall not be less than one inch nor more than one-third the thickness of the sill. If the floor is composed of solid material and a mud sill is not required, the legs shall be properly hitched in the bottom to prevent the slides from pushing the timber.

Where miners are undercutting coal with picks, they shall be protected by props and breast caps, or head-block, set not more than three feet from the face and not more than six feet apart.

Attention is called to the fact that rot will spread from old timbering to new when the old rotten members are left in place. They should be removed as a matter of economy as well as safety. The life of timber can be prolonged considerably by the use of a preservative, such as creosote, coal tar, or other products, and this should be given due consideration before timbering is begun.

III. **Hoisting requirements in shafts being sunk:** Shafts that are being sunk shall be equipped with guides to prevent the bucket from swinging while ascending or descending. Such guides shall be maintained at a distance of not more than 75 feet from the bottom of the shaft until it has been completed. This requirement shall not apply to shafts 100 feet or less in depth. Hoisting by bucket shall not be done in shafts of a greater depth than 200 feet.

All material elevated from shafts as they are being sunk shall not be raised except in a bucket or on a cage, and such bucket or cage must be connected to the cable or chain by a safety hook or clevis, or other approved attachment.

Not more than four persons shall be hoisted or lowered at the same time on a bucket. Standing on the sides shall not be permitted while the bucket is in motion. No person shall ride on a loaded bucket at any time.

No bucket shall be allowed to leave the top or bottom of any shaft or winze until the workman in charge has steadied it.

No person shall be permitted to do any work in a shaft when drillers or muckers are working at the bottom of the shaft.

IV. **Haulage and hoisting:** The signal code in use shall be posted in the engine room and other places where signals are given within easy sight of the hoisting engineer. The signal code shall be printed in heavy plain type.

The following code of signals is used by most of the operating mines in the United States and is recommended:

SIGNALS FROM SHAFT OR SLOPE TO HOIST ENGINEER

a. When the hoist is at rest_____1 bell or signal_____HOIST
b. When the hoist is in motion_____1 bell or signal_____STOP
c. When the hoist is at rest_____2 bells or signals _____LOWER
d. When the hoist is at rest_____3 bells or signals____MEN READY TO GET ON CAGE OR SKIP

SIGNALS FROM HOIST ENGINEER TO SHAFT OR SLOPE

a. 3 bells _____MEN CAN GET ON CAGE OR SKIP
b. 4 bells _____SEND UP EMPTY CAGE OR SKIP

Additional signals may be added when required for such as BLASTING, ACCIDENTS, etc.

Every hoisting engineer should be provided with an indicator in order to determine when the load is approaching the top or bottom of a slope, shaft or any level.

No person shall ride upon or against any loaded car or cage, on any shaft, slope or haulageway.

Shelter or safety holes shall be provided at the bottom of all shafts and slopes and kept free from obstructions to enable persons at the bottom of the shaft or slope to escape readily in case of danger.

The head frames or structures used for supporting the cage, skip, or trip, shall be so designed that it will withstand a greater load than the calculated breaking strength of the hoisting ropes or rope attachments. A platform with standard railings and toe board shall be provided at the head sheaves and a safe railed stairway or standard ladder leading thereto.

DEFINITIONS

The term MINE shall mean all underground workings as excavations, shafts, tunnels, slopes, drifts, entries and all other openings, and shall include all equipment and materials connected with its operation.

The term WORKINGS shall mean all the excavated parts of a mine, those abandoned as well as the places actually being worked.

The term SHAFT shall mean a vertical opening through the strata and which is or may be used for the purpose of ventilating or drainage, or for hoisting men or materials in connection with mining operations.

The term SLOPE shall mean any inclined way or opening used for the same purpose as a shaft.

The term DRIFT shall mean any inclined way or opening wherein haulage is effected by any methods and which is used for the same purpose as a shaft or slope.

The term OWNER or OPERATOR shall mean the person, firm or corporation who is in legal possession of a mine, and as such responsible for the condition and management thereof.

The term TIMBER shall mean all wood, steel, concrete or other materials used in strengthening and supporting any part of a mine.

The term STOPE shall mean an excavation from which the ore has been removed, either above or below a level in a series of steps.

The term STANDARD RAILINGS shall mean railings not less than 42 inches in height and provided with intermediate rail between the top rail and the ground or floor, and constructed in a permanent and substantial manner.

The term WINZE shall mean a steeply inclined passageway driven to connect one mine working place with another at a lower level.

The term ADIT shall mean a nearly horizontal passage from the surface.

The term EXPLOSIVES shall mean and include any chemical compound or chemical mixture which is used in blasting and so recognized by the INSTITUTE OF MAKERS OF EXPLOSIVES.

The term BARRICADED shall mean a physical barrier, either natural or artificial, around the magazine to protect the life and limb of persons.

The term CLASS "A" MAGAZINE shall mean the principal magazine located outside of the mine and used for the storage of 200 pounds or more of explosives.

The term CLASS "B" MAGAZINE shall mean the magazine used for the storage of less than 200 pounds of explosives, or the magazine located in the mine and used for the storage of one day's supply of explosives.

The word SHALL where used is mandatory and SHOULD is advisory.

appropriate action in the civil courts of the State to enforce such rules and regulations. Upon request of the Attorney General, any solicitor of the State of North Carolina in whose district such rule or regulation is violated may perform the duties hereinabove required of the Attorney General."

For the modification of any of these rules and regulations the following shall be the method of procedure:

Any employer, employee or other person may file a petition with the Commissioner of Labor setting forth the rule or regulation upon which a change is desired and the reason for such a change.

Upon receipt of a petition the Commissioner will determine its merits, and, if a hearing is necessary, notice of the time and place will be given to the petitioner and to such other persons as the Commissioner may find directly interested.

V. **Precautions to be observed in the use of safety lamps:**

1. Be sure that the lamp is locked before being taken into the mine.

2. Examine it carefully yourself to see that it is in good condition, even if it has passed the lamp inspector.

3. Do not set your lamp on the bottom of the mine. It may be accidentally upset and extinguished and the glass globe may be broken. It is safer to hang the lamp on a timber by a stout nail.

4. When testing for gas, be careful to prevent dripping water from striking the glass globe.

5. When gas flames up in your lamp, withdraw the lamp slowly and carefully. If the flame goes out, retire to fresh air before attempting to relight it.

A report of all gas examinations shall be kept in a book provided for that purpose. Each report shall be made immediately after the examination is made. Each report shall give time, date and hour at which such examination was made and shall be signed by the person making the examination. Each working place shall be marked and dated at the time of examination.

The mine superintendent or foreman shall be responsible for shutting down all workings in which accumulation of gas encountered cannot be sufficiently diluted, rendered harmless and swept away by existing ventilation equipment. Every person, except those who may be required to remove the danger, shall be withdrawn from or prevented from entering each working and no person shall be allowed to return to work therein until an examination has been effected by a competent person and the workings reported safe for him. A report of all facts in such case shall be made to the Commissioner of Labor. Signs marked "DANGEROUS—KEEP OUT" shall be placed at all entrances to the working closed on account of gas.

When workings are carried to a point within one-half mile or less of a suspected worked out or abandoned gas area, there shall be maintained at least twenty feet in advance of each working head one drill hole not to exceed two inches in diameter.

VI. **Test hole for water:** When approach is made to an area likely to contain an accumulation of water, working places shall not exceed twelve feet in width. At a distance of not less than twenty feet in advance of such working there shall be at least one drill hole of no more than two inches in diameter.

VII. **Explosives—safety in transportation, handling, storage and use:**

1. **Quantity and distance table for barricaded magazines:**

AMERICAN TABLE OF DISTANCE

1919 REVISION

Blasting and Electric Blasting Caps		Other Explosives		Inhabited Buildings Barricaded* (Feet)	Public Railway Barricaded* (Feet)	Public Highway Barricaded* (Feet)
Number Over	Number Not Over	Pounds Over	Pounds Not Over			
1,000	5,000	----------	----------	15	10	5
5,000	10,000	----------	----------	30	20	10
10,000	20,000	----------	----------	60	35	18
20,000	25,000	----------	50	73	45	23
25,000	50,000	50	100	120	70	35
50,000	100,000	100	200	180	110	55
100,000	150,000	200	300	260	155	75
150,000	200,000	300	400	320	190	95
200,000	250,000	400	500	360	215	110
250,000	300,000	500	600	400	240	120
300,000	350,000	600	700	430	260	130
350,000	400,000	700	800	460	275	140
400,000	450,000	800	900	490	295	150
450,000	500,000	900	1,000	510	305	155
500,000	750,000	1,000	1,500	530	320	160
750,000	1,000,000	1,500	2,000	600	360	180
1,000,000	1,500,000	2,000	3,000	650	390	195
1,500,000	2,000,000	3,000	4,000	710	425	210
2,000,000	2,500,000	4,000	5,000	750	450	225
2,500,000	3,000,000	5,000	6,000	780	470	235
3,000,000	3,500,000	6,000	7,000	805	485	245
3,500,000	4,000,000	7,000	8,000	830	500	250
4,000,000	4,500,000	8,000	9,000	850	510	255
4,500,000	5,000,000	9,000	10,000	870	520	260
5,000,000	7,500,000	10,000	15,000	890	535	265
7,500,000	10,000,000	15,000	20,000	975	585	290
10,000,000	12,500,000	20,000	25,000	1,055	635	315
12,500,000	15,000,000	25,000	30,000	1,130	680	340
15,000,000	17,500,000	30,000	35,000	1,205	725	360
17,500,000	20,000,000	35,000	40,000	1,275	765	380

* Barricaded, as here used, signifies that the building containing explosives is screened from other buildings, railways or from highways by either natural or artificial barriers. Where such barriers do not exist, distances should be doubled.

PART I

RULES AND REGULATIONS GOVERNING MINING INDUSTRY

PURPOSE:

The purpose of this code is to provide safety standards for the protection of the health, safety and general well being of employees engaged in the mining industry.

AUTHORITY:

Under Sub-section (f) of Section 7310-h, Consolidated Statutes of North Carolina, the Division of Standards and Inspections of the Department of Labor is authorized and directed "to conduct such research and carry out such studies as will contribute to the health, safety and general well being of the working classes of the State. The findings of such investigations—shall be promulgated as rules and regulations governing work places and working conditions." Under this authority the following rules have been promulgated to safeguard the lives, limbs and health of workers in Mines.

SCOPE:

The code is divided into two parts. Part I is mandatory. Part II is not mandatory, but is for the purpose of furnishing information and advice.

PENALTY:

Under Chapter 398, Public Laws of North Carolina, Session of 1939, it is provided:

"Section 1. That Chapter three hundred twelve of the Public Laws of one thousand nine hundred thirty-one be, and the same is hereby amended, by inserting a new section to be designated as Section thirteen (a) as follows:

"Section 13 (a). In the event any person, firm or corporation shall, after notice by the Commissioner of Labor, violate any of the rules or regulations promulgated under the authority of this Act or any laws amendatory hereof relating to safety devices, or measures, the Attorney General of the State, upon the request of the Commissioner of Labor, may take

2. **Additional safety precautions in handling explosives:** Magazines shall be ventilated and the openings for ventilation shall be so screened that sparks may not enter.

Magazine keys shall be in charge of a person especially appointed for the purpose, who shall be responsible for its conditions and see that it is kept closed.

Smoking, naked light or any source of heat in magazines is prohibited.

If leaks develop in magazine roof or walls, they shall be repaired at once.

When black blasting powder and dynamite are both stored in one magazine, store each explosive separately.

Unused dynamite and caps shall be taken to the permanent storage magazine at the end of each day.

Dynamite boxes shall be laid flat, top side up. Powder shall be stored with kegs standing on end, bungs down or on sides, "seams" down. Corresponding grades and brands shall be stored together in such a manner that brand and grade marks will show. All stock shall be stored so as to be easily counted and checked and so the oldest stocks can be delivered and used first.

Magazine floors should be swept regularly and kept clean. Good housekeeping in magazines shall be required at all times.

Rules and regulations for proper storage, handling and transportation of explosives should be placed on the inside wall of every explosive magazine. Your manufacturer of explosives will gladly furnish these on request.

Make frequent inspections around the magazines and promptly remove dirt, leaves or other debris which may have filled up ditches, drains or ventilators.

Empty dynamite boxes previously used for high explosives may be dangerous. Examine them carefully for stains and if they are stained they should be destroyed and not used for other purposes.

"Abode" or "mud-cap" blasting is inefficient and hazardous.

VIII. **Bulletin Boards:** Suggested designs of bulletin boards may be had from the Department of Labor on request.

Neat and attractive bulletin boards, properly placed, are esential in maintaining the interest of all workers in accident prevention work. Frequent changes of bulletins should be made. Good material for bulletin boards consist of safety bulletins, safety rules, safety posters and slogans, photographs, cartoons, exhibits of unsafe tools, broken goggles, crushed hard or safety hats and safety shoes, newspaper accounts of accidents, etc.

IX. **Sanitation:** Standard approved plans for sanitary surface pit toilets may be secured from the State Board of Health or the Department of Labor on request.

For sanitary drinking water facilities, tight fitting milk cans, with faucet attached and individual cups will satisfactorily fulfill this requirement.

X. **General safety:** If cars have to be handled by hand, they should be pushed not pulled.

All electric switches should be operated from an insulated platform.

All electric control switches should be plainly marked, with the name of the machine which it controls.

All electric switches located in wet places shall be mounted in approved weatherproof switch boxes.

Men should be trained in the proper method of lifting and carrying materials.

The proper equipment should be provided for handling material.

APPROVAL OF RULES AND REGULATIONS

In accordance with the law the "Rules and Regulations governing Mining Industry" above are hereby approved, to become effective on October 1, 1942.

J. MELVILLE BROUGHTON,
Governor of North Carolina.

FORREST H. SHUFORD,
Commissioner of Labor.

Raleigh, N. C.,
June 23, 1942.

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Docket 4216

RULES AND REGULATIONS

GOVERNING

MINING INDUSTRY

NORTH CAROLINA DEPARTMENT OF LABOR

FRANK CRANE

Commissioner

FIG.-9

IMEA-4216

RECEIVED
JUL 5 - 1956

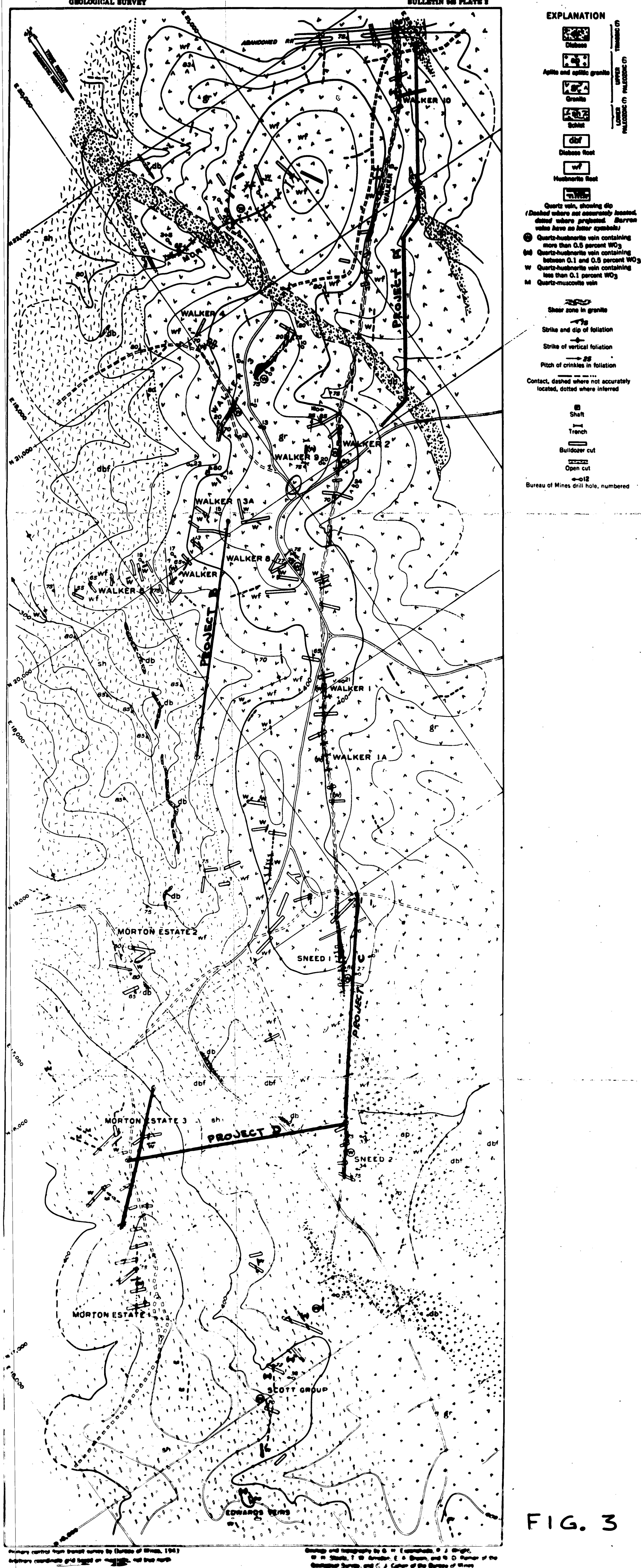
Photograph by
U. S. Dept. of the Interior
Bureau of Mines
Minerals Technology Division
College Park, Maryland

CP Neg. No. _____

Date _____

If this picture is used for publication, please credit the Bureau of Mines.

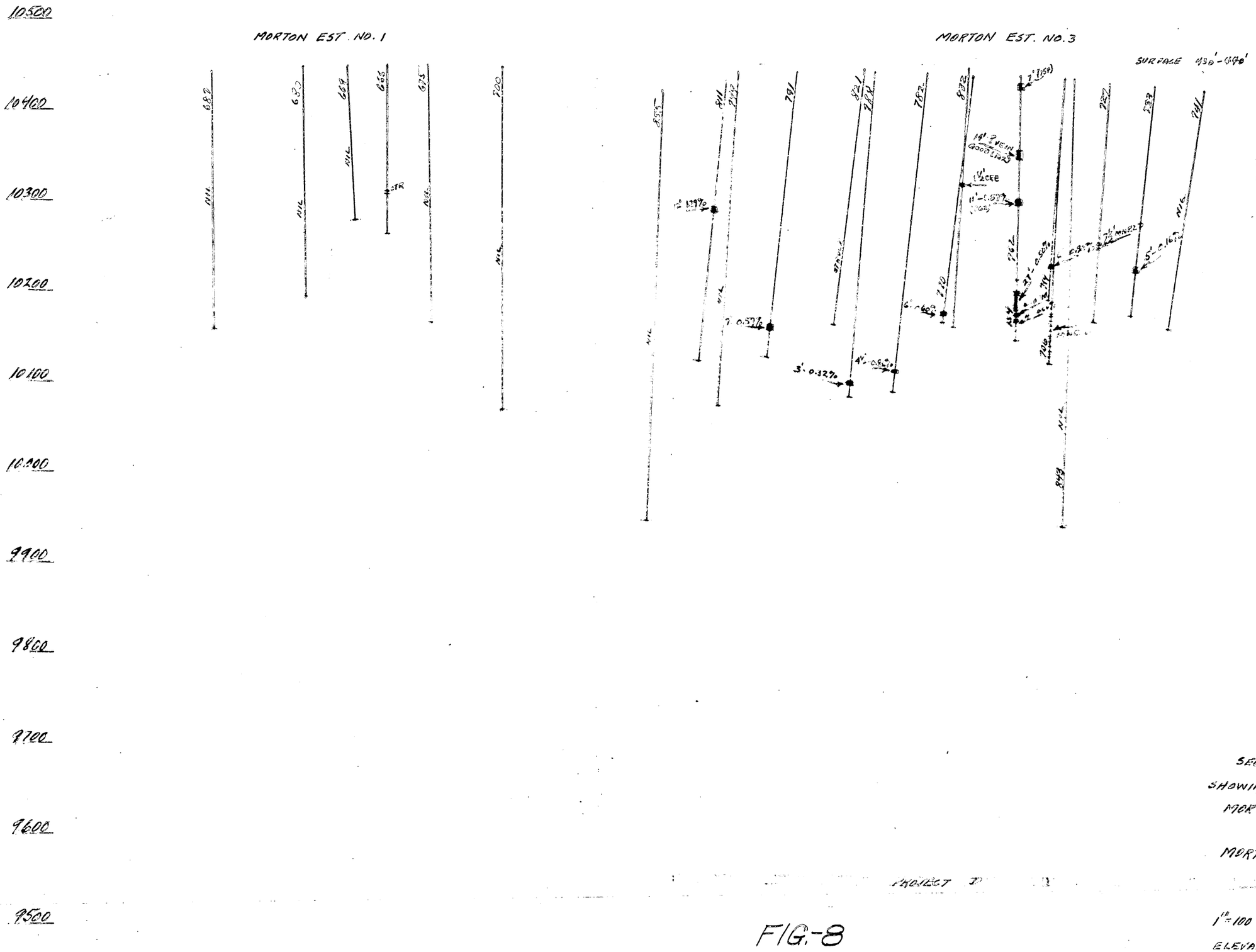
RECEIVED
JUL 5 - 1956



GEOLOGIC MAP OF THE CENTRAL PART OF THE TUNGSTEN DISTRICT, IN VANCE COUNTY, NORTH CAROLINA

1" = 300'

FIG. 3



SECTION N29E
SHOWING DRILLING ON
MORTON EST. NO. 1 VEIN
AND
MORTON EST. NO. 3 VEIN

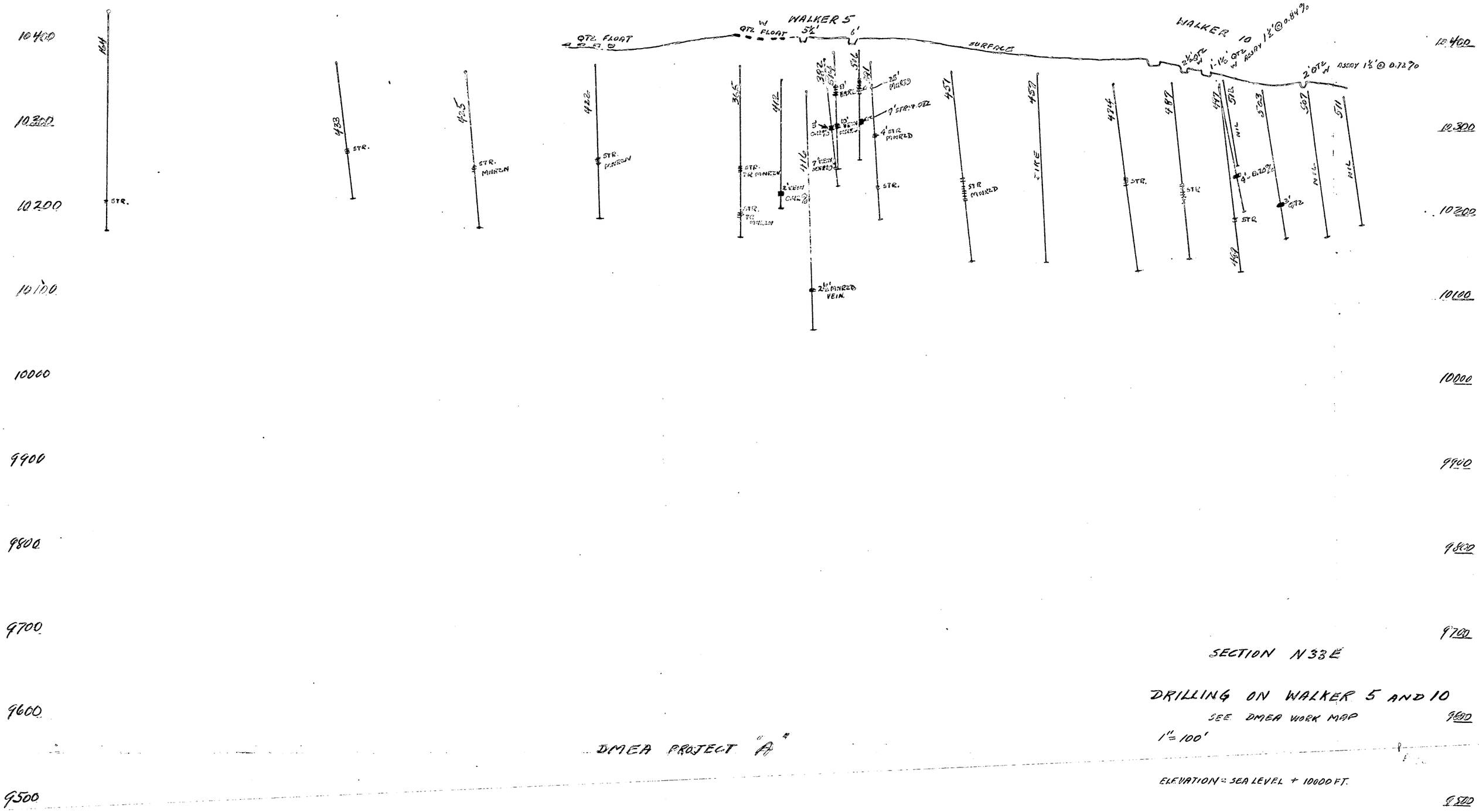
1" = 100' (SEE DMEA WORK MAP)

ELEVATION = SEA LEVEL + 10000 FT

DMEA-4216

PROJECT ID

FIG.-8



SECTION N33E

DRILLING ON WALKER 5 AND 10

SEE DMEA WORK MAP

1" = 100'

ELEVATION = SEA LEVEL + 10000 FT.

DMEA PROJECT "A"

FIG.-7

DMEA-4216

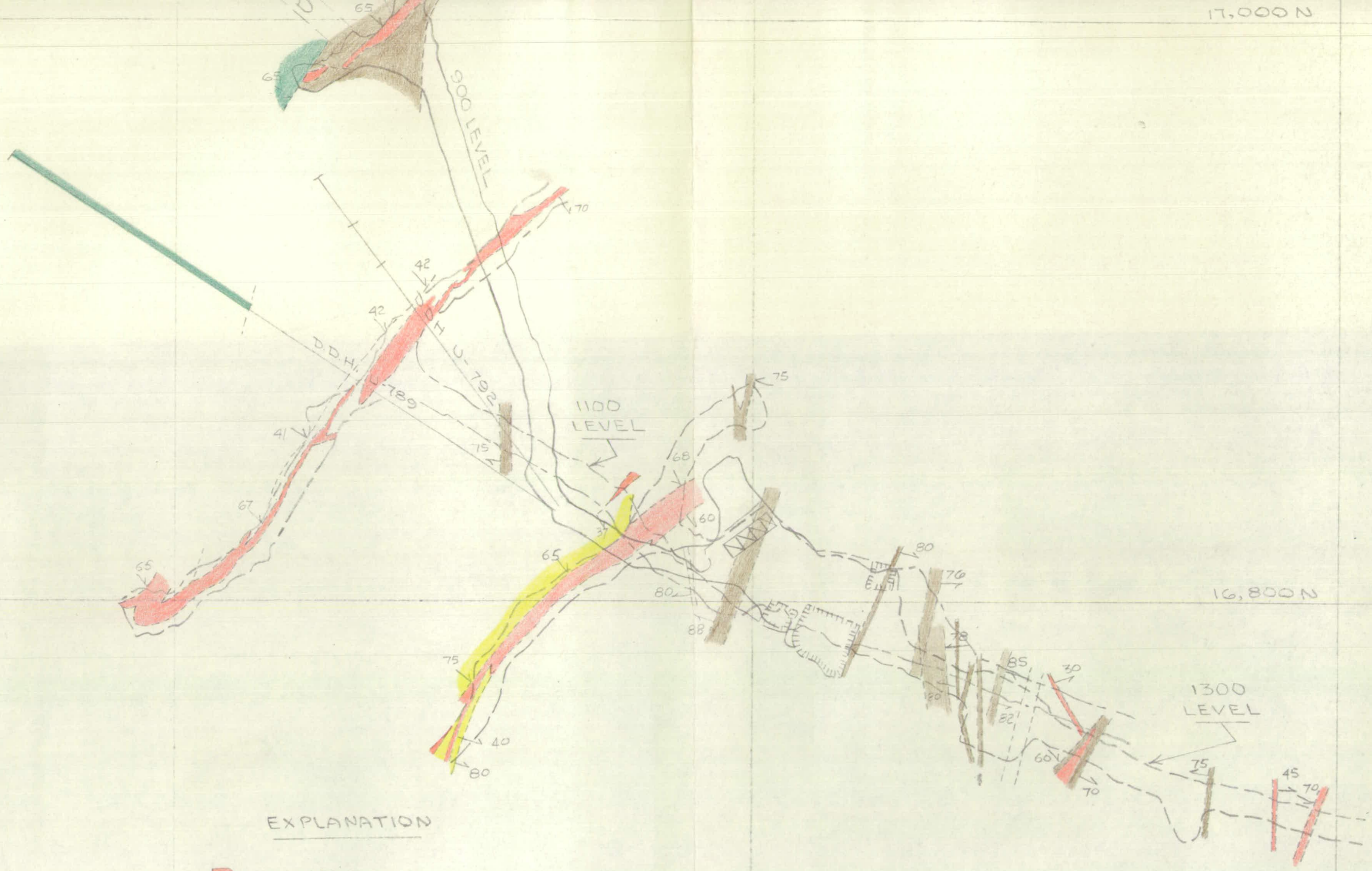


FIG. 6 PROJECTS C & D
TUNGSTEN MINING CORPORATION
HENDERSON, N. C.

COMPOSITE LEVEL PLAN
HAMME MINE

SCALE 1" = 40'

JUNE 1956

DMEA 4216

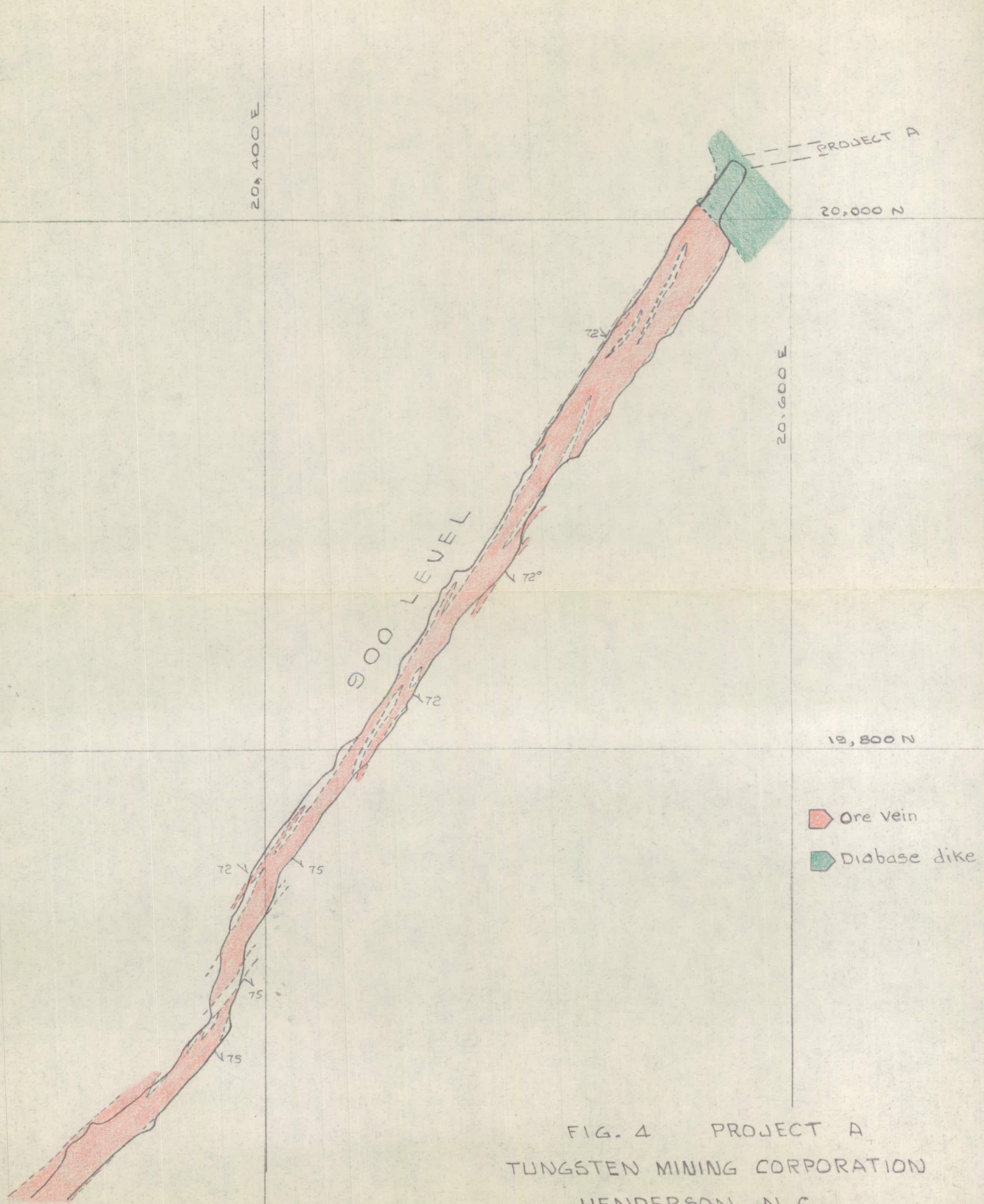


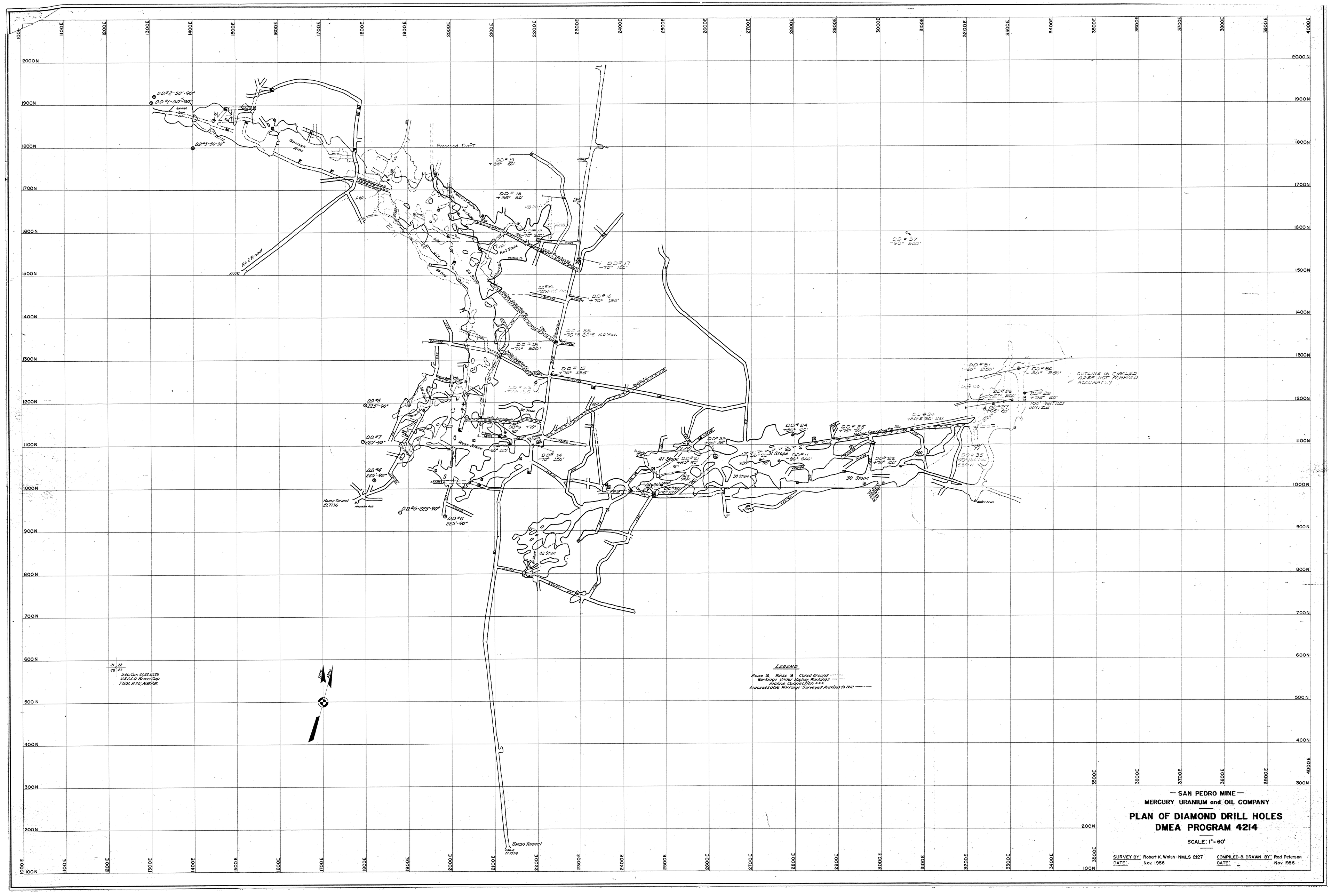
FIG. 4 PROJECT A

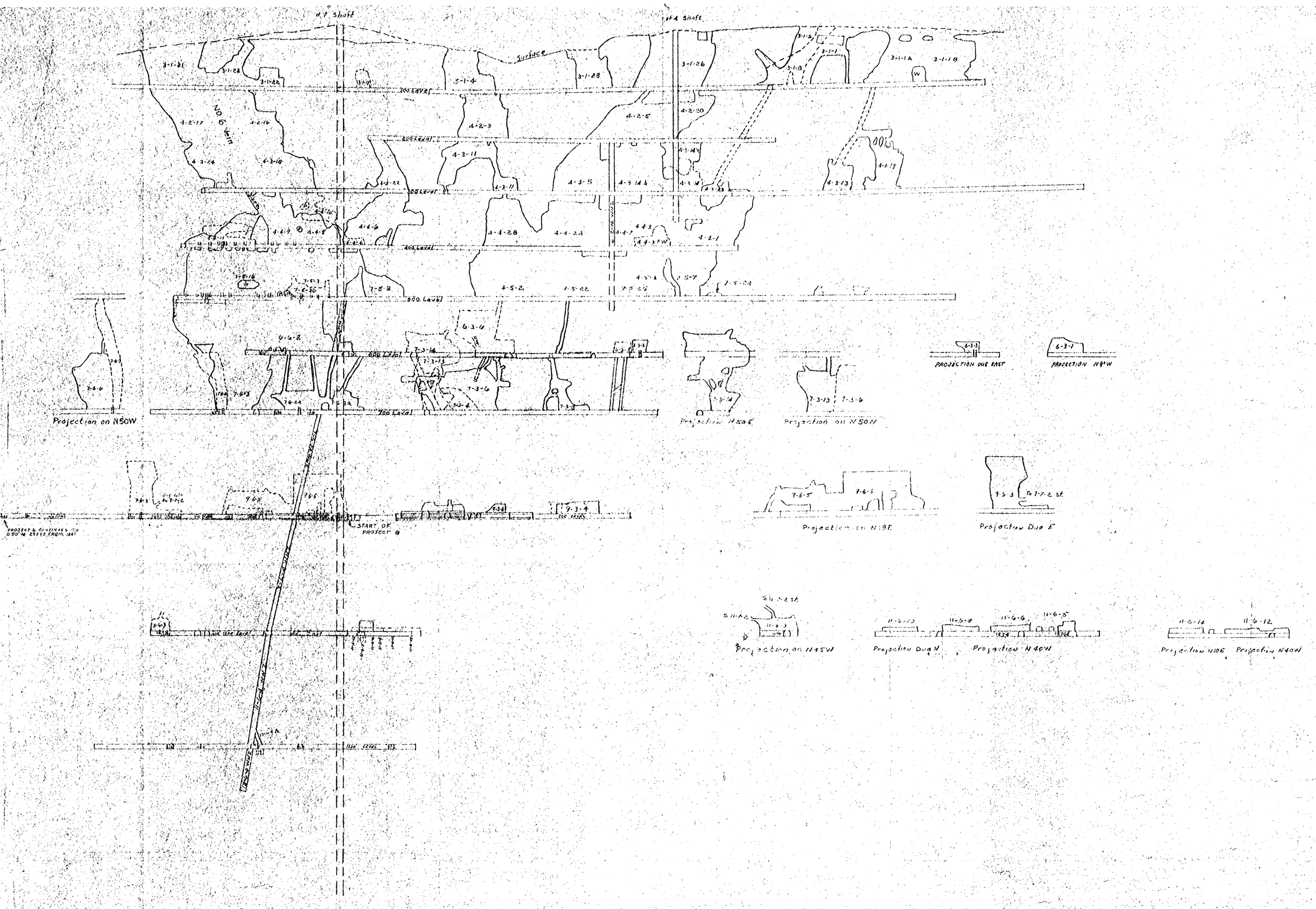
TUNGSTEN MINING CORPORATION

HENDERSON, N. C.

LEVEL PLAN SCALE 1" = 40' JUNE, 1956

HAMME MINE


SAN PEDRO MINE
MERCURY URANIUM and OIL COMPANY
PLAN OF DIAMOND DRILL HOLES
DMEA PROGRAM 4214
SCALE: 1" = 60'
SURVEY BY: Robert K. Walsh - NMLS 2127
DATE: Nov. 1956
COMPILED & DRAWN BY: Rod Peterson
DATE: Nov. 1956
LEGEND
Raise Winze Cased Ground
Workings Under Higher Workings
Incline Connection
Inaccessable Workings Surveyed Previous to 1912
No 2 Tunnel
Spanish Mine
Proposed Drift
No 1 Stope
No 2 Stope
No 3 Stope
West Stope
41 Stope
31 Stope
30 Stope
42 Stope
Home Tunnel
Swan Tunnel
Sec. Cor. 21, 22, 27, 28
U.S.G.L.O. Brass Cap
T12N, R7E, M.&D.M.
True North
Magnetic North
OUTLINE IN CIRCLED AREA NOT MAPPED ACCURATELY
100' Vertical WINZE
Water Level



VERTICAL SECTION

WALKER NO.3 & NO. 6 VEINS

TUNGSTEN MINING CORP.

HENDERSON N. C.

SCALE 1" = 100' JUNE 30, 1958

SECTION N50E

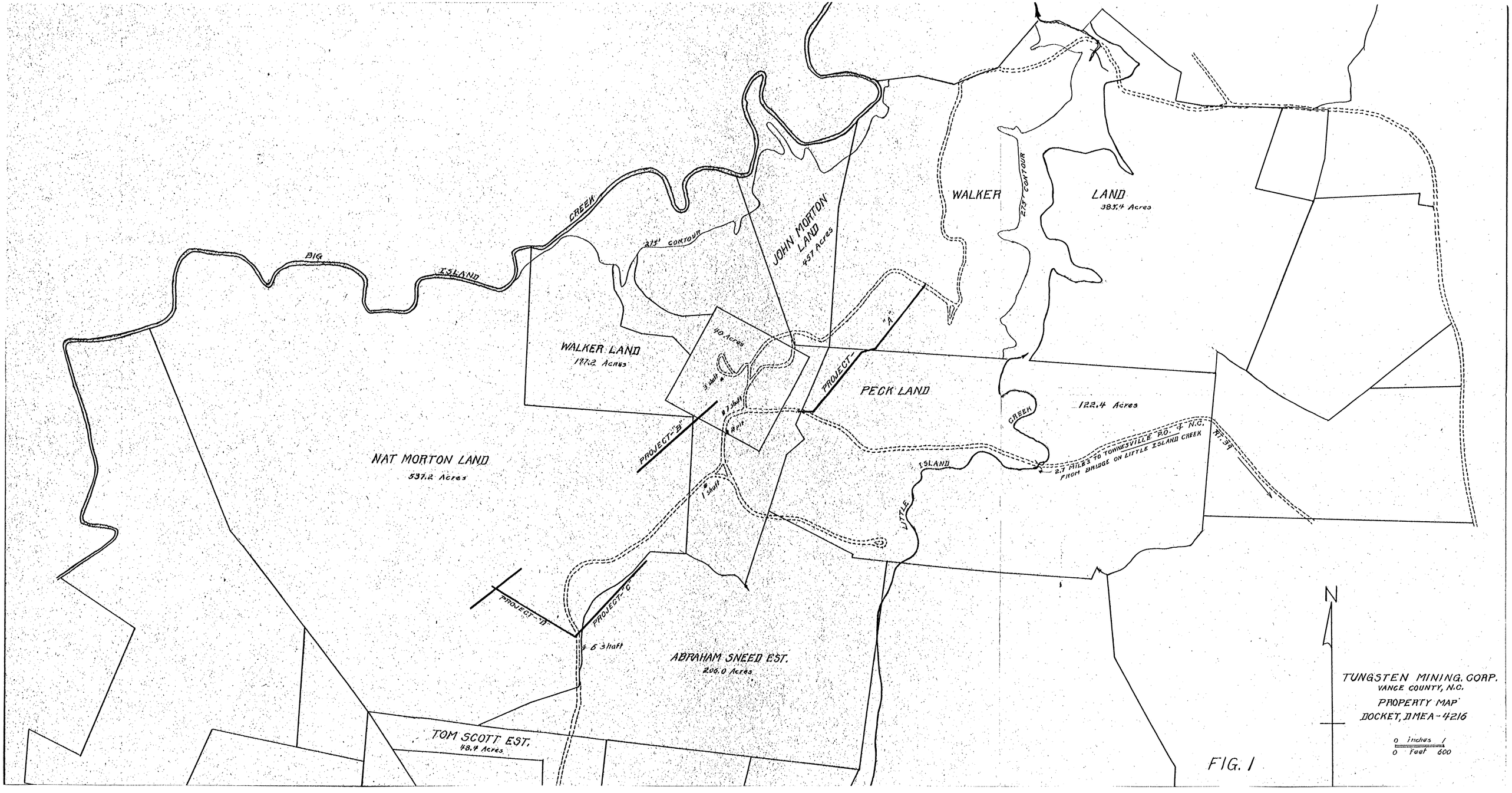
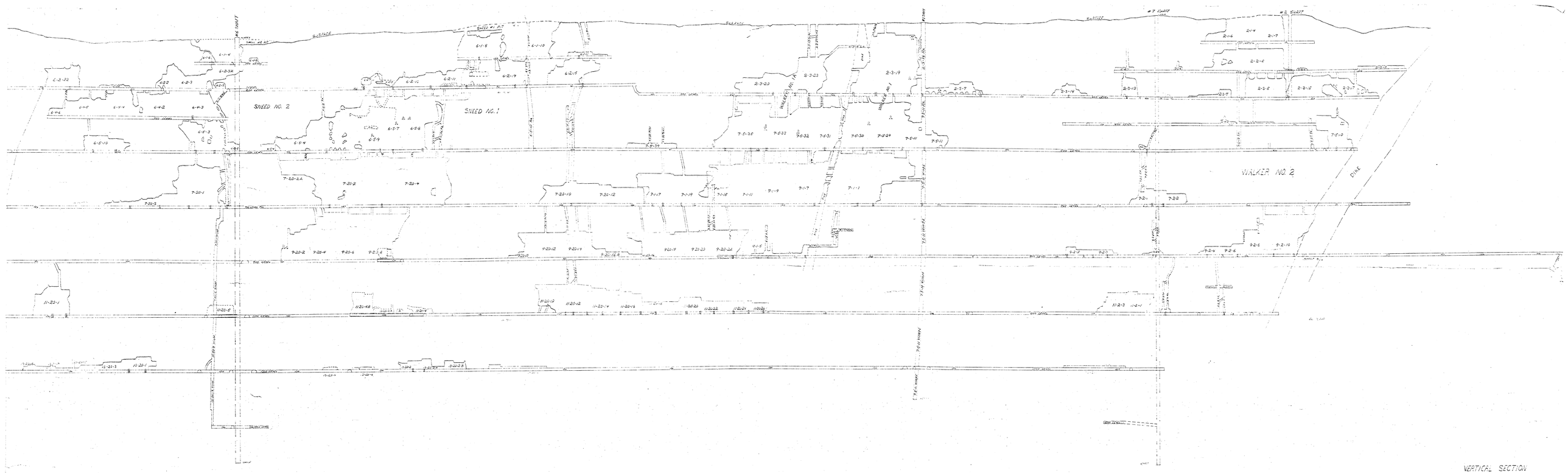

BIG ISLAND CREEK
NAT MORTON LAND
537.2 Acres
WALKER LAND
197.2 Acres
313' CONTOUR
JOHN MORTON LAND
457 Acres
40 Acres
3 shaft
7 shaft
8 pit
1 shaft
PROJECT "B"
PROJECT "A"
PECK LAND
WALKER
272' CONTOUR
LAND
383.4 Acres
122.4 Acres
LITTLE ISLAND CREEK
2.7 MILES TO TOWNESVILLE P.O. IN N.C. FROM BRIDGE ON LITTLE ISLAND CREEK
PROJECT "D"
PROJECT "C"
6 shaft
ABRAHAM SNEED EST.
206.0 Acres
TOM SCOTT EST.
48.4 Acres
N
TUNGSTEN MINING CORP.
VANCE COUNTY, N.C.
PROPERTY MAP
DOCKET, DMEA-4216
0 inches 1
0 feet 600

FIG. 1



VERTICAL SECTION
SHEED No. 1 + No. 2 Veins
WALKER No. 1, No. 1A + No. 2 Veins
PROJECTION OF
TWO STORY RANGE FORM BOROPEYLIN C.
SCALE: 1" = 100'
JUNE 30, 1958

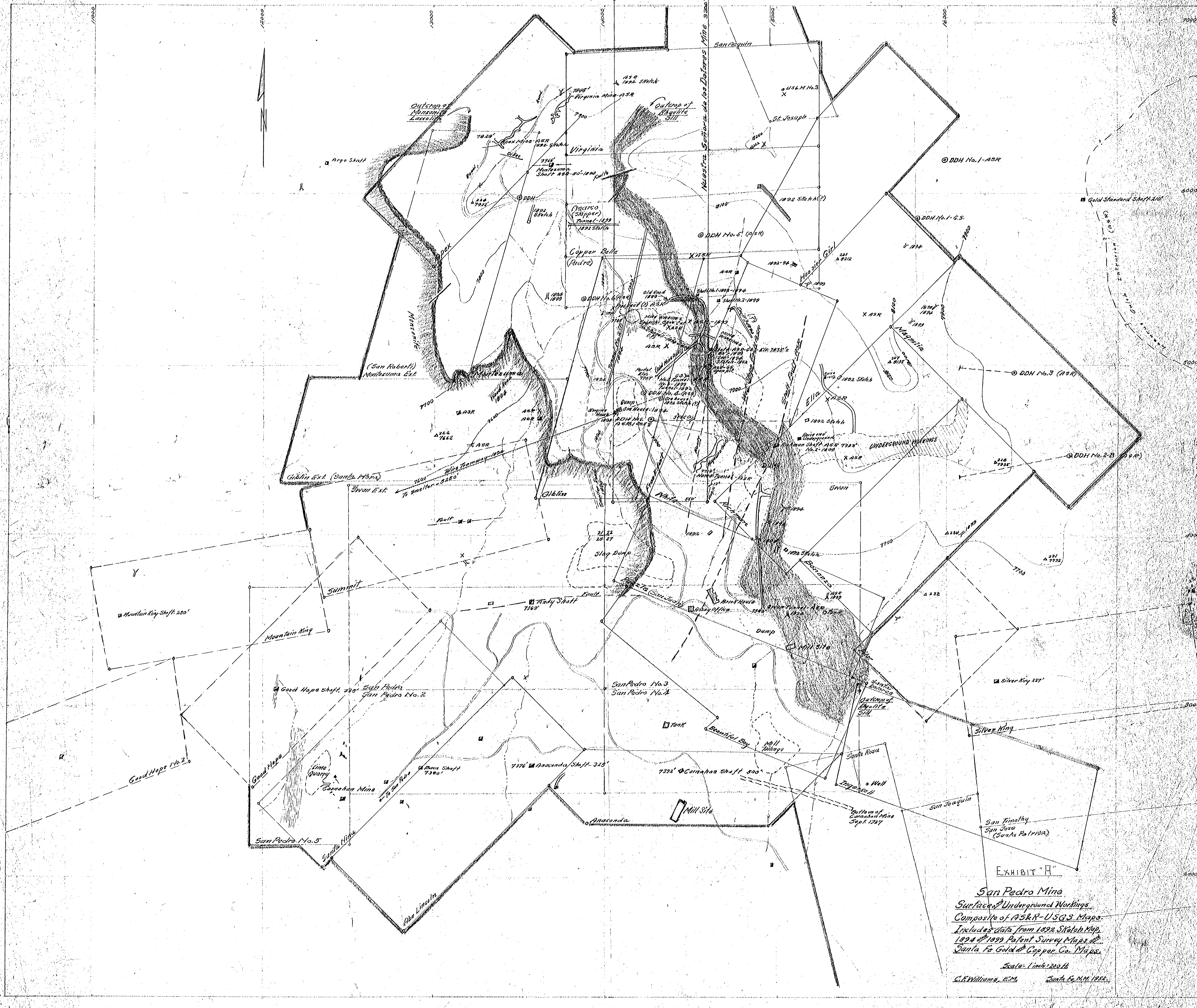
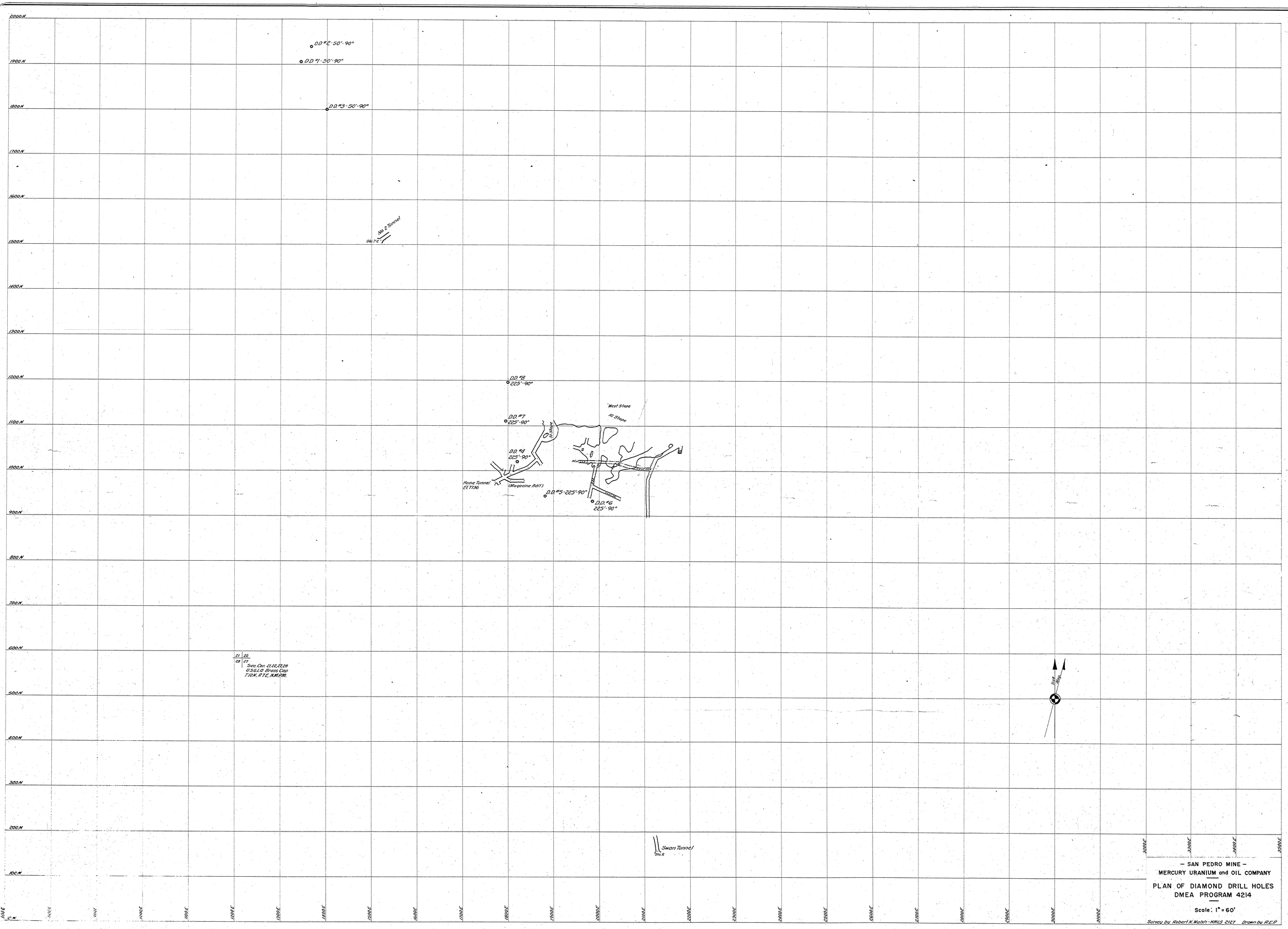


EXHIBIT "A"
San Pedro Mine
Surface and Underground Workings
Composite of AS&R-USGS Maps.
Includes data from 1892 Sketch Map,
1894 and 1899 Patent Survey Maps and
Santa Fe Gold and Copper Co. Maps.
Scale- 1 inch=200 ft.
C.F. Williams, E.M.
Santa Fe, N.M. 1952.
11000
12000
13000
14000
15000
16000
17000
7000
6000
5000
4000
3000
2000
N
Argo Shaft
Outcrop of Monzonite Laccolith
Outcrop of Rhyolite Sill
Nuestra Señora de los Dolores Mine 3300'
San Acquin
USLM No.3
St. Joseph
Virginia
Virginia Mine-ASR
Apex Mine-ASR 1892 Sketch
Dikes
Montezuma Shaft ASR-80'-1894
Fault
DDH
1892 Sketch
Asarco (Skipper) Tunnel-1899
1892 Sketch
DDH No.5 (ASR)
1892 Sketch (?)
DDH No.1-ASR
Gold Standard Shaft-210'
DDH No.1-G.S.
Hoosier Girl
Copper Belle (Padre)
Apex
Monzonite
DDH No.6 (ASR)
Old Road 1899
Shaft No.1-1899-1894
Shaft No.2-1899
Prospect (?) ASR
Mine Workings Spanish Open Cut
Mine Workings
Tunnel No.3 (?) 1894
Old Mine Adit
No.2 Tunnel-1899
No.3-1899 Tunnel-1892
DDH No.4 (ASR)
Ore house 1892 Sketch (?)
Engine House
Dump
Ore House-1894
DDH No.5 ASR
West Slope Fault-ASR
Shaft Fault-ASR
Magnolia
Ella
1892 Sketch
DDH No.3 (ASR)
Richman Shaft ASR 7723' No.2-1899
Raise 140' Underground
UNDERGROUND WORKINGS
DDH No.2-B (ASR)
Gulch Intrusion (ASR)
(San Roberti) Montezuma Ext.
Montezuma
Wood Road 1894
Wire Tramway-1894
To Smelter-5280'
Giblin Ext. (Santa Flora)
Swan Ext.
Giblin
Smelter Road
Franklin
White
Richmond
Home Tunnel-ASR
Swan
Bonanza
Fault
Slag Dump
Summit
Andy Shaft 7369'
Fault
Puzzle (San Juan)
Brick House
Assay Office
Swan Tunnel-ASR 1894
Dump
Mill Site
Pilar
Santa Dolores
Outcrop of Rhyolite Sill
Silver King 227'
Silver King
Mountain King Shaft-250'
Mountain King
Good Hope Shaft 220'
San Pedro
San Pedro No.2
San Pedro No.3
San Pedro No.4
Tank
Beautiful Bay
Mill Tailings
Santa Rosa
Well
Ingersoll
Good Hope
Good Hope No.2
Lime Quarry
Carnahan Mine
To San Pedro
Baca Shaft 7380'
7376' Anaconda Shaft-325'
7392' Carnahan Shaft 500'
Mill Site
Anaconda
Bottom of Carnahan Mine Sept. 1927
San Joaquin
San Timothy
San Jose (Santa Patricia)
San Pedro No.5
Santa Nina
Abe Lincoln


2000N
1900N
1800N
1700N
1600N
1500N
1400N
1300N
1200N
1100N
1000N
900N
800N
700N
600N
500N
400N
300N
200N
100N
0
D.D. #2-50'-90°
D.D. #1-50'-90°
D.D. #3-50'-90°
No. 2 Tunnel
Sec. 7
D.D. #8
225'-90°
D.D. #7
225'-90°
D.D. #4
225'-90°
West Slope
10 Slope
Home Tunnel
El. 1136
(Magazine Adit)
D.D. #5-225'-90°
D.D. #6
225'-90°
21
22
28
27
Sec. Cor. 21,22,27,28
U.S.G.L.O. Brass Cap
T.10 N., R.7E., N.M.P.M.
Swan Tunnel
Sec. 8
True North
1100E
1200E
1300E
1400E
1500E
1600E
1700E
1800E
1900E
2000E
2100E
2200E
2300E
2400E
2500E
2600E
2700E
2800E
2900E
3000E
3100E
3200E
3300E
3400E
3500E
— SAN PEDRO MINE —
MERCURY URANIUM and OIL COMPANY
PLAN OF DIAMOND DRILL HOLES
DMEA PROGRAM 4214
Scale: 1" = 60'
Survey by Robert K. Walsh - NMLS 2127 Drawn by R.E.P.

DMEA 4216

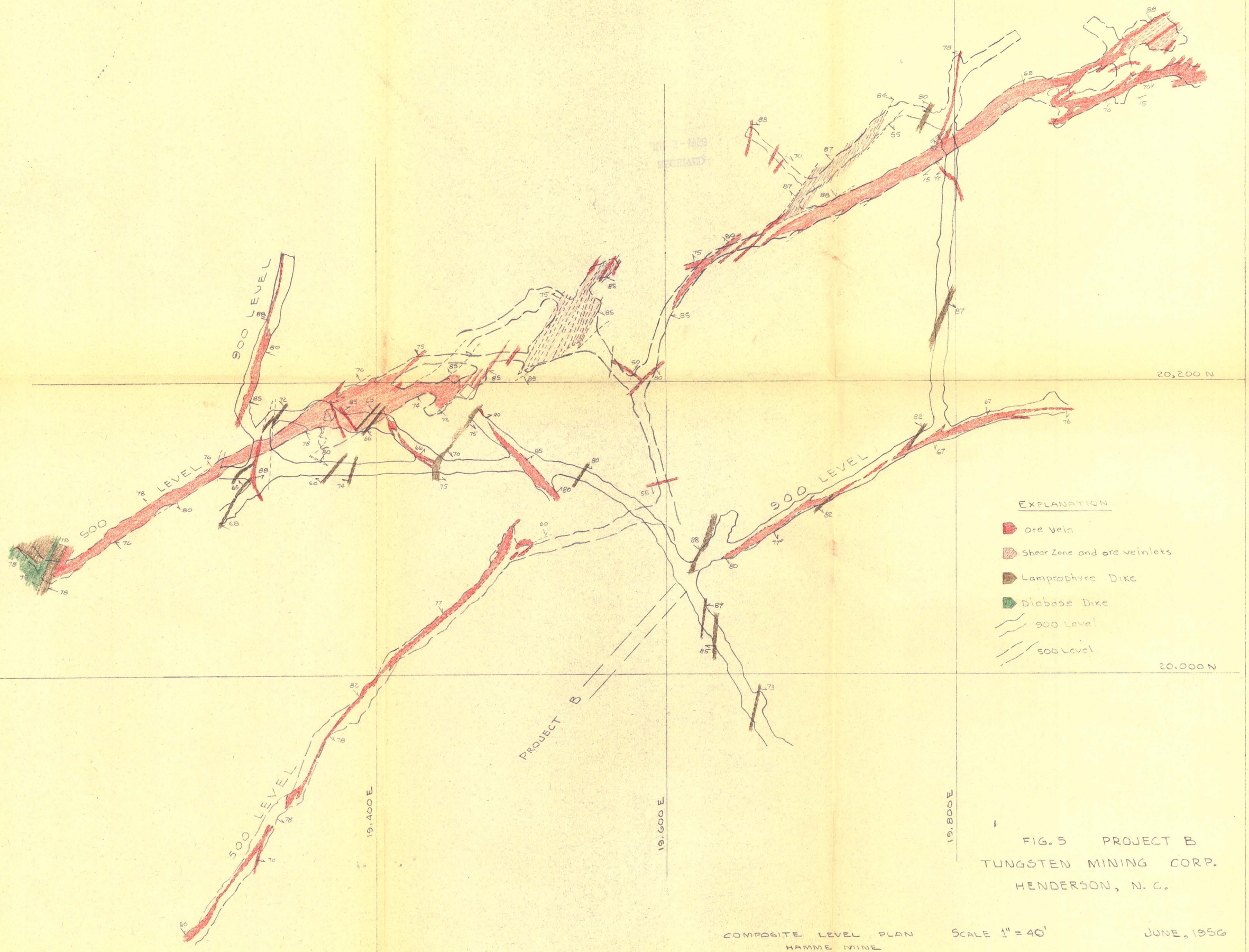
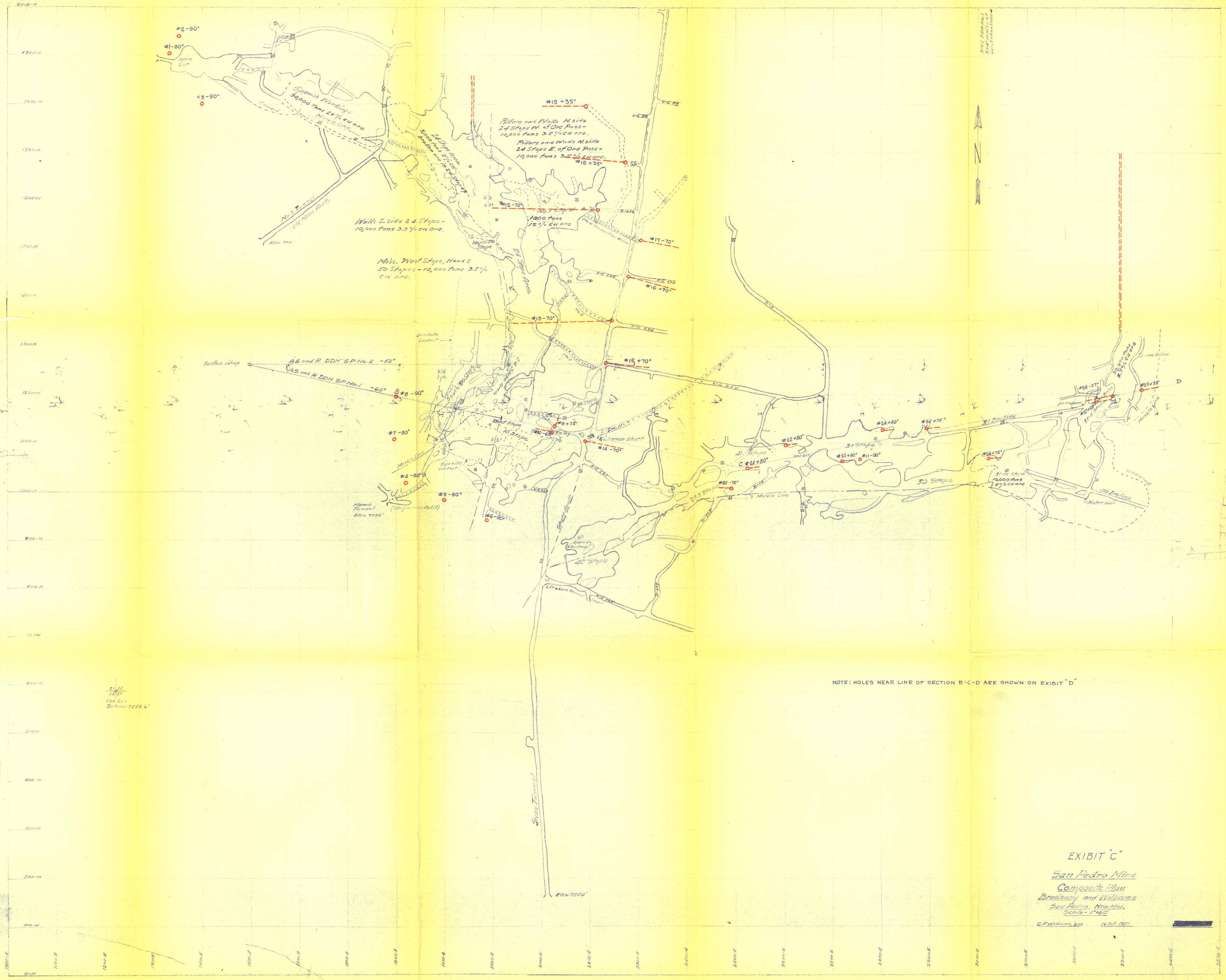


FIG. 5 PROJECT B
TUNGSTEN MINING CORP.
HENDERSON, N. C.

COMPOSITE LEVEL PLAN
HAMME MINE

SCALE 1" = 40'

JUNE, 1956



NOTE: HOLES NEAR LINE OF SECTION B-C-D ARE SHOWN ON EXIBIT "D"

EXIBIT "C"

San Pedro Mine

Composite Plan

Bradbury and Williams

San Pedro, New Mex.

Scale - 1" = 60'

C.E. Williams, E.M. 16 Oct. 1951

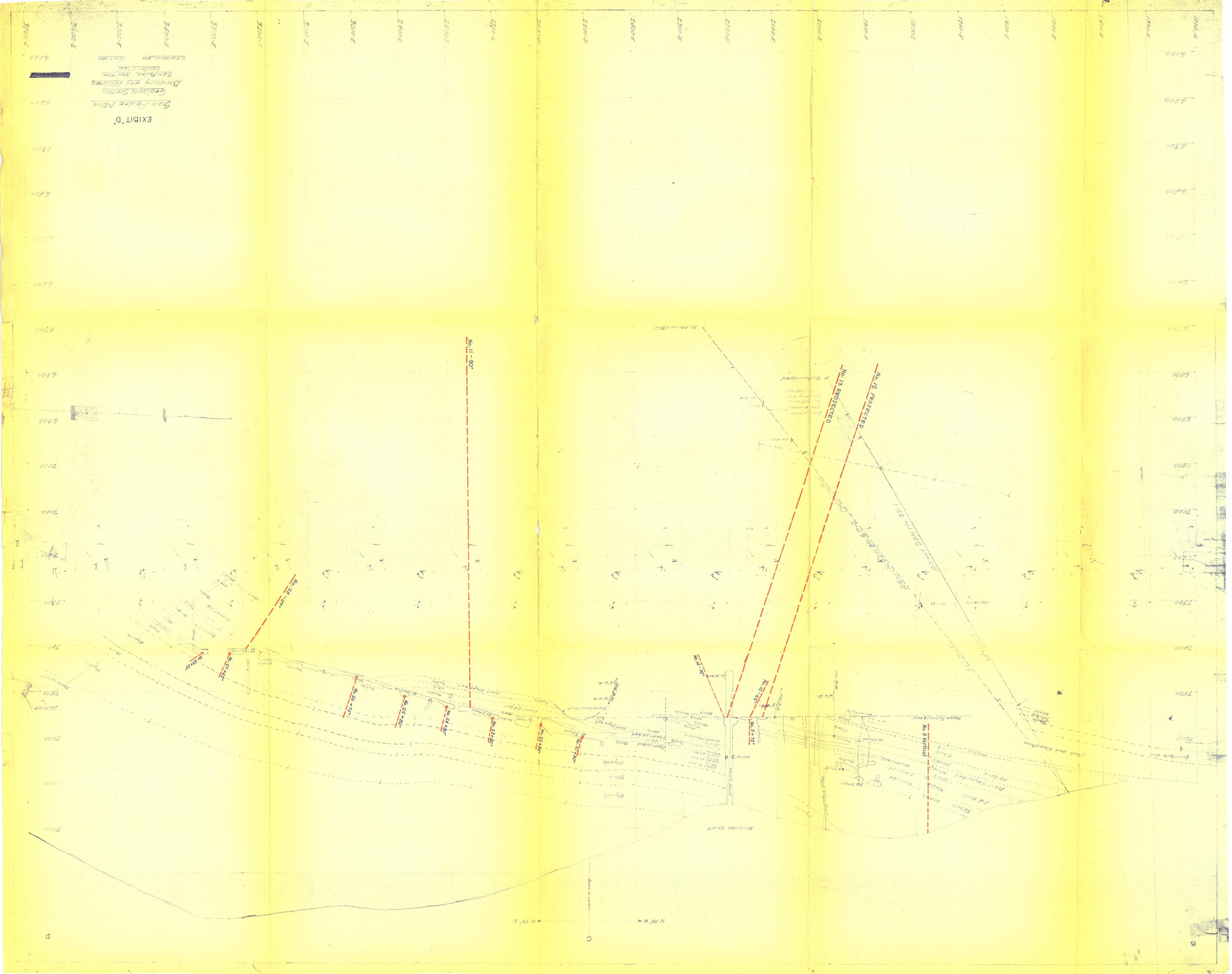
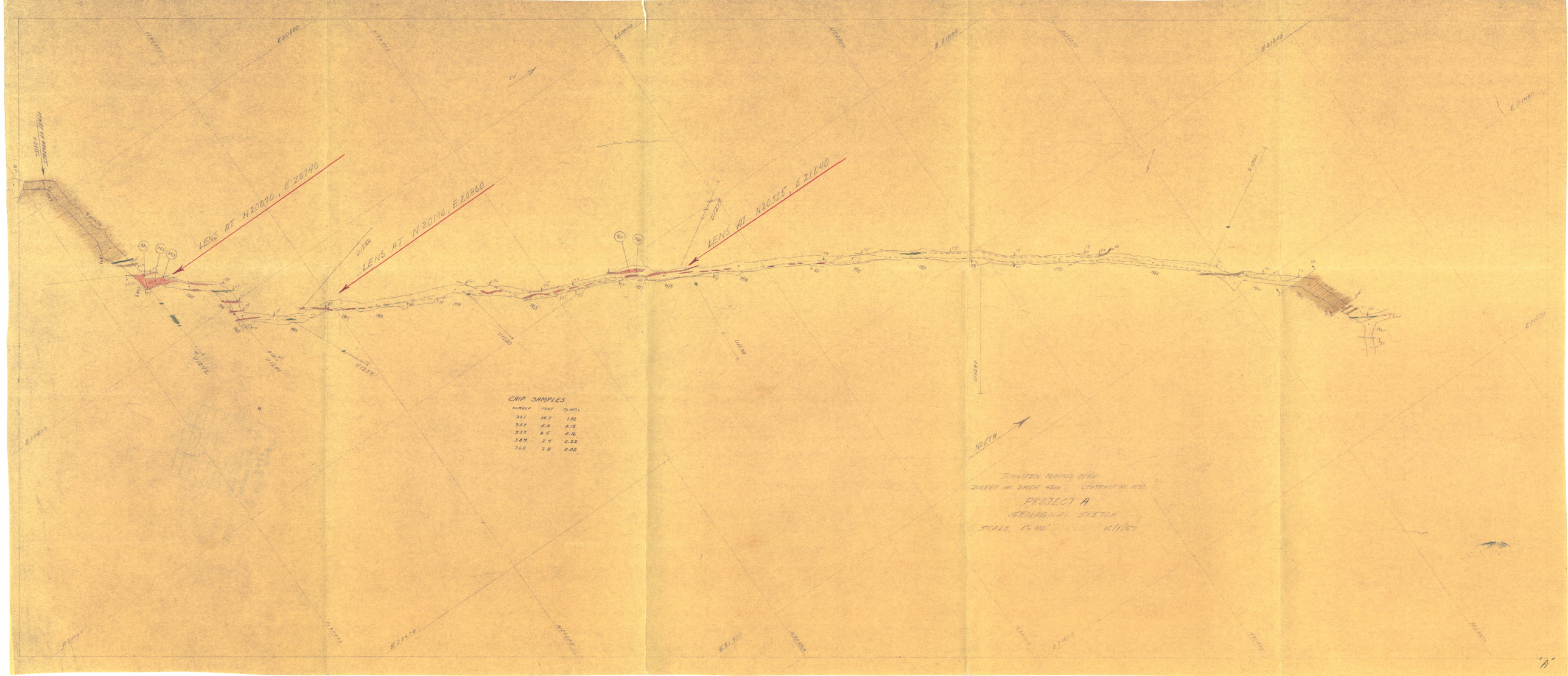


EXHIBIT "D"
San Pedro Mine
Geologic Section
Breakdown and Workings
San Pedro, New Mex.
Scale: 1"=50'
C.E. Wilkins, E.M. 1963 Mar.
No. 11 – 90°
No. 12 PROJECTED
No. 13 PROJECTED
No. 8 Vertical
No. 9 + 75°
No. 10 – 55°
No. 14 – 70°
No. 20 – 57°
No. 22 + 60°
No. 23 + 80°
No. 24 + 80°
No. 25 + 80°
No. 26 + 75°
No. 27 + 65°
No. 28 + 55°
RICHMAN SHAFT
Swan Tunnel Level
N 78° W
N 79° E
Back in section
1300-E
1400-E
1500-E
1600-E
1700-E
1800-E
1900-E
2000-E
2100-E
2200-E
2300-E
2400-E
2500-E
2600-E
3100-E
3200-E
3300-E
3400-E
3500-E
3600-E
3700-E
6100
6200
6300
6400
6500
6600
6700
6800
6900
7000
7100
7200
7300
7400
7500
7600
7700
7800
7900
B
C
D



CHIP SAMPLES

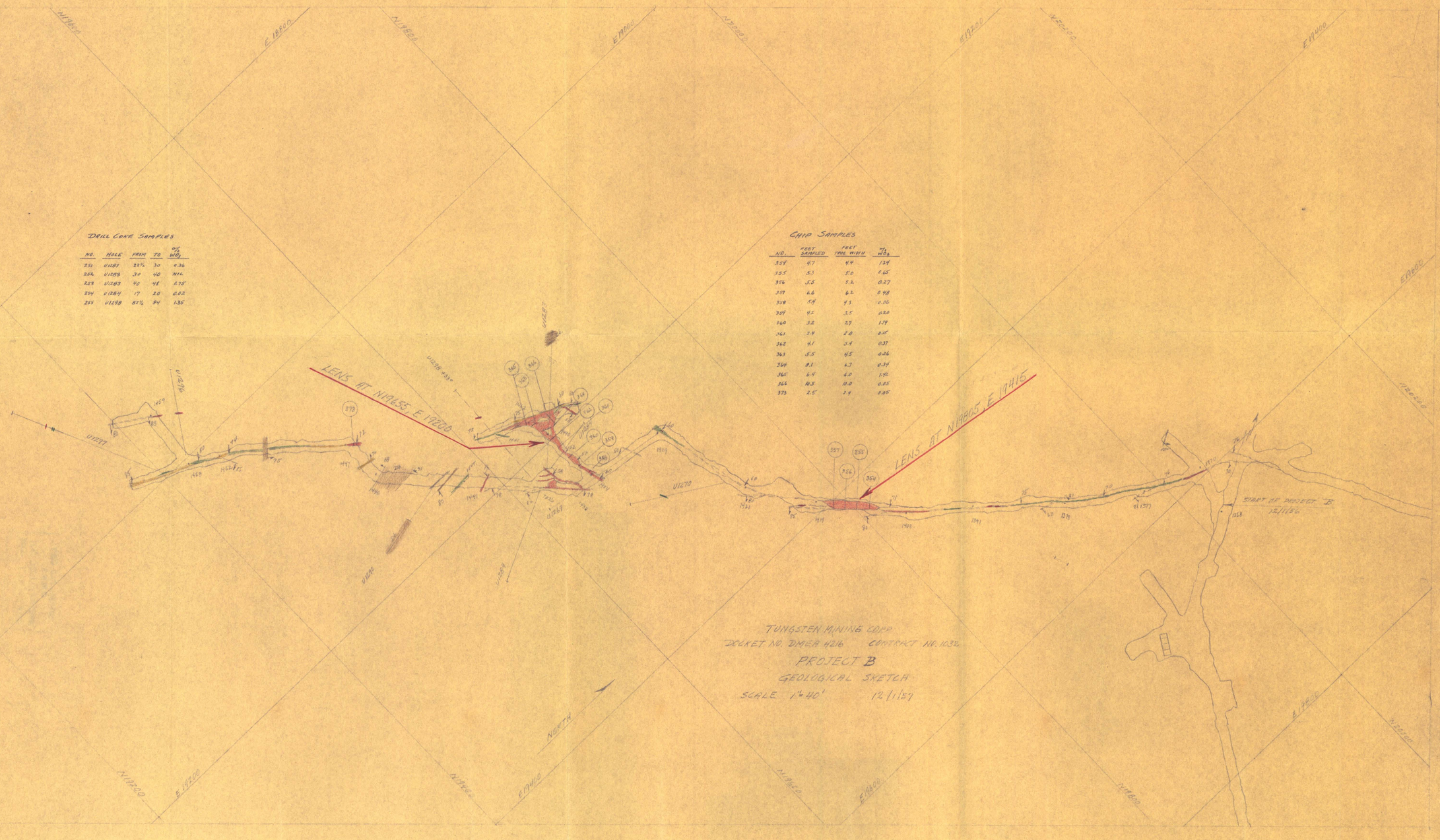
NUMBER	FEET	% WO3
351	15.7	1.82
352	5.5	0.13
353	6.5	0.16
367	2.4	0.22
368	2.8	0.02

Drill Core Samples

No.	Hole	From	To	% WO_3
251	U1281	22½	30	0.36
252	U1283	30	40	1.16
253	U1283	40	48	1.75
254	U1284	17	20	0.02
255	U1298	82½	84	1.35

Chip Samples

No.	Feet Sampled	Feet True Width	% WO_3
354	4.7	4.4	1.24
355	5.3	5.0	1.65
356	5.5	5.2	0.27
357	6.6	6.2	0.48
358	5.4	4.5	0.06
359	4.2	3.5	0.20
360	3.2	2.7	1.79
361	2.4	2.0	0.15
362	4.1	3.4	0.37
363	5.5	4.5	0.26
364	8.1	6.7	0.34
365	6.4	6.0	1.42
366	10.5	10.0	0.25
373	2.5	2.4	0.05



TUNGSTEN MINING CORP.
DOCKET NO. DMEB 4216 CONTRACT NO. 1032
PROJECT B
GEOLOGICAL SKETCH
SCALE 1"=40' 12/1/57

CHIP SAMPLES

NO.	FEET SAMPLED	FEET TRUE WIDTH	% WO3
369	2.5	1.7	1.31
370	1.5	1.1	0.19
371	3.5	2.2	0.02
372	4.0	2.6	0.48
374	3.0	2.0	0.33

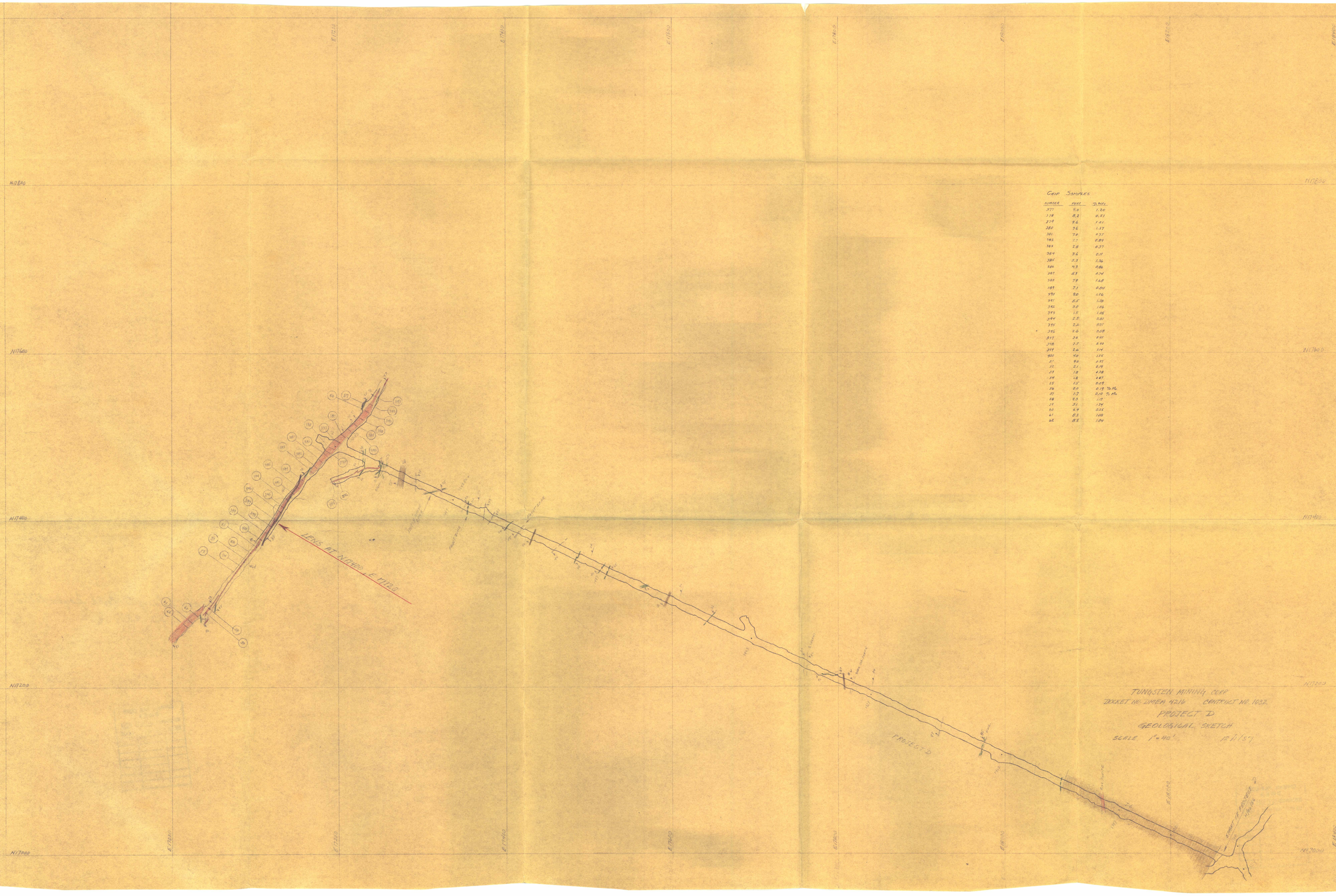
TUNGSTEN MINING CORP

DOCKET NO. DMEA 4216 CONTRACT NO. 1032

PROJECT C

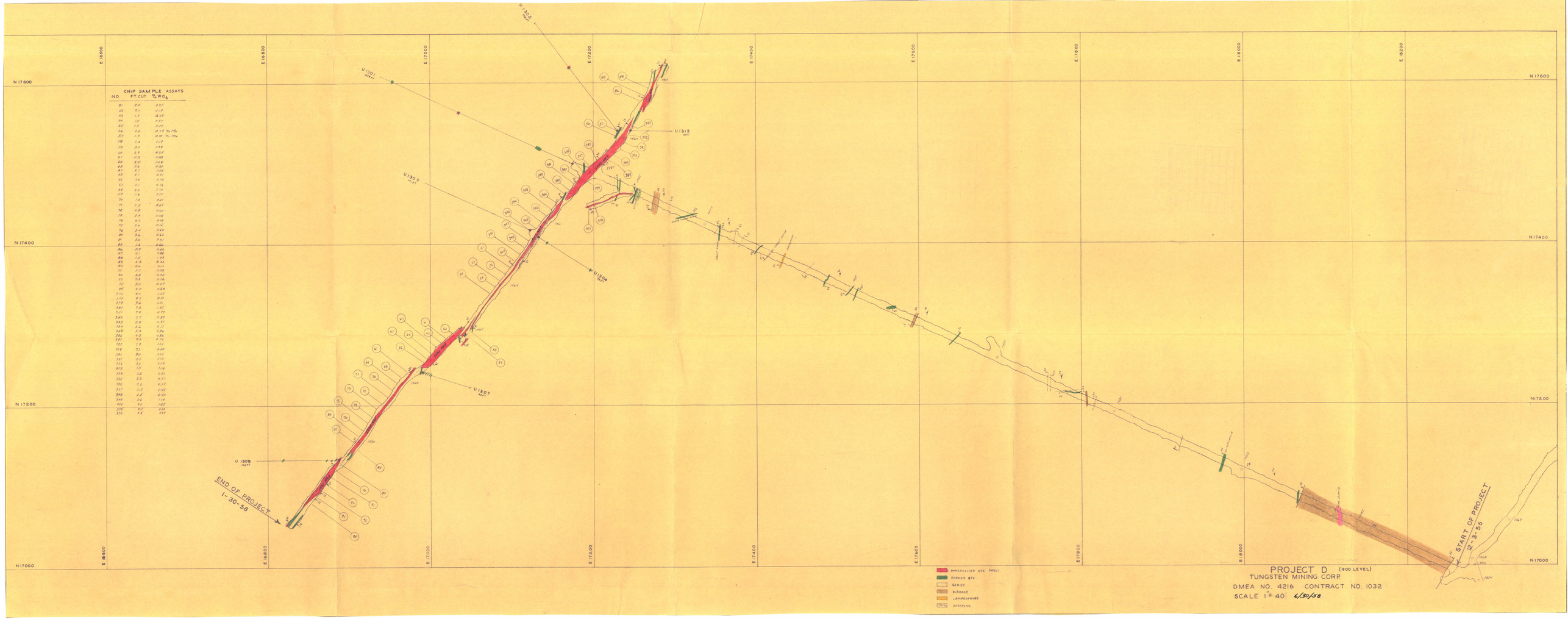
GEOLOGICAL SKETCH

SCALE 1" = 40' 12/1/57



CHIP SAMPLES

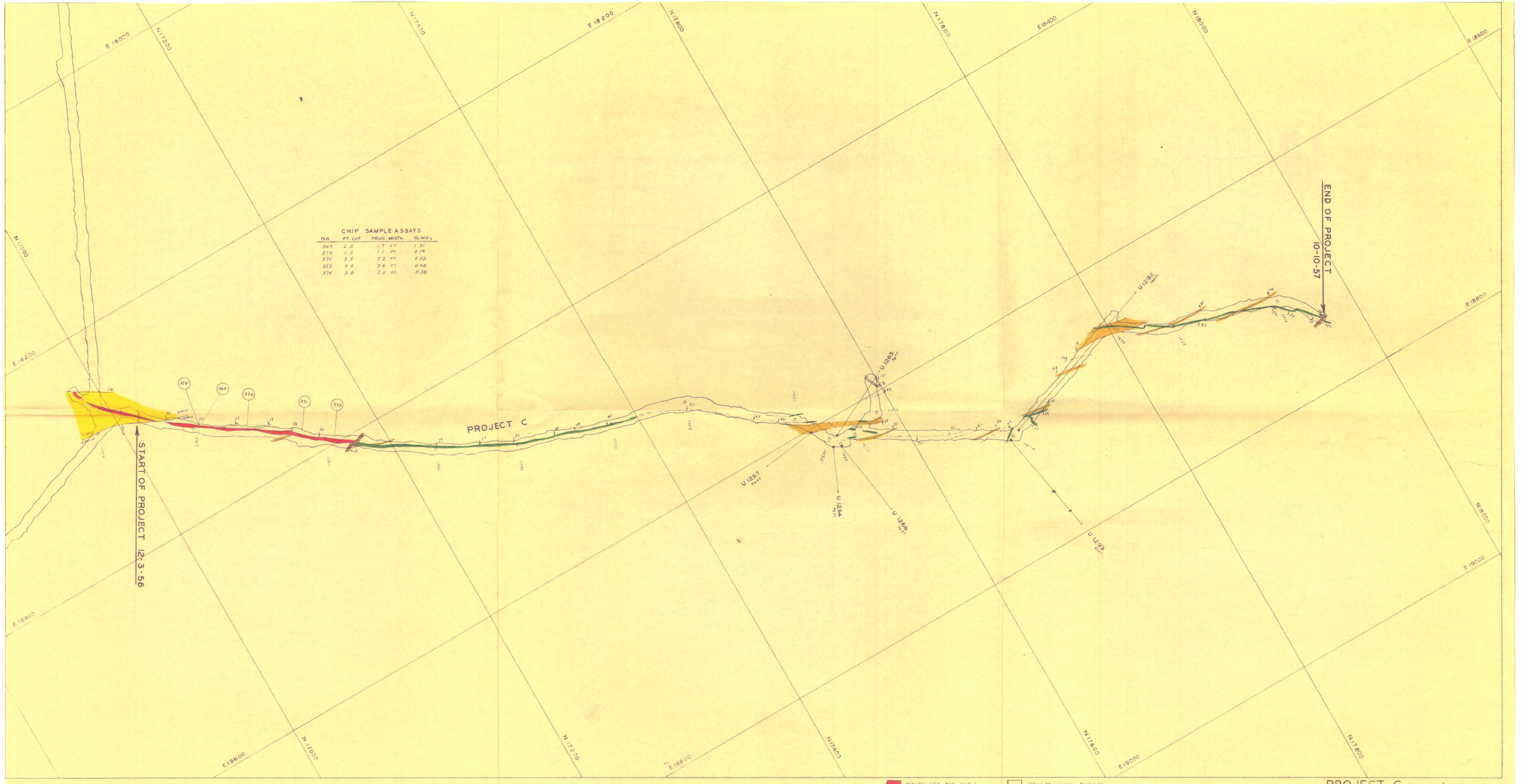
NUMBER	FEET	% WO3
377	5.0	1.20
378	8.2	0.51
379	9.6	1.01
380	7.6	1.17
381	7.0	0.77
382	7.7	0.89
383	2.8	0.37
384	3.6	0.11
385	5.3	1.26
386	4.3	0.86
387	8.3	0.74
388	7.9	1.68
389	7.1	0.64
390	9.0	1.26
391	8.5	1.18
392	3.0	1.06
393	1.5	1.08
394	2.5	0.81
395	2.2	0.07
396	2.6	0.58
397	2.0	0.95
398	2.5	0.90
399	2.6	1.14
400	4.0	1.15
31	9.0	2.55
32	2.1	0.19
33	1.8	0.28
34	4.8	0.87
35	1.5	0.09
36	2.0	0.19 % Mo
37	1.7	0.10 % Mo
38	8.3	.17
39	3.1	.24
40	6.9	0.25
41	8.3	1.08
42	8.5	1.04



CHIP SAMPLE ASSAYS

NO	FT CUT	% WO_3
21	4.0	0.37
22	7.1	0.19
23	1.7	0.28
24	1.5	0.77
25	1.5	0.79
26	7.0	0.19 % Mo
27	1.7	0.08 % Mo
28	2.3	1.17
29	2.1	1.38
30	4.9	0.35
31	2.3	1.08
32	2.5	1.08
33	7.6	0.30
34	2.1	1.08
35	2.1	0.31
36	3.4	0.76
37	2.1	0.13
38	2.3	1.10
39	1.4	0.17
40	1.3	0.21
41	2.2	0.27
42	4.8	0.61
43	2.9	0.18
44	4.1	0.18
45	3.4	0.12
46	2.4	0.24
47	3.4	0.62
48	2.0	0.41
49	1.6	0.20
50	0.9	0.44
51	2.1	0.18
52	1.0	1.03
53	2.6	0.32
54	4.4	0.14
55	2.5	0.09
56	6.8	0.12
57	5.3	0.14
58	2.0	0.07
59	2.0	0.28
60	9.2	0.18
61	8.2	0.10
62	7.6	0.10
63	7.5	0.17
64	7.4	0.77
65	7.7	1.21
66	2.8	0.37
67	2.6	0.17
68	2.3	1.36
69	4.2	0.86
70	4.3	0.14
71	3.1	1.61
72	7.1	1.24
73	7.0	1.22
74	8.0	1.78
75	7.6	1.14
76	7.2	1.14
77	5.5	0.31
78	2.2	0.23
79	2.3	0.42
80	2.5	0.90
81	2.4	1.14
82	7.0	1.22
83	4.3	0.21
84	5.8	0.17

PROJECT D (900 LEVEL)
TUNGSTEN MINING CORP.
DMEA NO. 4216 CONTRACT NO. 1032
SCALE 1" = 40' 6/30/58



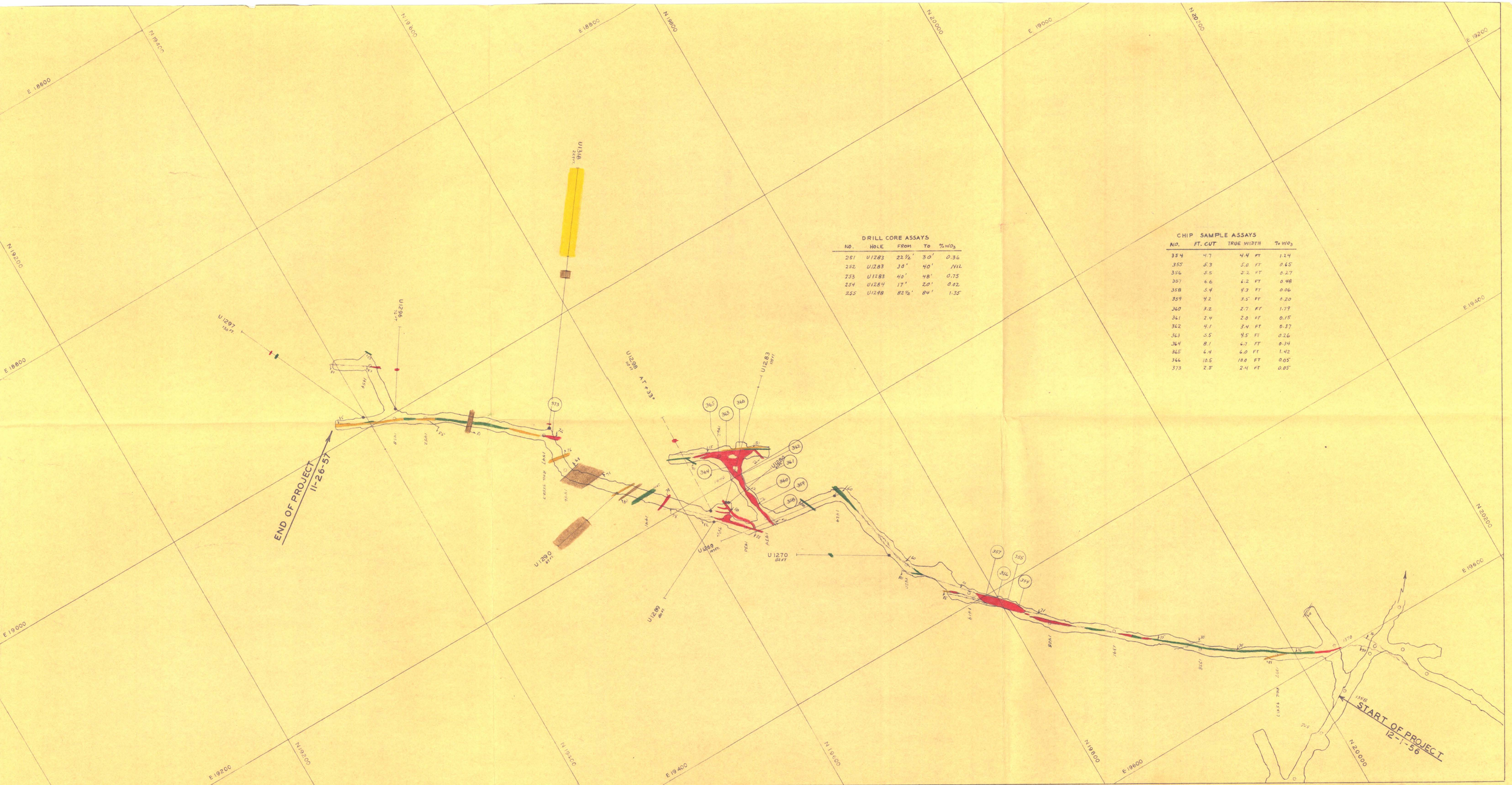
CHIP SAMPLE ASSAYS

NO.	FT. CUT	TRUE WIDTH	% WO_3
369	2.5	1.7 FT.	1.31
370	1.5	1.1 FT.	0.19
371	3.5	2.2 FT.	0.02
372	4.0	2.6 FT.	0.48
374	3.0	2.0 FT.	0.38

MINERALIZED QTZ. (WO_3)
BARREN QTZ.
SHEARING
SCHIST
GRANITE-GNEISS COMPLEX
LAMPROPHYRE DIKE
DIABASE

PROJECT C (900 LEVEL)

TUNGSTEN MINING CORP.
DMEA NO. 4216 CONTRACT NO. 1032
SCALE 1" = 40' 6/30/58



DRILL CORE ASSAYS

NO.	HOLE	FROM	TO	% WO_3
251	U1283	22½'	30'	0.36
252	U1283	30'	40'	NIL
253	U1283	40'	48'	0.75
254	U1284	17'	20'	0.02
255	U1298	82½'	84'	1.35

CHIP SAMPLE ASSAYS

NO.	FT. CUT	TRUE WIDTH	% WO_3
354	4.7	4.4 FT	1.24
355	5.3	5.0 FT	0.65
356	5.5	5.2 FT	0.27
357	6.6	6.2 FT	0.48
358	5.4	4.3 FT	0.06
359	4.2	3.5 FT	0.20
360	3.2	2.7 FT	1.79
361	2.4	2.0 FT	0.15
362	4.1	3.4 FT	0.37
363	5.5	4.5 FT	0.26
364	8.1	6.7 FT	0.34
365	6.4	6.0 FT	1.42
366	10.5	10.0 FT	0.05
373	2.5	2.4 FT	0.05

PROJECT B (900 LEVEL)
TUNGSTEN MINING CORP.
DMEA NO. 4216 CONTRACT NO. 1032
SCALE 1" = 40' 6/30/58

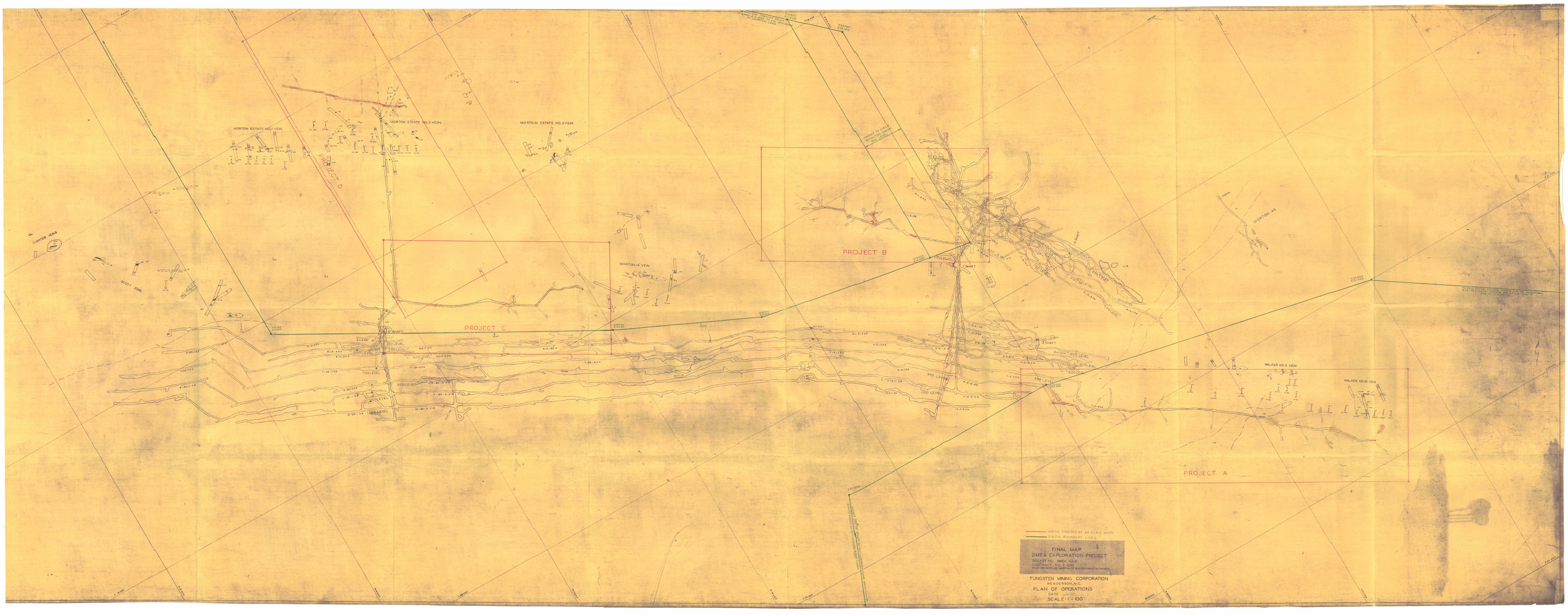
START OF PROJECT
11-19-58

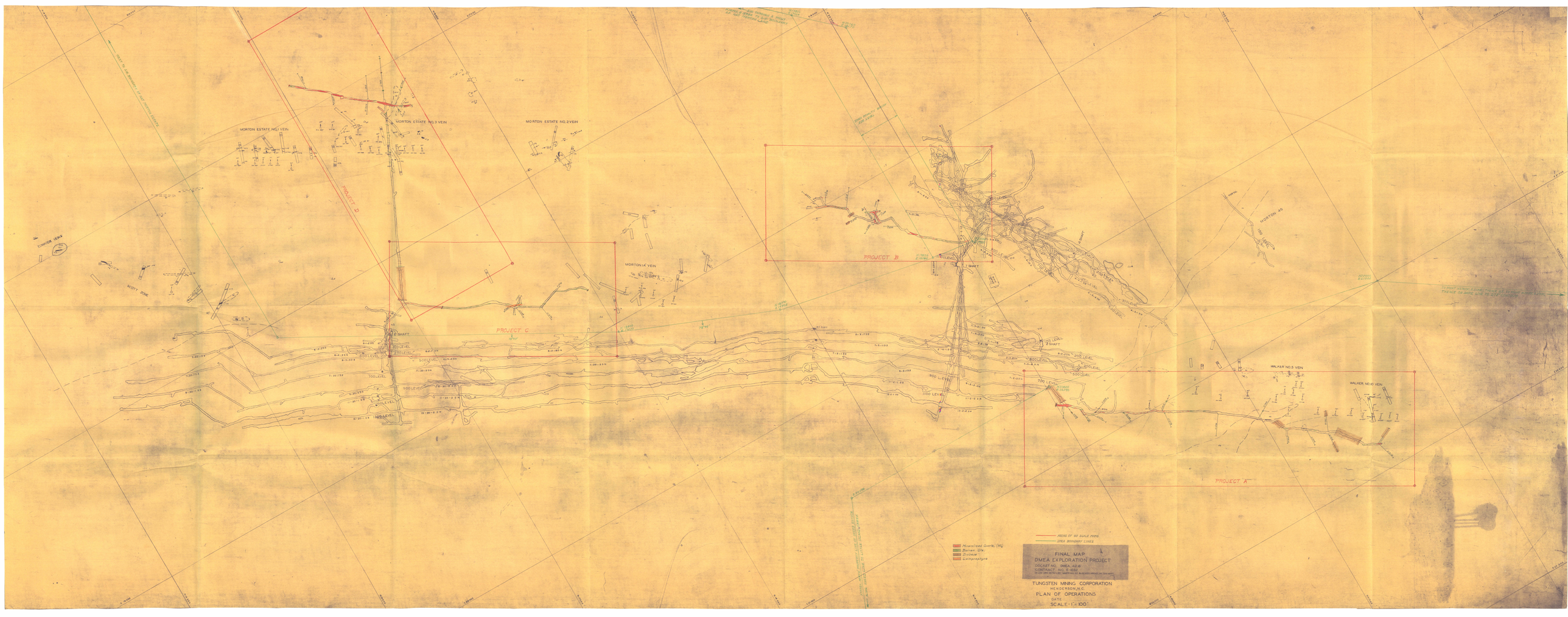
END OF PROJECT
5-29-58

CHIP SAMPLE ASSAYS		
NO	FT CUT	% WO_3
77	11.2	0.16
78	10.1	0.38
79	7.5	0.44
80	6.8	0.83
81	5.5	0.07
84	9.5	0.02
85	10.1	1.00
86	2.5	0.13
87	6.0	0.16
90	7.0	0.40
96	2.6	0.41
98	1.5	0.10
99	4.2	0.01

MINERALIZED QTZ. (WOLF)
BARREN QTZ.
GRANITE COMPLEX
PORPHYRIC LAMPROPHYRE
ENGINEERING

PROJECT A (900 LEVEL)
TUNGSTEN MINING CORP.
DMEA NO. 4218 CONTRACT NO1032
SCALE 1"=40' 6/30/60


MORTON ESTATE NO.1 VEIN
MORTON ESTATE NO.3 VEIN
MORTON ESTATE NO.2 VEIN
PROJECT D
PROJECT C
PROJECT B
PROJECT A
MORTONIA VEIN
MORTON 40
WALKER NO.5 VEIN
WALKER NO.10 VEIN
SCOTT VEIN
CLIMAX VEIN
SHAFT
300 LEVEL
500 LEVEL
700 LEVEL
900 LEVEL
1100 LEVEL
AREAS COVERED BY 40 SCALE MAPS
D.M.E.A. BOUNDARY LINES
FINAL MAP
DMEA EXPLORATION PROJECT
DOCKET NO. DMEA-48-B
CONTRACT NO. E-1033
TUNGSTEN MINING CORPORATION
HENDERSON, N.C.
PLAN OF OPERATIONS
DATE
SCALE 1" = 100'


MORTON ESTATE NO.1 VEIN
MORTON ESTATE NO.3 VEIN
MORTON ESTATE NO.2 VEIN
MORTONIA VEIN
MORTON 4D
WALKER NO.5 VEIN
WALKER NO.10 VEIN
SCOTT ZONE
PROJECT A
PROJECT B
PROJECT C
PROJECT D
SHAFT
100 LEVEL
200 LEVEL
300 LEVEL
500 LEVEL
600 LEVEL
700 LEVEL
900 LEVEL
1100 LEVEL
Mineralized Quartz (WO3)
Barren Qtz.
Diabase
Limonite/Lyre
AREAS OF 40 SCALE MAPS
DMEA BOUNDARY LINES
FINAL MAP
DMEA EXPLORATION PROJECT
DOCKET NO. DMEA-42-16
CONTRACT NO. E-6032
IN LIEU OF DETAILED MAPPING OF BLOCKED AREAS ON DATA
TUNGSTEN MINING CORPORATION
HENDERSON, N.C.
PLAN OF OPERATIONS
DATE
SCALE 1" = 100'

START OF PROJECT
11-19-56

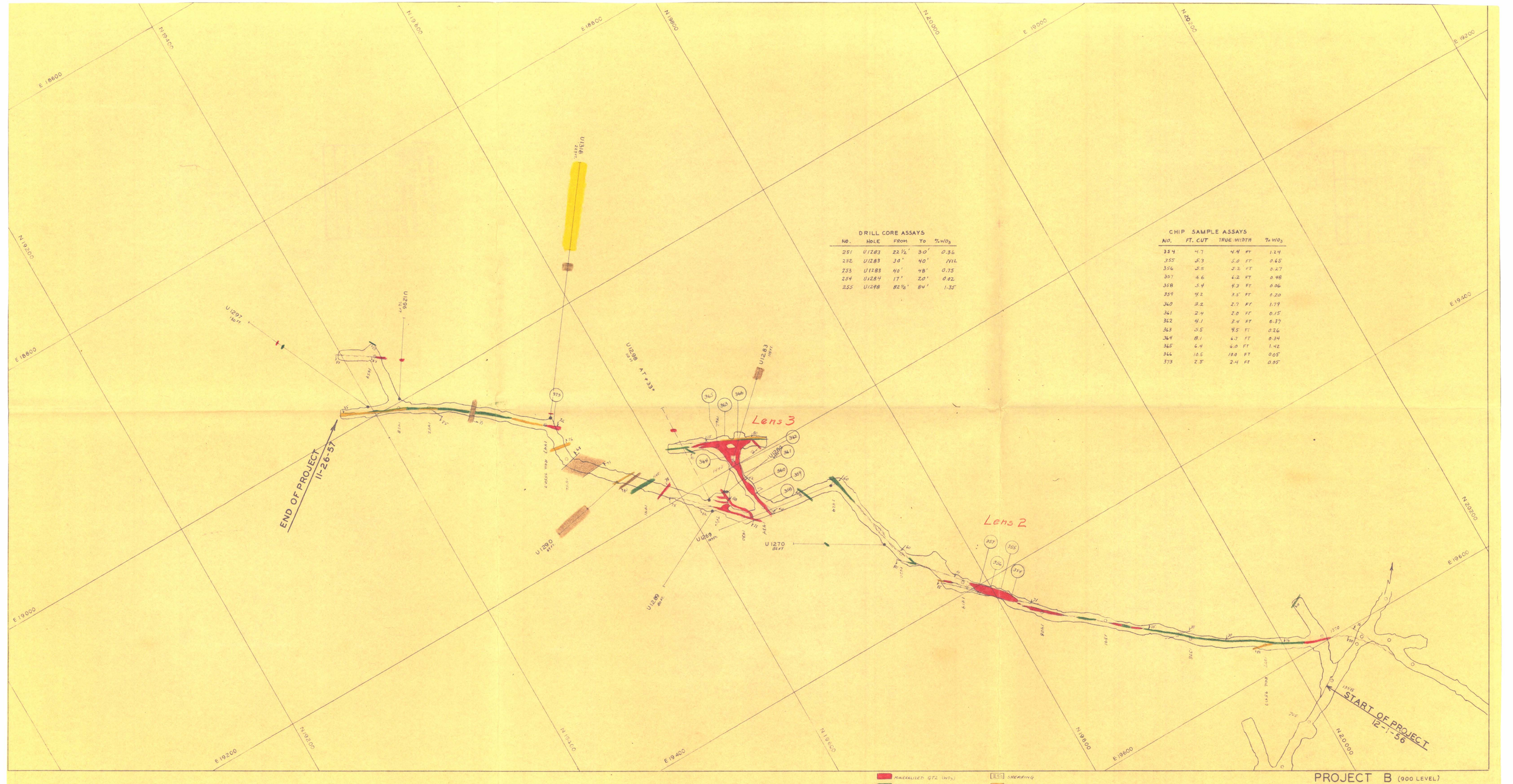
Lens I

END OF PROJECT
3-29-58

CHIP SAMPLE ASSAYS		
NO.	FT CUT	% WO_3
77	11.2	0.16
78	11.1	1.18
79	7.4	0.16
80	8.8	0.83
81	5.5	0.19
82	7.5	0.16
83-1	12.1	1.16
83-2	2.2	1.13
83-3	4.8	0.16
84-1	7.5	0.56
84-2	2.8	0.06
86	2.5	0.11
87	5.2	0.37

MINERALIZED QTZ (WO3)
BARREN QTZ
GRANITE COMPLEX
PORPHYRY OR DIORITE
INFERRED

PROJECT A (800 LEVEL)
TUNGSTEN MINING CORP
DMEA NO. 4216, CONTRACT NO1032
SCALE 1"=40' 6/30/58



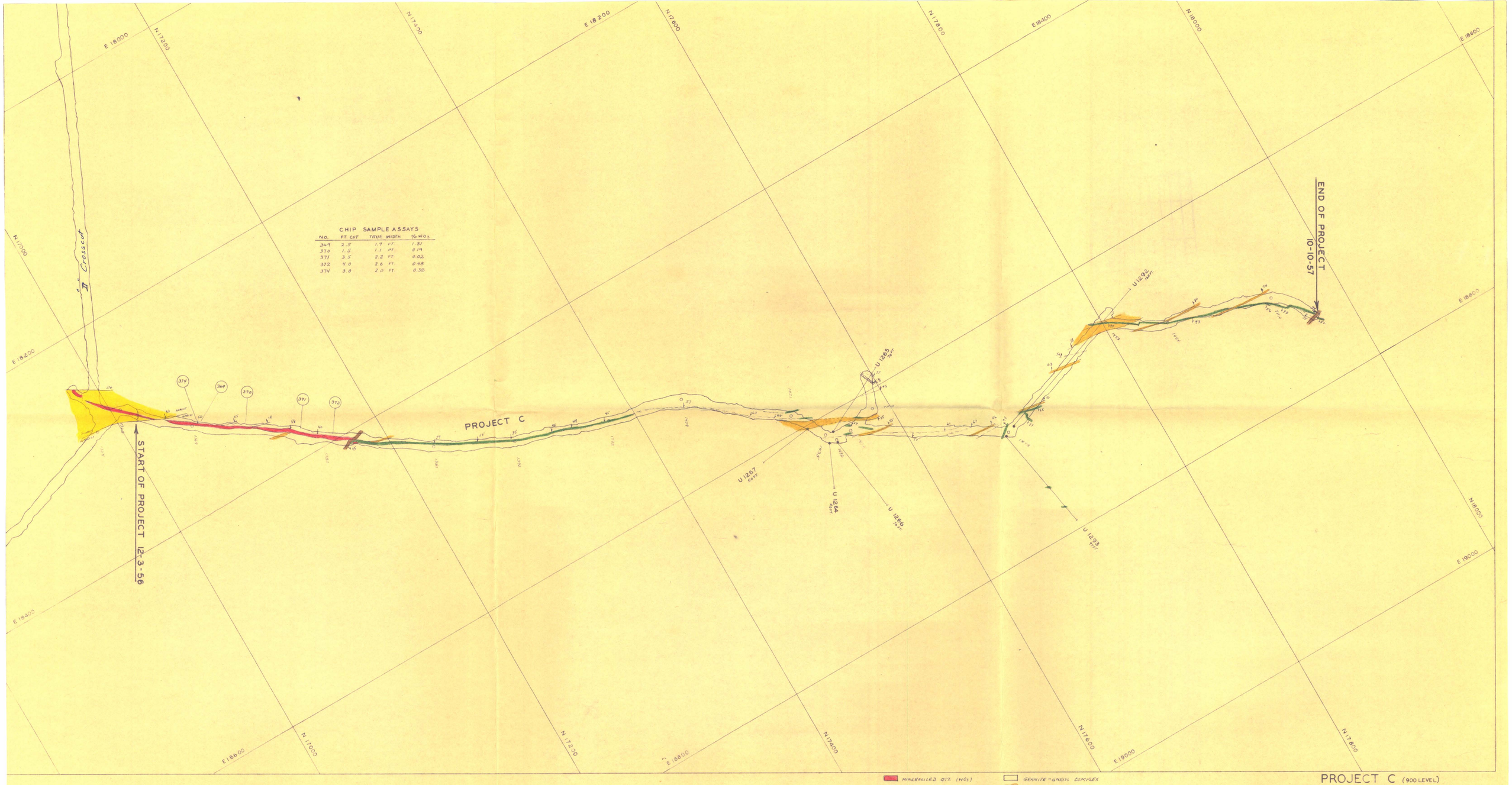
DRILL CORE ASSAYS

NO.	HOLE	FROM	TO	%WO3
251	U1283	22½'	30'	0.36
252	U1283	30'	40'	NIL
253	U1283	40'	48'	0.75
254	U1284	17'	20'	0.02
255	U1298	82½'	84'	1.35

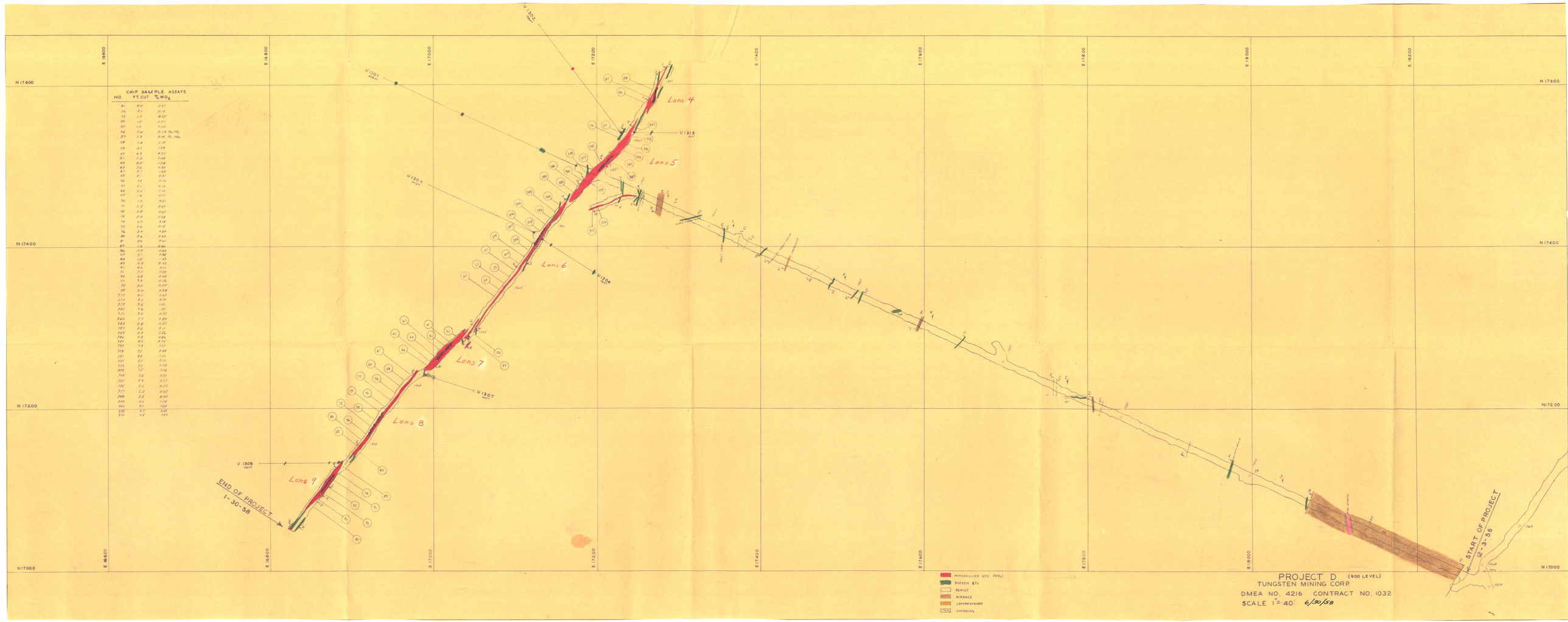
CHIP SAMPLE ASSAYS

NO.	FT. CUT	TRUE WIDTH	% WO3
354	4.7	4.4 FT	1.24
355	5.3	5.0 FT	0.45
356	5.5	5.2 FT	0.27
357	4.6	4.2 FT	0.48
358	5.4	4.3 FT	0.06
359	4.2	3.5 FT	0.20
360	3.2	2.7 FT	1.79
361	2.4	2.0 FT	0.15
362	4.1	3.4 FT	0.37
363	5.5	4.5 FT	0.26
364	8.1	6.7 FT	0.34
365	6.4	6.0 FT	1.42
366	10.5	18.0 FT	0.05
373	2.5	2.4 FT	0.05

PROJECT B (900 LEVEL)
TUNGSTEN MINING CORP.
DMEA NO. 4216 CONTRACT NO. 1032
SCALE 1" = 40' 6/30/58



PROJECT C (900 LEVEL)
TUNGSTEN MINING CORP.
DMEA NO. 4216 CONTRACT NO. 1032
SCALE 1" = 40' 6/30/58



CHIP SAMPLE ASSAYS

NO.	FT. CUT	% WO_3
81	4.0	0.97
82	2.1	0.17
83	1.5	0.22
84	1.2	0.17
85	1.5	0.19
86	2.0	0.19 % MO
87	1.3	0.10 % MO
38	5.3	1.17
39	3.1	1.34
40	4.5	0.25
41	2.5	1.08
42	2.5	1.24
43	3.6	0.80
44	2.1	1.28
45	2.1	0.31
46	3.4	0.74
47	2.1	0.14
48	2.3	1.10
49	1.4	0.11
70	1.3	0.21
71	2.2	0.27
72	1.8	0.22
73	2.9	0.18
74	1.1	0.18
75	3.6	0.2
76	1.4	0.29
80	3.4	0.22
8[illegible]	2.0	0.41
85	1.6	0.86
86	1.9	0.22
87	2.1	0.18
88	1.2	1.93
89	2.4	0.22
90	1.4	0.12
91	2.2	0.29
92	1.8	0.12
93	1.9	0.16
94	2.0	0.07
95	2.0	0.28
377	1.1	1.51
378	2.1	0.51
379	1.2	1.01
380	1.6	1.27
381	2.2	0.77
382	2.7	0.39
383	2.8	0.37
384	2.2	0.21
385	3.3	1.36
386	1.1	0.26
387	1.1	0.74
388	1.1	1.23
389	2.1	0.84
390	1.2	1.11
391	2.1	1.73
392	2.0	1.16
393	1.5	1.03
394	1.5	0.31
395	2.5	0.27
396	2.6	0.23
397	2.2	0.97
398	2.8	0.90
399	2.6	1.14
400	1.1	1.22
401	2.3	0.33
402	1.2	1.97