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**MICROFILMED**

COMSTAFF PROPRIETARY LIMITED

7AP/AM

AN EVALUATION OF THE ORE  
RESERVES AT MT. BISCHOFF

WINTER 1970.

**OPEN FILE**

ANGLO AMERICAN CORPORATION (AUSTRALIA) LIMITED

71-719  
Vol 1/2

9210/11

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71-719

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7AP/AM

AN EVALUATION OF THE ORE RESERVES AT  
MT. BISCHOFF

1. GENERAL

The calculations involved in this evaluation are based on all available information from past and present work on the Mt. Bischoff Mine Area, including data from the recently completed "AAB" series of diamond drill holes.

The following basic figures were used in the calculations:-

|  |   |
|--|---|
| Dolomite                               | 12.74 cu.ft./long ton                                 |
| Porphyry                               | 13.44 cu.ft./long ton                                 |
| Dolomite ore                           | 12.5 cu.ft./long ton (assuming a 4% sulphide content) |
| Porphyry ore                           | 13.2 cu.ft./long ton (assuming a 4% sulphide content) |
| Maximum angle of sides of open cut 45° |   |
| Cut off grade 0.25% Sn                 |   |

2. METHOD:

2.1. DDH Intersections

All DDH ore intersections were replotted on the sectional model at the cut off grade of 0.25% Sn. Correctly weighted averages were calculated to give an overall grade for each intersection, as were percentage reliabilities derived from the percentage

2.

core recovery. Intersections were plotted as "dolomitic" or "porphyry" ore.

The only instances in which intersections of less than 0.25% Sn were included were those in which a short intersection of less than 0.25% occurred within a long intersection greater than 0.25%. In all other cases all intersections of less than 0.25% were rejected.

### 2.2. Ore-Body Interpretation

With the replotting of the DDH ore intersections completed, it was possible to plot the size, shape and position of the various ore bodies on the sectional model. In the case of the porphyry ore-bodies this was straightforward, but the dolomitic ore-bodies are extremely complex and irregular. It is not possible to link all the ore intersections within the dolomite, and the interpretation arrived at gives one main dolomite ore body in the west, above the porphyry, a smaller body in the east, below the porphyry, and a number of much smaller, and isolated, "pods" of ore.

### 2.3. Open-Cut

Once the "ore-bodies" had been plotted, a simplified open-cut was planned to allow the extraction of the two main dolomite ore bodies. This also involves the removal of one of the minor isolated pods of dolomitic ore, and of some of the porphyry ore. The sides of the open cut were plotted with a maximum angle of 45°.

#### 2.4. Plans and Sections

Once the details of DDH intersections, interpreted ore bodies and proposed open-cut had been plotted a number of plans and sections were prepared to illustrate these features and facilitate the evaluation calculations. Plans were drawn at a vertical interval of 50 ft. for levels from 1600' to 2200'. In addition, a geological interpretation plan on a scale of 400':1" was prepared.

Two sections approximately north-south and two approximately east-west were also compiled, to show the main dolomite ore bodies, in addition to parts of the porphyry bodies.

### 3. CALCULATIONS

#### 3.1. Porphyry Ore Bodies

Calculations of tonnage and grade of the porphyry ore bodies was much simplified by the fact that these ore bodies are regular and of dipping tabular form.

This volume was calculated in terms of a combination of rectangular blocks and diagonally halved blocks, and then converted to a tonnage using a conversion factor of 13.2 cu.ft./long ton.

Each known intersection within porphyry ore was given an area of influence (viz. half the distance to the next known intersection(s)) and by weighting these grades in proportion to the volumes of each section of the ore body within the area of influence of a particular intersection, a corrected overall grade

4.

was obtained.

3.2. Dolomite Ore Bodies

The highly complex and irregular nature of these bodies makes an accurate assessment of their tonnage and grade far more difficult to arrive at than that for the porphyry ore bodies.

Accordingly a simplified, but reasonably accurate method of calculation was employed:

1. Each ore body intersection on the horizontal plans was given a vertical influence of 50 ft. i.e. from 25 ft. above and below the horizontal section.
2. The area of each ore body intersection on each plan was measured.
3. The volume of dolomitic ore within the area of influence of each plan was then calculated as the product of the area on that plan times 50 ft. vertical influence.
4. The total volume of the dolomite ore body was given by addition of the 50 ft. section volumes as calculated in (3).
5. Where applicable, areas of below cut-off grade and inclusive of barren walls surrounded by dolomitic ore body were calculated as above,

5.

and this volume was then subtracted from that of the ore-body.

6. Overall grade was assessed in the same manner as that for the porphyry ore.

### 3.3. The Open Cut

The volume to be removed from the open cut was calculated using the same method as was employed for the calculation of the dolomitic ore bodies.

The tonnage involved was calculated from the volume assuming that all the material to be removed was dolomite, i.e. a conversion factor of 12.74 cu. ft./long ton was used.

### 3.4. Percentage Reliability

The percentage reliability of the overall grade of each ore body was calculated by distributing the reliabilities of known intersections in the same way as the grades.

## 4. BASIC ASSUMPTIONS REGARDING MINING METHODS

It is assumed that:

- (a) the dolomite ore bodies, if mined, represent an open cut proposition.
- (b) the porphyry ore bodies, if mined, would be a target for underground development.

However, the establishment of an open cut to effect the removal of the dolomitic ore would inevitably lead to the removal of a smaller part of the porphyry ore.

5. RESULTS OF CALCULATIONS5.1. Ore Reserves

The calculations made lead to the following statement of ore reserves within the Mt. Bischoff Mine Area:-

(a) Dolomitic Ore

In the western ore-body 283,000 tons @ 0.89% Sn  
(153,600 tons 79.6% reliability)  
(129,400 tons unknown reliability)

In the eastern ore-body 47,000 long tons @ 0.66% Sn  
(12,600 tons 100% reliability)  
(36,400 tons unknown reliability)

TOTAL DOLOMITE ORE (Main Bodies) 330,000 long tons @ 0.86%  
Sn

(166,200 tons 81% reliability)  
(163,800 tons unknown reliability)

(b) Porphyry Ore

In the main ore bodies 838,000 long tons @ 0.594% Sn  
(313,000 tons 86% reliability)  
(525,000 tons unknown reliability)

5.2. Open Cut(a) Material to be removed

This includes both waste and ore 4,759,000 long tons

7.

(b) Ore to be removed

This would include:-

Total dolomite ore in the main bodies 330,000 tons @ 0.86%

dolomite ore (minor pod) 3,000 tons @ ~~0.501%~~ 0.356%

part of the porphyry ore 103,000 tons @ 0.501%

Total 436,000 long tons @ 0.77% Sn(c) Stripping Ratio

|                                |                    |
|--------------------------------|--------------------|
| Total to be removed:           | 4,759,000 tons (1) |
| <u>Less</u> Ore to be removed: | 436,000 tons (2)   |
| *Waste to be removed:          | 4,323,000 tons (3) |

\* Includes overburden, underburden and "intraburden".

Thus from (2) and (3)

Stripping ratio = 1:9.9

5.3. Under Ground Development

Ore available:-

EITHER porphyry ore in toto,

i.e. 838,000 tons @ 0.594% Sn as in 5.1. (b)

OR if open cut established, remainder of porphyry ore

= 735,000 long tons @ 0.606% Sn

(307,000 tons 86% reliability)

(428,000 tons unknown reliability)

6. PLANS

See additional folder for Mt. Bischoff Plans.

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8.

| <u>Plan No.</u> | <u>Title</u>  |
|-----------------|---|
| Tas-2-116       | Mt. Bischoff Mine Area Geology<br>Interpretation Plan (Scale 1":400') |
| Tas-2-129       | Mt. Bischoff Area Diamond Drillhole Data                              |
| Tas-2-130       | Section EW1.  |
| Tas-2-131       | Section EW2.  |
| Tas-2-132       | Section D1  |
| Tas-2-133       | Section F   |
| Tas-2-134       | Open Cut Bench Plans (13)   |

*Romana Armfield*

~~*f* H. Robinson~~

January 1971

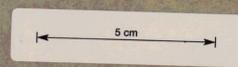
2,699,000 N  
2,698,000 N  
2,697,000 N  
2,696,000 N  
2,695,000 N  
2,694,000 N  
2,693,000 N  
2,692,000 N  
2,691,000 N  
2,690,000 N

1,065,000 E  
1,066,000 E  
1,067,000 E  
1,068,000 E  
1,069,000 E  
1,070,000 E  
1,071,000 E  
1,072,000 E  
1,073,000 E

- SANDSTONE / QUARTZITE
- GRAY SHALES SEQUENCE
- CARB. SHALES SEQUENCE
- DOLOMITE
- PORPHYRIES
- MUDSTONE
- LITHOLOGICAL BOUNDARIES
- LINEAMENTS w/ DIP ANGLES
- FOLD AXES
- OVERTURNED BEDS
- FAULT
- PROPOSED DRILL HOLES (DHP)
- TUNNELS & ADITS
- SECTION LINES
- 'RHEOMORPHIC' MATERIAL



COMSTAFF PTY. LTD.  
 MT. BISCHOFF MINE AREA  
 GEOLOGY INTERPRETATION PLAN

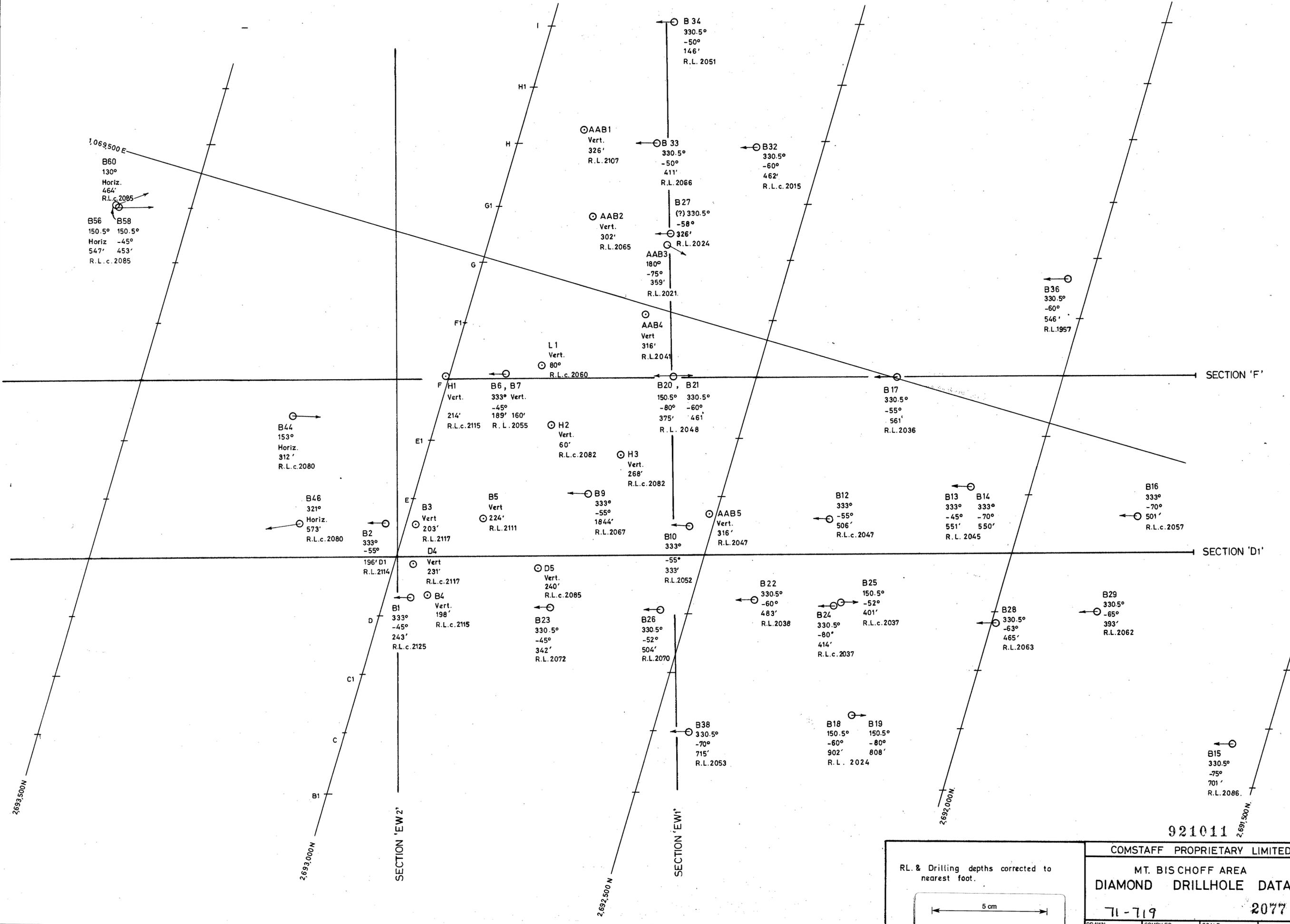


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TAS-2-116

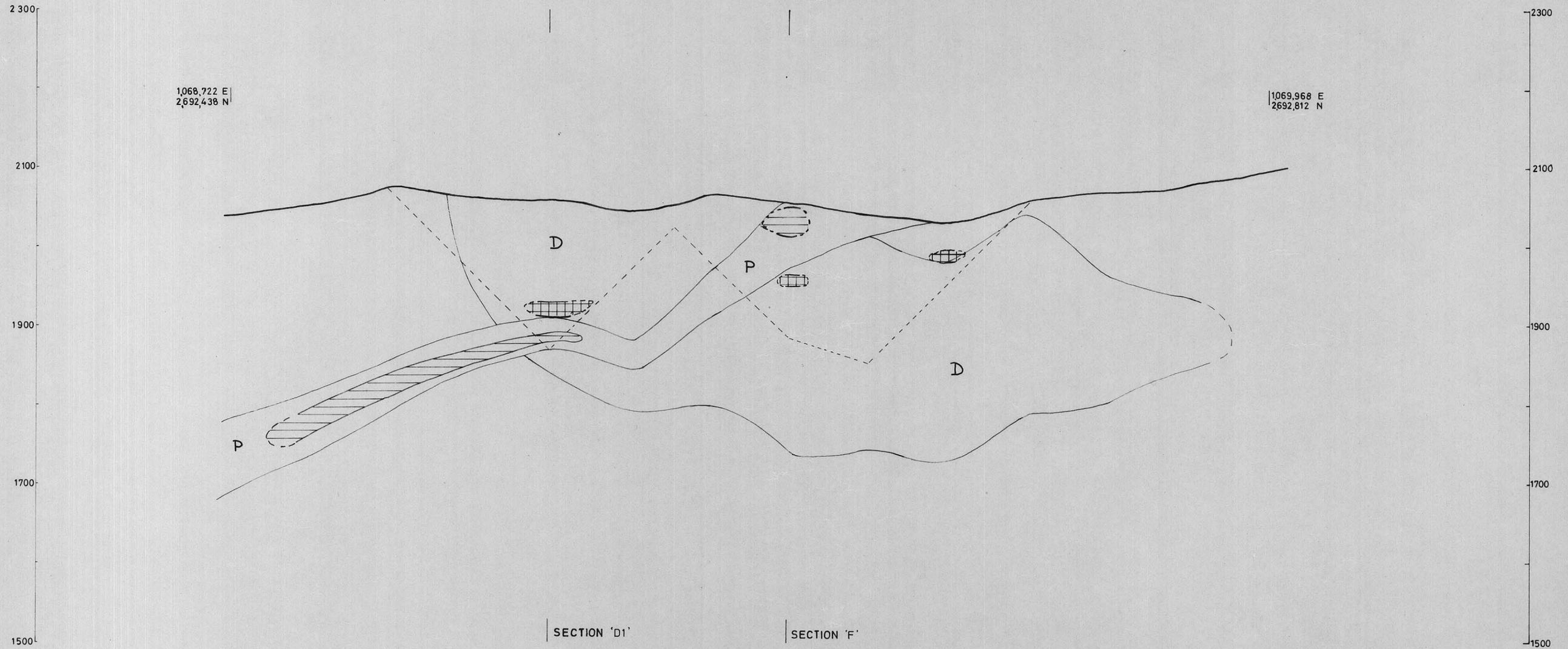


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RL & Drilling depths corrected to nearest foot.

COMSTAFF PROPRIETARY LIMITED  
 MT. BISCHOFF AREA  
 DIAMOND DRILLHOLE DATA  
 71-719 2077

DRAWN JAN. 1971 COMPILED SCALE 1:1200 TAS-2-129



**LEGEND**

- D Dolomite
- P Porphyry
- ▨ Porphyry Ore
- ▩ Dolomite Ore
- - - - - Approx. boundary of 'open-cut' as used in calculations.

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MT BISCHOFF AREA  
SECTION EW1

Corresponds to R.G.F.'s Section

5 cm

|       |          |              |           |
|-------|----------|--------------|-----------|
| DRAWN | COMPILED | SCALE 1:1200 | TAS-2-130 |
|-------|----------|--------------|-----------|

2300  
2200  
2100  
2000  
1900  
1800  
1700  
1600  
1500

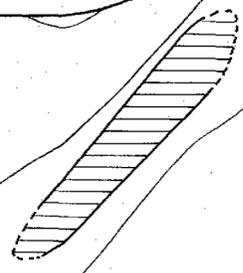
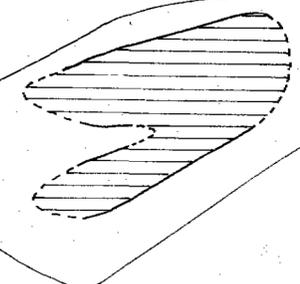
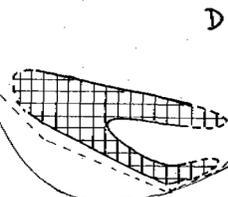
1,068,586 E  
2,692,886 N

1,069,835 E  
2,693,252 N

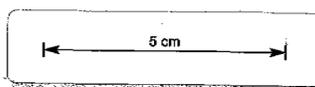
2300  
2200  
2100  
2000  
1900  
1800  
1700  
1600  
1500

SECTION 'D'

SECTION 'F'



| LEGEND                |   |
|-----------------------|---|
| D                     | Dolomite  |
| P                     | Porphyry  |
| [Horizontal Hatching] | Porphyry Ore  |
| [Cross-hatching]      | Dolomite Ore  |
| [Dashed Line]         | Approximate boundary of open-cut used in calculations |



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MT BISCHOFF AREA  
SECTION EW2

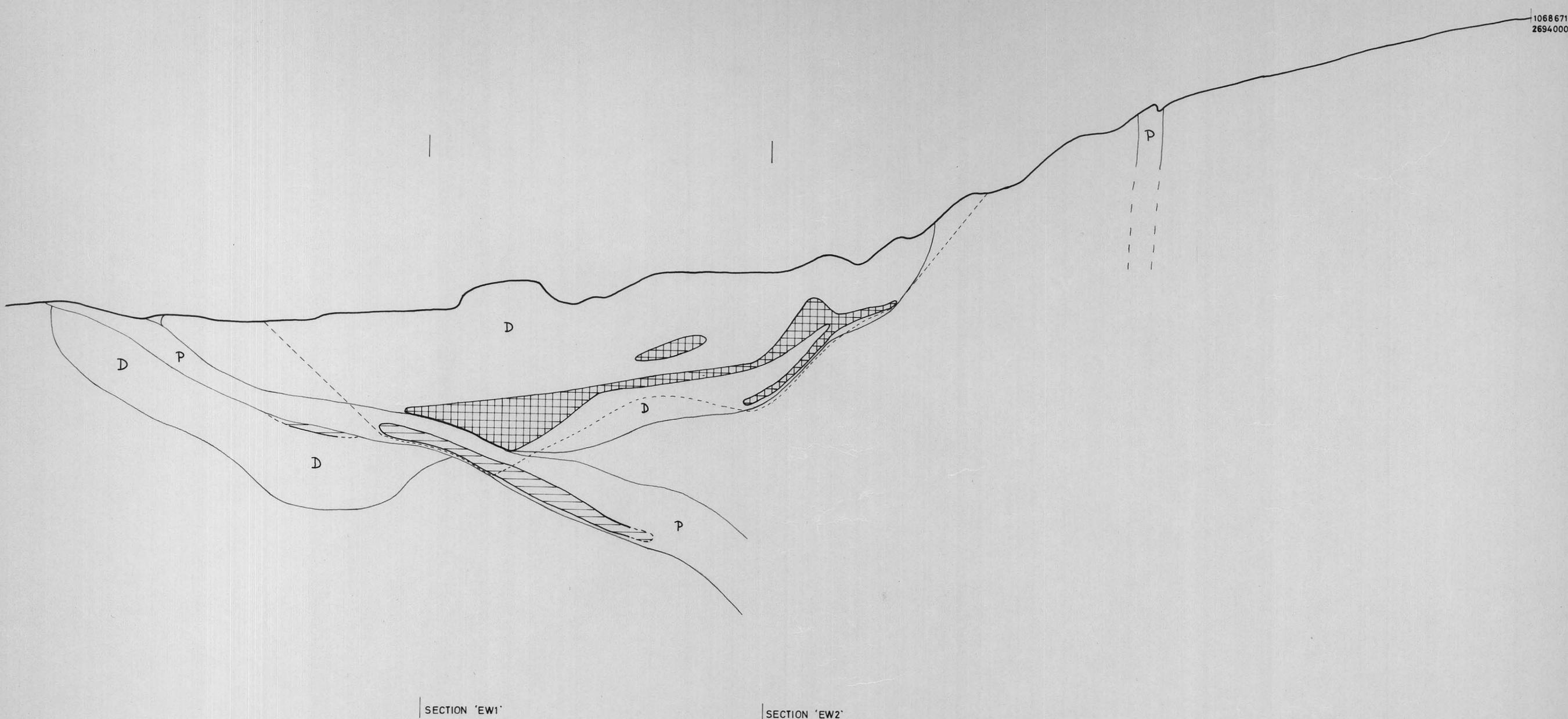
921013

2079

71-719 1:1200 TAS-2-131

1068671 E  
2694000 N

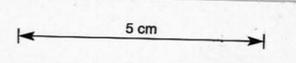
2500  
2400  
2300  
2200  
2100  
2000  
1900  
1800  
1700  
1600  
1500



SECTION 'EW1'

SECTION 'EW2'

921014



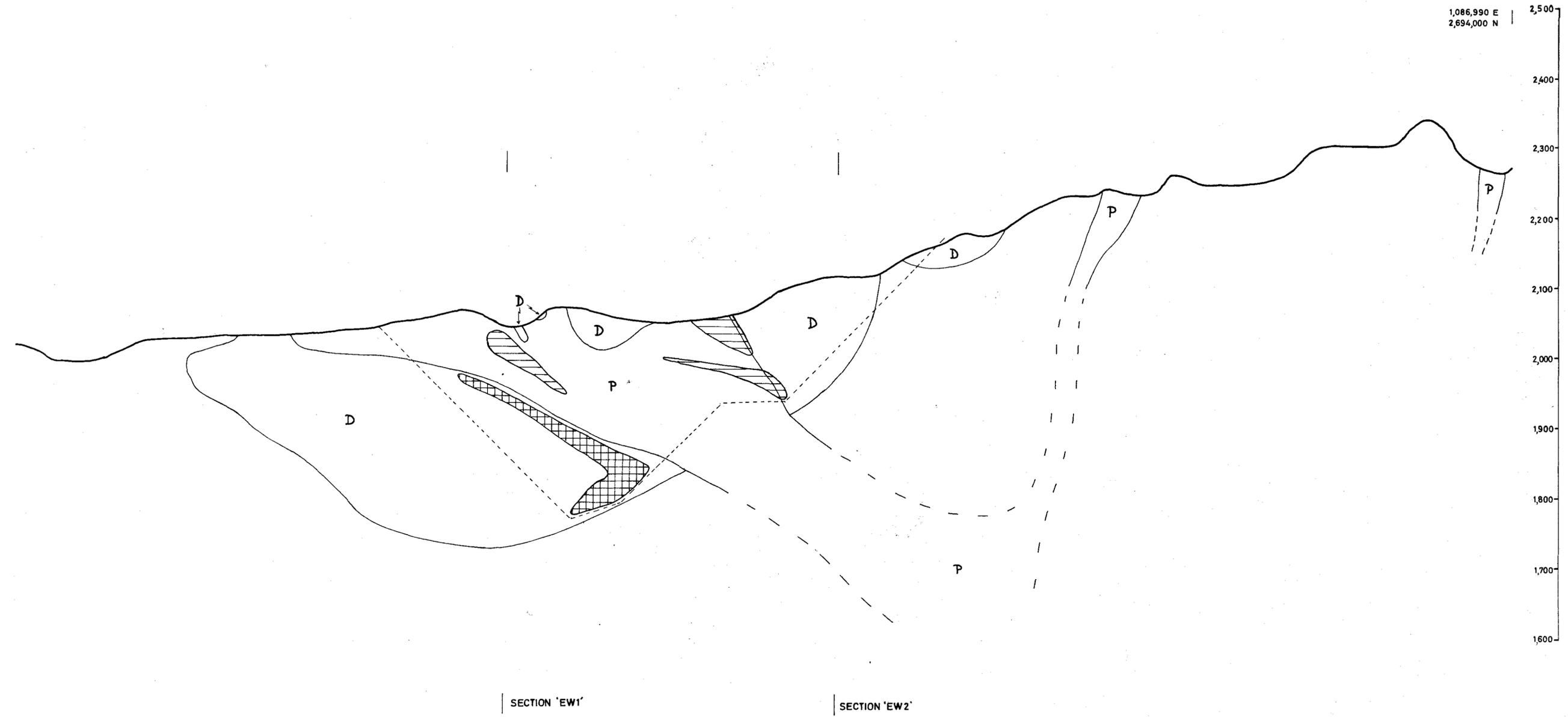
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| LEGEND           |  |
|------------------|--|
| D                | Dolomite   |
| P                | Porphyry   |
| [Diagonal lines] | Porphyry Ore   |
| [Grid]           | Dolomite Ore   |
| [Dashed line]    | Approximate boundary of open-cut as used in calculations |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| SECTION D1                   |          |              |           |
| 2080                         |          |              |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-132 |

1,086,990 E  
2,694,000 N

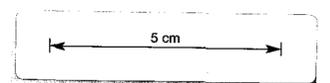
2,500  
2,400  
2,300  
2,200  
2,100  
2,000  
1,900  
1,800  
1,700  
1,600



SECTION 'EW1'

SECTION 'EW2'

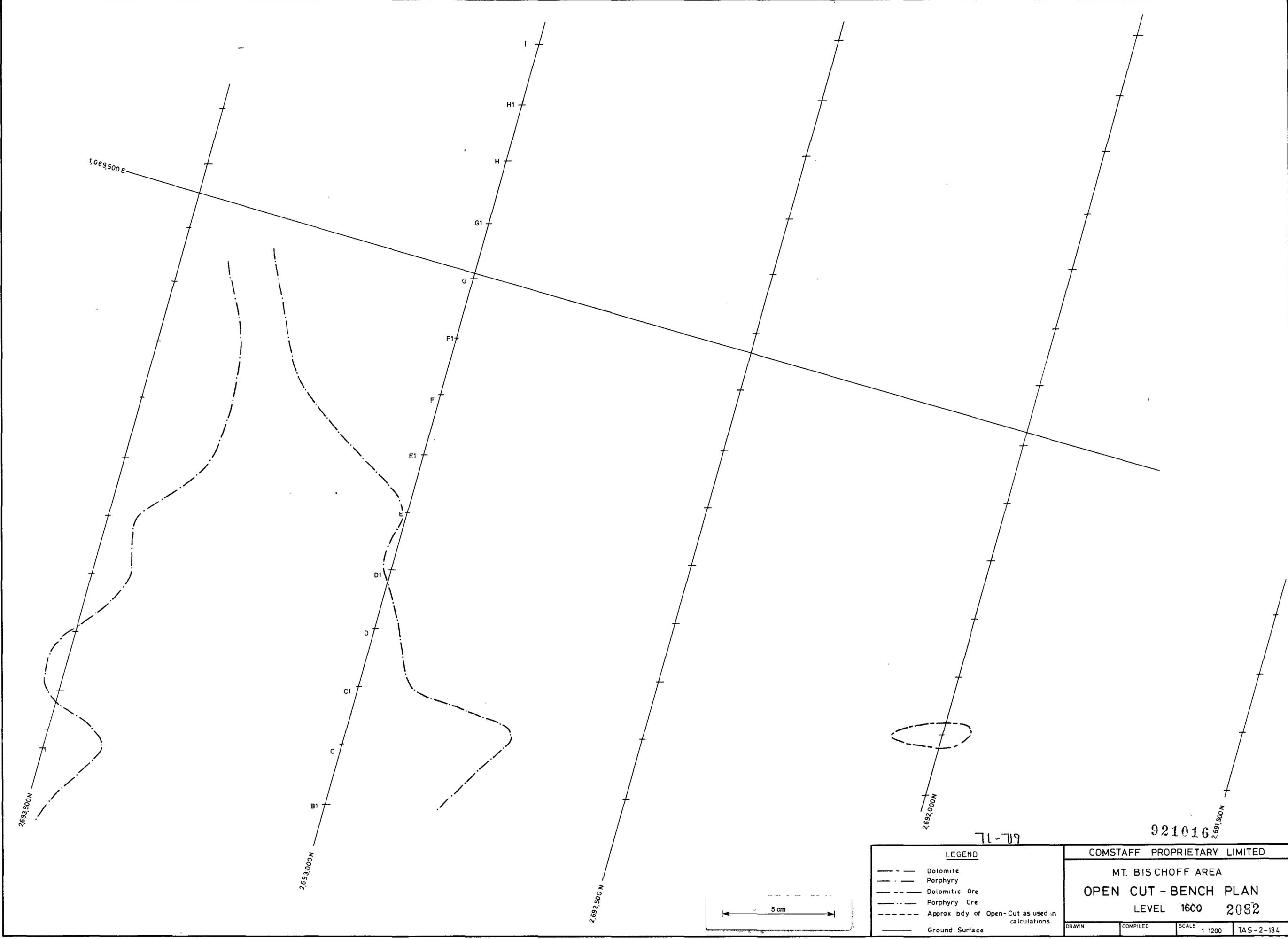
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|   |  |
|---|--|
| D | Dolomite   |
| P | Porphyry   |
|   | Porphyry Ore   |
|   | Dolomite Ore   |
|   | Approximate boundary of 'open-cut' as used in calculations |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| SECTION F                    |          |              |           |
|                              |          |              | 2081      |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-133 |



| LEGEND |  |
|--------|--|
|        | Dolomite                                       |
|        | Porphyry                                       |
|        | Dolomitic Ore                                  |
|        | Porphyry Ore                                   |
|        | Approx bdy of Open-Cut as used in calculations |
|        | Ground Surface                                 |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 1600                   |          | 2082         |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |

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1069500 E

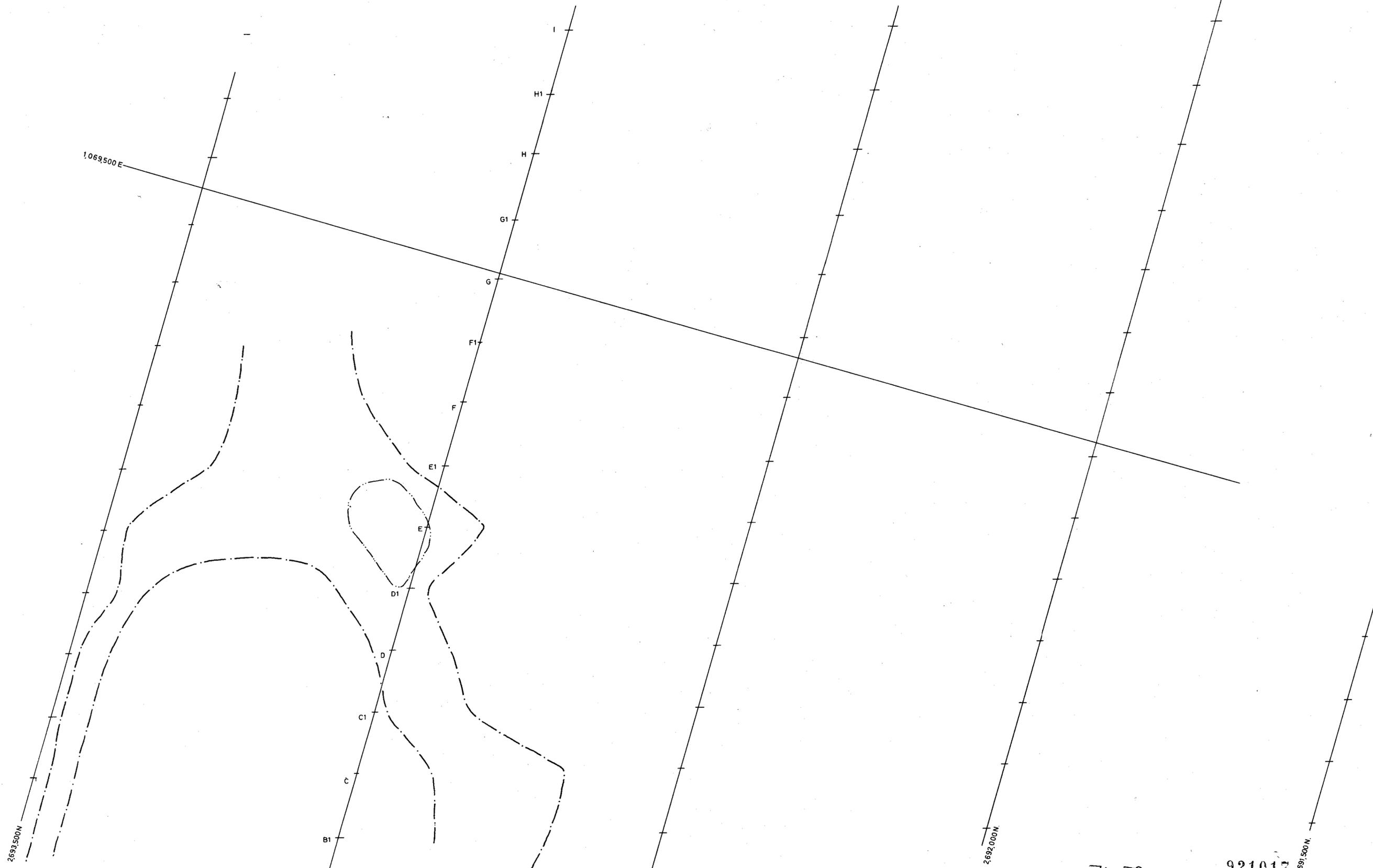
2693500 N

2693000 N

2692500 N

2692000 N

2691500 N



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921017

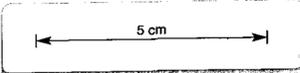
| LEGEND |   | COMSTAFF PROPRIETARY LIMITED   |           |
|--------|---|--|-----------|
| ---    | Dolomite  | MT. BISCHOFF AREA<br><b>OPEN CUT - BENCH PLAN</b><br>LEVEL 1650 2003 |           |
| -.-.-  | Porphyry  |  |           |
| ---    | Dolomitic Ore                                     |  |           |
| -.-.-  | Porphyry Ore                                      |  |           |
| ---    | Approx. bdy. of Open-Cut as used in calculations. |  |           |
| ---    | Ground Surface                                    | DRAWN  | COMPILED  |
|        |   | SCALE 1:1200   | TAS-2-134 |

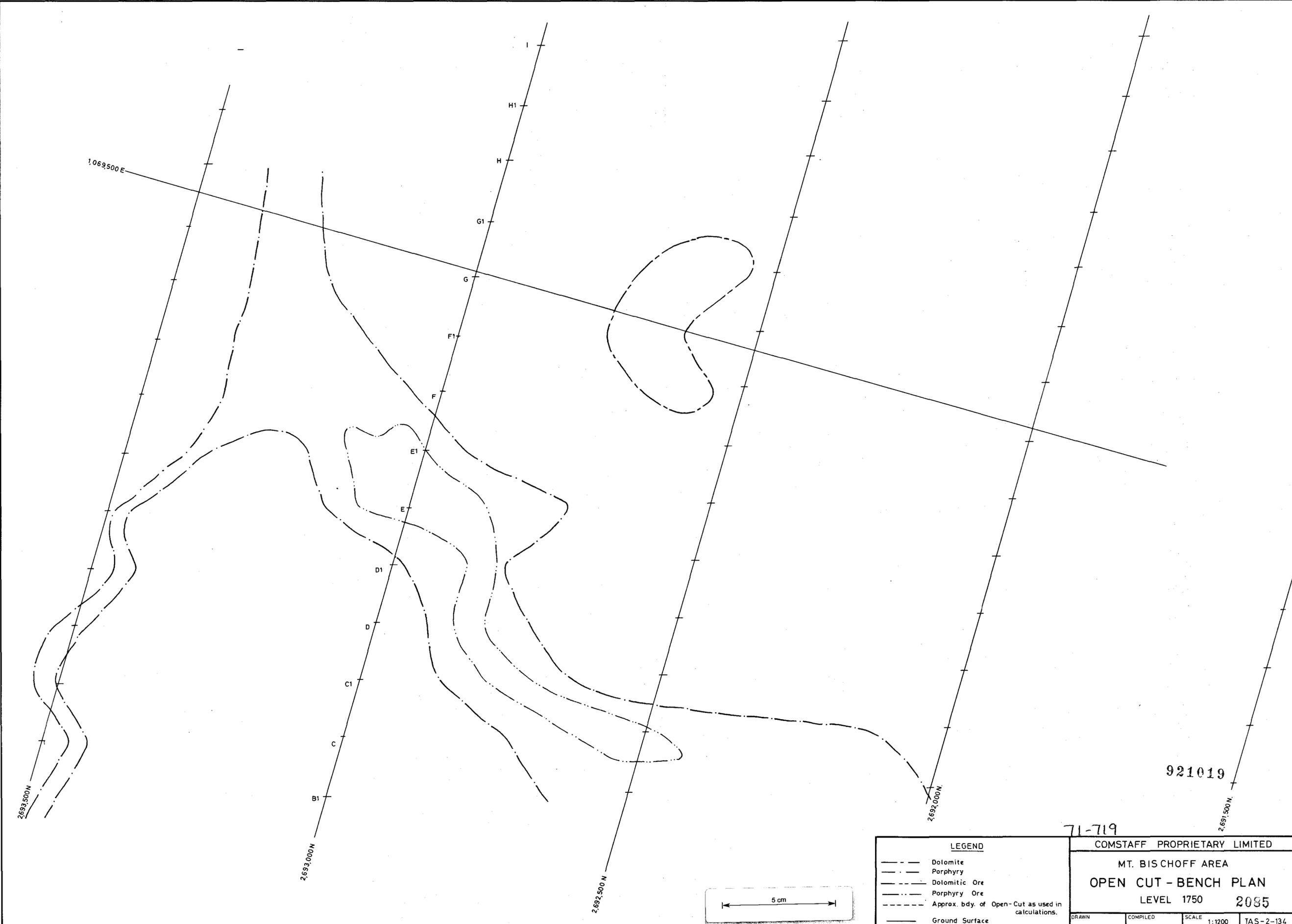


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| LEGEND    |   |
|-----------|---|
| ---       | Dolomite  |
| - - -     | Porphyry  |
| - · - · - | Dolomitic Ore                                     |
| - · - · - | Porphyry Ore                                      |
| - - - - - | Approx. bdy. of Open-Cut as used in calculations. |
| —         | Ground Surface                                    |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 1700                   |          | 2084         |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |





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| LEGEND  |   |  |  |
|---------|---|--|--|
| ---     | Dolomite  |  |  |
| - . - . | Porphyry  |  |  |
| .....   | Dolomitic Ore                                     |  |  |
| ————    | Porphyry Ore                                      |  |  |
| ---     | Approx. bdy. of Open-Cut as used in calculations. |  |  |
| ————    | Ground Surface                                    |  |  |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 1750                   |          | 2085         |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |

1069500 E

2693500 N

2693000 N

2692500 N

2692000 N

2691500 N

B1

C

C1

D

D1

E

E1

F

F1

G

G1

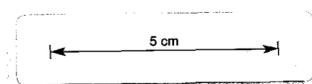
H

H1

I

921020

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| LEGEND |   |
|--------|---|
|        | Dolomite  |
|        | Porphyry  |
|        | Dolomitic Ore                                     |
|        | Porphyry Ore                                      |
|        | Approx. bdy. of Open-Cut as used in calculations. |
|        | Ground Surface                                    |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 1800 2086              |          |              |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |



| LEGEND |   |
|--------|---|
|        | Dolomite  |
|        | Porphyry  |
|        | Dolomitic Ore                                     |
|        | Porphyry Ore                                      |
|        | Approx. bdy. of Open-Cut as used in calculations. |
|        | Ground Surface                                    |



|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 1850                   |          |              | 2087      |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |



| LEGEND |   |
|--------|---|
|        | Dolomite  |
|        | Porphyry  |
|        | Dolomitic Ore                                     |
|        | Porphyry Ore                                      |
|        | Approx. bdy. of Open-Cut as used in calculations. |
|        | Ground Surface                                    |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 1900                   |          | 2088         |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |

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921022

5 cm

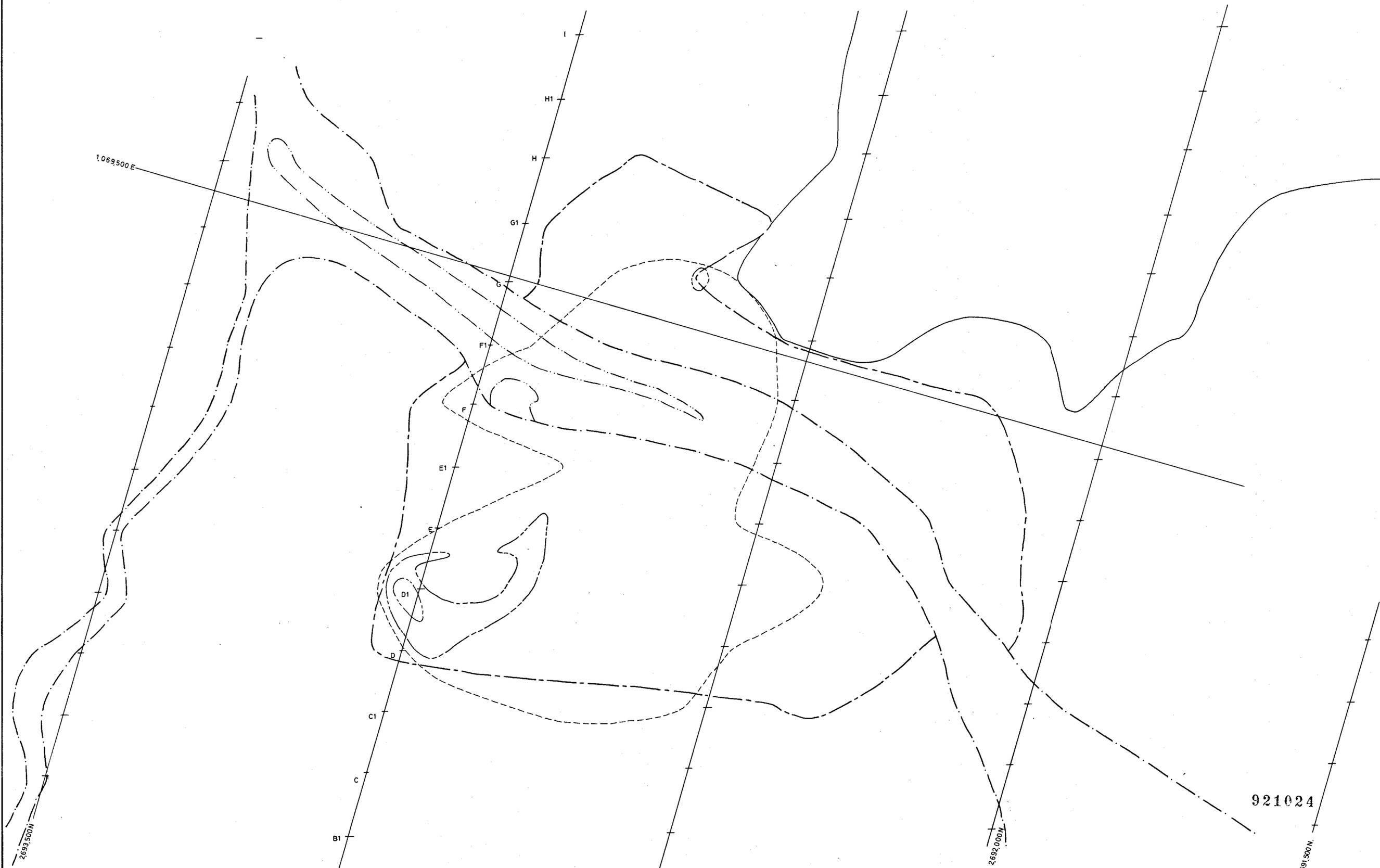


| LEGEND |   |
|--------|---|
|        | Dolomite  |
|        | Porphyry  |
|        | Dolomitic Ore                                     |
|        | Porphyry Ore                                      |
|        | Approx. bdy. of Open-Cut as used in calculations. |
|        | Ground Surface                                    |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 1950                   |          | 2089         |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |

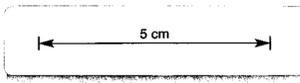
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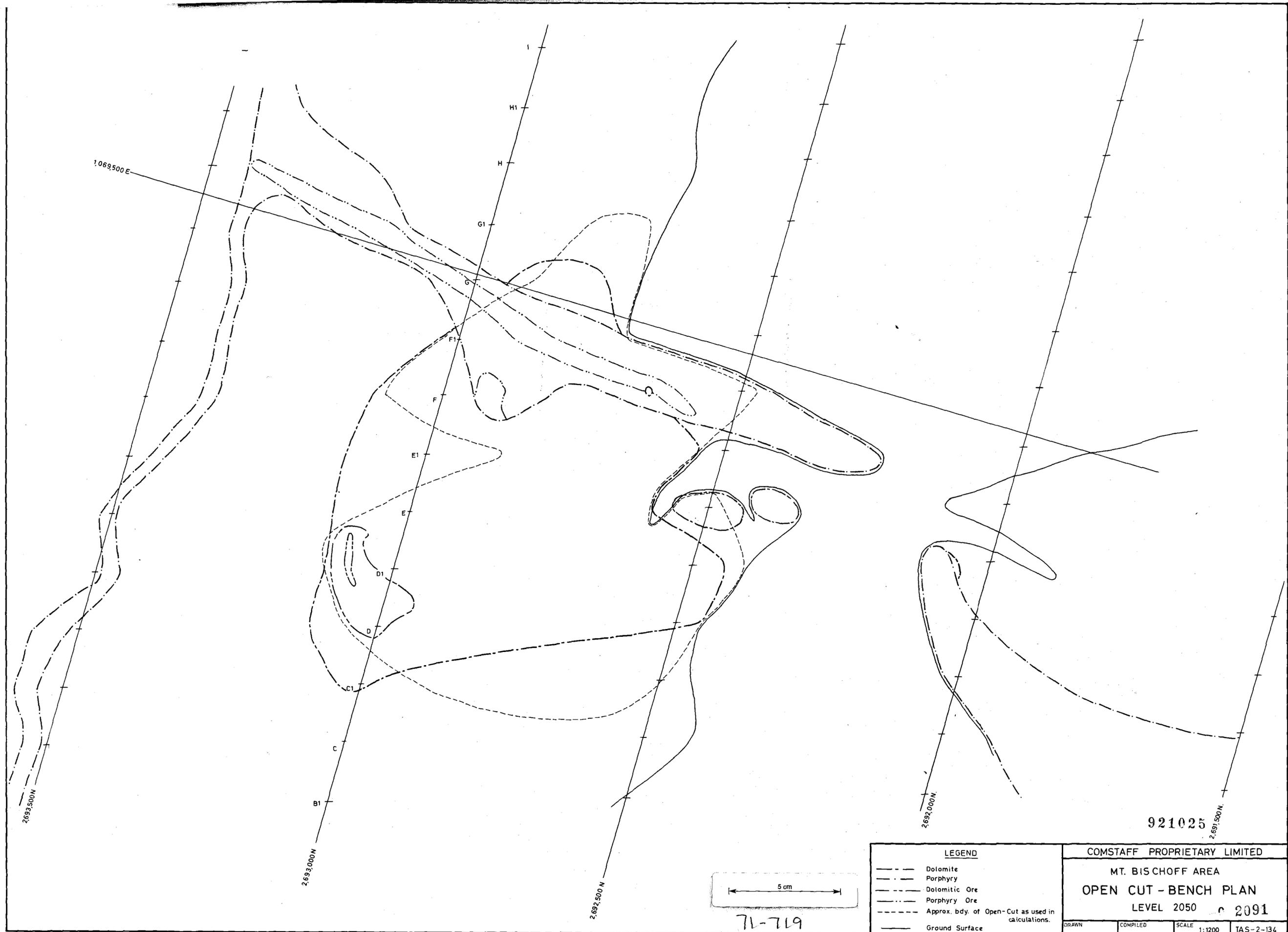
| LEGEND |   |
|--------|---|
|        | Dolomite  |
|        | Porphyry  |
|        | Dolomitic Ore                                     |
|        | Porphyry Ore                                      |
|        | Approx. bdy. of Open-Cut as used in calculations. |
|        | Ground Surface                                    |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 2000 OR 2090           |          |              |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |



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921024



1069500 E

2693500 N

2693000 N

2692500 N

2692000 N

2691500 N

B1

C

C1

D

D1

E

E1

F

F1

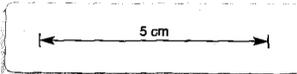
G

G1

H

H1

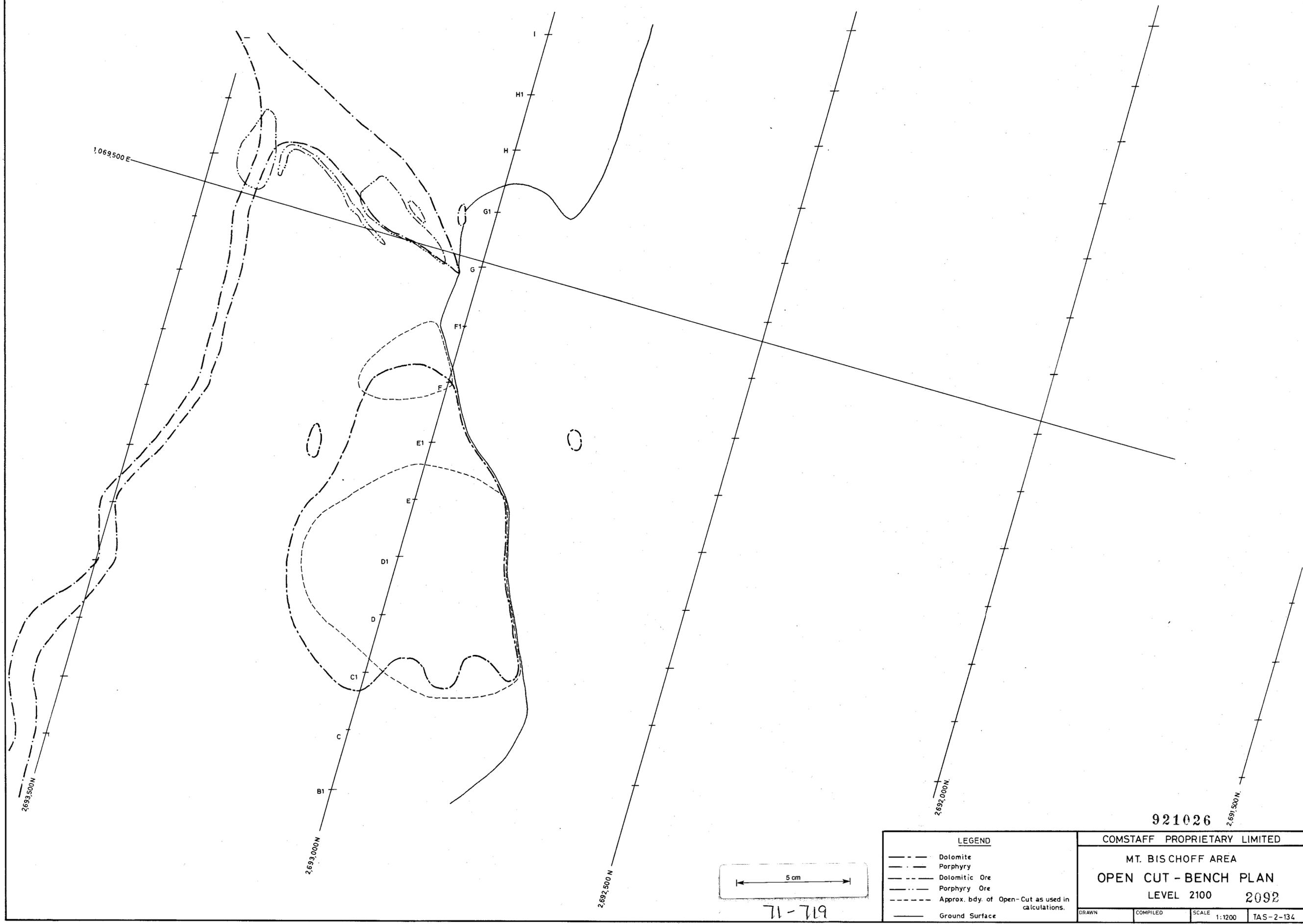
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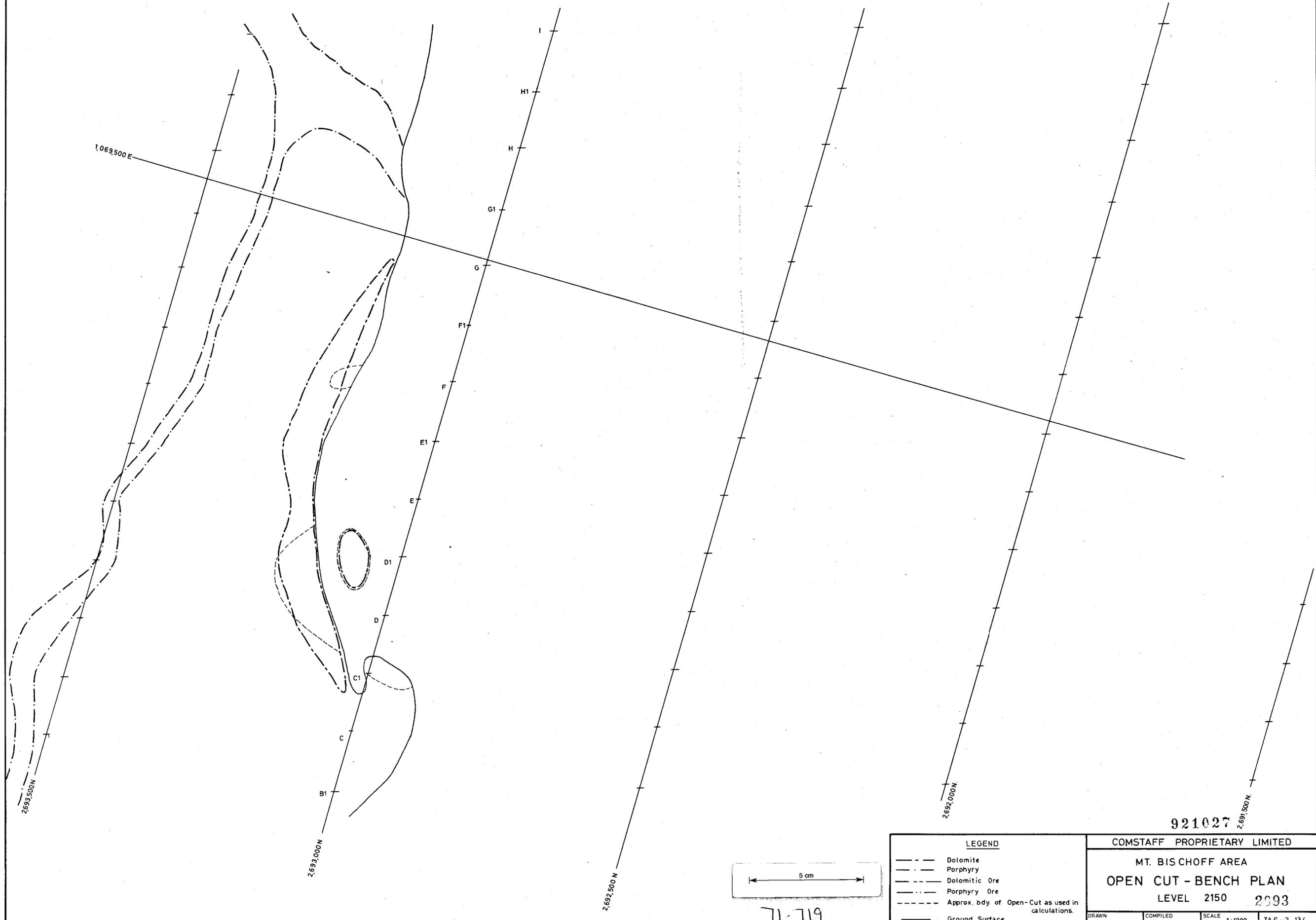
|               |   |                              |  |
|---------------|---|------------------------------|--|
| <b>LEGEND</b> |   | COMSTAFF PROPRIETARY LIMITED |  |
| -----         | Dolomite  | MT. BISCHOFF AREA            |  |
| - . - . - .   | Porphyry  | <b>OPEN CUT - BENCH PLAN</b> |  |
| .....         | Dolomitic Ore                                     | LEVEL 2050 c 2091            |  |
| —————         | Porphyry Ore                                      | DRAWN                        |  |
| - - - - -     | Approx. bdy. of Open-Cut as used in calculations. | COMPILED                     |  |
| —————         | Ground Surface                                    | SCALE 1:1200                 |  |
|               |   | TAS-2-134                    |  |

921025



| LEGEND    |   |
|-----------|---|
| ---       | Dolomite  |
| ---       | Porphyry  |
| - · - · - | Dolomitic Ore                                     |
| · · · · · | Porphyry Ore                                      |
| - - - - - | Approx. bdy. of Open-Cut as used in calculations. |
| —         | Ground Surface                                    |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| 921026                       |          |              |           |
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 2100                   |          | 2092         |           |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |



| LEGEND |   |
|--------|---|
|        | Dolomite  |
|        | Porphyry  |
|        | Dolomitic Ore                                     |
|        | Porphyry Ore                                      |
|        | Approx. bdy. of Open-Cut as used in calculations. |
|        | Ground Surface                                    |

|                              |          |              |           |
|------------------------------|----------|--------------|-----------|
| COMSTAFF PROPRIETARY LIMITED |          |              |           |
| MT. BISCHOFF AREA            |          |              |           |
| OPEN CUT - BENCH PLAN        |          |              |           |
| LEVEL 2150                   |          |              | 2093      |
| DRAWN                        | COMPILED | SCALE 1:1200 | TAS-2-134 |

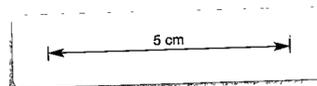
921027

5 cm

71-719



921028



71-719

| LEGEND |   | COMSTAFF PROPRIETARY LIMITED  |          |              |           |
|--------|---|---|----------|--------------|-----------|
| ---    | Dolomite  | MT. BISCHOFF AREA<br><b>OPEN CUT - BENCH PLAN</b><br>LEVEL 2200    2004 |          |              |           |
| ---    | Porphyry  |   |          |              |           |
| ---    | Dolomitic Ore                                   |   |          |              |           |
| ---    | Porphyry Ore                                    |   |          |              |           |
| ---    | Approx bdy of Open-Cut as used in calculations. |   |          |              |           |
| ---    | Ground Surface                                  | DRAWN   | COMPILED | SCALE 1:1200 | TAS-2-134 |