

# SCUD 11, 12, 13, 14 CLAIMS <br> (4855, 4856, 4857, 4858) 

LIARD MINING DIVISION PROSPECTING REPORT

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OCTOBER, 1989
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Paul W. Jones CORONA CORPORATION

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## CONCLUSIONS

The SCUD C group has a low priority with respect to the rest of the Scud package. The prospecting in the amphibolite grade metamorphic rocks did not produce any showings of economic interest. This along with the fact that a large portion of the claim group overstakes previous mineral claims suggests that limited follow-up should be planned. Three areas on SCUD 11 can be prospected to determining whether any potential zones remain undiscovered.

## RECOMMENDATIONS

The SCUD C group should be kept in good standing with minimal work. If local work on adjoining claims suggest that the claim group has any potential then follow-up exploration may be warranted.

## INTRODUCTION

The Scud C claim group includes the four 20 unit Scud 11 (4855), Scud 12 (4856), Scud 13 (4857) and Scud 14 (4858) claims. They were all staked on July 5, 1988 by a contractor for Lacana Ex. (1981) Inc. a subsidiary of Corona Corporation. They are located at the head waters of the Scud River and are to the immediate east of the north south portion of the Scud River where it originates from the Scud glacier. The claims lie on the east of the Coast Plutonic Complex Intermontane Belt contact. Access is via helicopter from the Scud airstrip located at the confluence of the Scud and Stikine Rivers or the Galore Creek airstrip located 20 km to the south west.

The claims are composed of Permian limestones with tuffaceous siltstones of the Stikine assemblage overlain by Triassic Stuhini Group undifferentiated volcanics and sediments. On the eastern border of the volcanic sediment package the middle-late Triassic Hickman batholith dominates. This intrusion has metamorphosed some of the rocks to the west grading from greenschist to amphibolite facies. Upper Triassic Stuhini group rocks are seemingly unaltered by the Hickman Pluton. The later middle Jurassic Yehiniko Pluton and Eocene intrusives are also present.

The claims can be divided into 3 north south lithologies. The eastern strip is the hornblende quartz diorite phase of the Hickman Pluton. The central area is a metamorphosed mafic volcanic package which is in fault contact with the older Permian limestone tuffaceous siltstones of the Stikine assemblage to the west. The original mafic composition of the now metavolcanics and iron-rich sediments explains the pervasive disseminated pyrite throughout the lithologies. Elevated Ni and W results were persistent in shear zones sampled. Limited follow-up of these anomalies is warranted.

A major prospecting program was undertaken during August of 1988. This program was based on the Scud airstrip. During 7.5 mandays, 51 samples were collected. The cost of this exploration amounted to $\$ 11,120.00$ Canadian Dollars. A regional government geochemical survey released in June of 1988 provided limited coverage of the SCUD claim

## PROPERTY LOCATION



# TELEGRAPH CREEK 



SCUD PROPERTY
CLAIM LOCATION MAP

REGIONAL GEOLOGY

The claim area lies on the western margin of the Intermontane Belt at its contact with the Coast Plutonic Complex. Paleozoic sediments and Mesozoic sediments and volcanics are cut by intrusive bodies of the main Coast Belt and the satellite Hickman and Yeheniko plutons. General tectonic fabric of the region trends north-northwesterly.

The oldest rocks exposed in the area are Lower Paleozoic clastics including impure quartzites and limestones, overlain by crystalline schists and gneisses. A thick impure limestone unit caps the Paleozoic oceanic sequence.

The lower contact of Mesozoic units is described by F.A. Kerr, G.S.C. Memoir 246 and J.G. Souther, G.S.C. Paper 71-44, as gradational and in places unconformable. Triassic rocks consist of a thick sedimentary sequence overlain by an island arc volcanic assemblage which is in turn capped by volcanic derived sediments.

The Jurassic layered sequence consists largely of a thick, near shore sedimantary package and later volcanic (island arc?) rocks. Extensive intrusive activity during this period resulted in the emplacement of the multi phased 'Coast Complex' and related satellite plutons. Alkaline and calc-alkaline members of this suite are directly associated with most of the numerous mineral occurences in the area. Cretaceous rocks consist mainly of marine sediments with a thin basaltic to rhyolitic component.

Cenozoic stratigraphy includes mafic and felsic aerial volcanic units. These rocks are a major component of glacial and fluvial deposits throughout the area. Several active hot springs attest to ongoing geologic activity throughout the general Iskut-Stikine region.

Most of the region has been subjected to Quaternary glaciation, resulting in rugged alpine terrain.

Study of aeromagnetic data published at a scale of $1: 250,000$ suggests that regional lows may reflect areas of thick ice cover.

## PROPERTY GEOLOGY

The SCUD 11, 12, 13, 14 claim group encompasses Paleozoic and Mesozoic metamorphosed, volcanic and sedimentary rocks all intruded by Mesozoic granodiorites.

The Mesozoic rocks correlate with the Stuhini Group and the Paleozoic sequence with the Stikine assemblage. The Stuhini Group is composed of basal maroon and green epiclastic unit overlain by andesite flows, tuffs and volcanic breccia with minor augite phyric basalt sills and/or flows. The sediments that overlie are polymictic conglomerates of augite basalt, volcanics and limestone clasts. The Stikine assemblage as mapped in the area of the Scud Glacier (B.C. MEMPR Open File 1989-7), is divided into Permian and Pre-Permian periods. The basal unit of the Pre-Permian rocks are recystallized limestones overlain by a schist unit that in turn is covered by a mafic facies then a sedimentary siliceous mixed siltstone and rhyolitic volcanic unit. The Permian period starts with a distinctive rusty argillite covered by a limestone unit which is overlain by a mixed sediment and volcanic package and capped with another limestone unit.

The geological units, from west to east include a thick sequence of layered limestones, siltstones and argillites of Permian age. Within these older Paleozoic sediments are grabben blocks of younger middle Triassic sediments. These sediments are graphitic argillites and related conglomertes. The central portion of the claim group is a mafic metavolcanic unit. Variations of amphibolite, biotite schist and pyroxenite have been noted and an elevation of Ni and Cr within the rocks analyzed concurs with the mafic composition.

The predominant geologic features within the claim group are strong N-S structures within the Permian limestones on the western portion and the fault contact of these sediments with the Triassic metavolcanics. These metamorphosed rocks have been affected by the Hickman plutonic rocks that occupy the eastern border of the claim group.


## PROSPECTING TRAVERSES

The following traverses are grouped according to the individuals who performed the work with the traverse number correlating to traverses marked on the compilation map.

Paul Jones - Prospector - Employee of Corona Corporation, 11 years within the mining industry, the last four years full time.
(27) August 24, 1988

SCUD 11, 13 - 3 rock samples \#20254-20256
This traverse was undertaken along a narrow canyon creek valley. The rocks included banded sediments within a larger limestone unit. The sediments were graphitic in nature and some bands had an abundance of pyrite. Along the gravel bank were the SCUD 11 and 13 Identification Posts ON4W and OS4W respectively.

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Paul Huel - Contract Prospector, - Resident of Hazelton, B.C. with over 10 years of mineral experience.
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(13) August 11, 1988

SCUD 10, 12 - 8 Rock Samples, \#1720-1727
This traverse involved a half day on the SCUD 10 claim and a helicopter move to SCUD 12 at noon. The southeast extension of a structure discovered on previous days was investigated on SCUD 10. A zone of quartz veins with chalcopyrite and tetrahedrite was prospected. Following this a move and traverse within the mafic metavolcanic unit was completed.

Bruce Holden - Contract Prospector, a resident of Hazelton, B.C. has been working in the mineral exploration industry for 10 years.
(14) August 11, 1988

SCUD 10, 12 - 6 rock samples,\# 1621-1626
This traverse involved a half day on the SCUD 10 claim and a helicopter move to SCUD 12 at noon. The south east extension of a structure discovered on previous days was investigated on SCUD 10. A zone of quartz veins with chalcopyrite and tetrahedrite was prospected. One quartz zone had erythrite that was also noted north west along the structure 2 km away. Following this a move and traverse within the mafic metavolcanic unit was completed.

Rob Klassen - Company Geologist, working for Corona Corporation for the last two years consecutively.
(11) - August 9, 1988

SCUD 14 - 14 Rock Samples,\# 1912-1925
This traverse was along the south west edge of a glacier flowing into the headwaters of the Scud River. It has been referred to in old assessment reports as Highgrader Glacier. The rocks along this traverse are predominantly mafic metavolcanic that have been intruded with a variety of plugs ranging in composition from diorite to leucocratic granodiorite. Late stage mafic dykes are also quite common.
(19) - August 21, 1988

SCUD 14 - 7 Rock Samples \#1260-1266
This traverse was along the ridge to the west of the route taken along the glacier on August 10. The traverse was limited to the alpine due to steep cliffs. The Hickman diorite intrusive predominates to the south. The remainder of the day was spent in mafic metavolcanics. Near the contact of the metamoriphic rocks and the Hickman Pluton copper mineralization, chalcopyrite, malachite was discovered in both the intrusive and volcanics.
(22)

- August 22, 1988

SCUD 8, 12 - 8 Rock Samples,\# 1275-1285
This day involved two separate traverses. The morning was spent on SCUD 12 along the contact of the diorite Hickman Pluton and the Triassic metavolcanic unit. The metavolcanic rock was very mafic in composition and disseminated pyrite was common. The second half of the day was spent on the north side of a mountain on SCUD 8. This area was completely intrusive in nature.

Karen Sobey - Contract Prospector - Graduate of the BCDM Prospecting Course 1987, 2 years field experience.
(12) - August 10, 1988

SCUD 14 - 8 Rock Samples,\# 1805, 1810-1816
This traverse was done on the western side of a glacier that flows into the headwaters of the Scud River. It has been named in older assessment reports as Highgrader Glacier. This travers was through predominantly mafic metavolcanics. Intruding into these volcanics are gabbroic intrusive plugs and dykes.
(23) - August 22, 1988

SCUD 13 - 8 Rock Samples,\# 1885-1890, 1894, 1895
3 Silt Samples,\# 1891-1893
This traverse was down a ridge that is predominantly Permian limestone. The limestones have quartz ankerite shear zones that are brecciated. The sediments have a high background of $N i$ probably owing in part to the close proximity of the mafic metavolcanic unit and the presence of the mafic Hickman Pluton to the east.

## GEOCHEMISTRY

The 51 samples collected during this phase of work were submitted to Min En Labs of Vancouver for geochemical analysis. Analytical techniques are described in Appendix $A$, sample descriptions in Appendix $B$ and results in Appendix C .

## STATEMENT OF COSTS

| SCUD 11, 12, 13, 14 - PROSPECTING |  |
| :--- | ---: |
| Prospecting 7.5 man days @ $\$ 250 /$ man day | $\$ 1,875.00$ |
| Samples (including shipping) 51 @ $\$ 25 /$ sample | $1,275.00$ |
| Food @ $\$ 30 /$ man day | 225.00 |
| Supplies and Equipment | 175.00 |
| Contract Base Camp | $1,570.00$ |
| Mob-demob (Aircraft Charter) | 750.00 |
| Helicopter Support 7.2 hrs @ $\$ 625 / \mathrm{hr}$ | $4,500.00$ |
| Report Preparation | 750.00 |
|  | TOTAL |

Dates: August 10, 11, 21, 22, 24, 1988

## STATEMENT OF QUALIFICATIONS

I, PAUL WILLIAM JONES of the City of Vancouver, B.C. declare that:

1. I have been actively involved in the mining industry in Canada and the United States for 12 years.
2. I have personally directed and performed the work enclosed in this report under the supervision of Corona Corporation's Senior Geologist, Darrel Johnson.


AT $\qquad$ , BRITISH COLUMBIA.

## BIBLIOGRAPHY

Alldrick, D.J., Drown, T.J., Grove, E.W., Kruchkowski, E.R., Nichols, R.F., 1989 Iskut - Sulphurets Gold; The Northern Miner Magazine, January 1989.

Allen, D.G., Pantelegev, A., Armstrong, A.T., 1976 - Porphyry Copper Deposits of the Alkalic Suite, Galore Creek; C.I.M., Special Volume 15, Paper 41.

Barr, D.A., Fox, P.E., Northcote, K.E., Preto, V.A., 1976 - Porphyry Copper Deposits of the Alkalic Suite, The Alkaline Suite Porphyry Deposits - A Summary; C.I.M., Special Volume 15, Paper 36.

Brown, D., Wojdak, P., 1989 - K-Feldspar Connection: Relationship of K-Feldspar Intrusions to Cu Porphyries and Au Veins, Stewart Iskut Belt, B.C.; G.A.C., Copper-Gold Porphyry Workshop April 1989.

Buddington, A.F., 1929 - Geology of Hyder and Vicinity Southeastern Alaska; U.S.G.S., Bulletin 807.

Grove, E.W., 1986 - Geology and Mineral Deposits of the Unuk River - Salmon River - Anyox Area; B.C. M.E.M.P.R., Bulletin 63.

Hodgson, C.J. - Recent Advances in the Archean Gold Model, With Implications for Exploration for "Mesothermal-Type" Gold Deposits in the Cordillera; G.A.C., Cordilleran Section Short Course No. 14.

Kerr, G.A., 1948 - Lower Stikine and Western Iskut River Areas, British Columbia; G.C.S., Memoir 246.

Lowell, J.D. 1988 - Gold Mineralization in Porphyry Copper Deposits; Society of Mining Engineering, SME Annual Meeting January 1988.

Lowell, J.D., Guilbert, J.M., 1970 - Lateral and Vertical Alteration Mineralization Zoning in Porphyry Ore Deposits; Economic Geology, Vol. 65, No. 4.

Souther, J.G., 1972 - Telegraph Creek Map-Area, British Columbia; G.S.C., Paper 71-44.

Souther, J.G., Brew, D.A., Okulitch, A.V., 1979 - Iskut River, British Columbia, Alaska; G.S.C., Map 14/8A.

Sutherland Brown, A., 1976 - General Aspects of Porphyry Deposits of the Canadian Cordillera; Mosphology and Classification; C.I.M., Special Volume 15, Paper 6.

APPENDIX A

GEOCHEMICAL METHODS

MIN-EN Laboratories Ltd.<br>Speciallsts in Mineral Envinonments<br>Corner 15th Sireet and Bowicke 705 WEST 15th STREET NORTH VANCOUVER, B.C.<br>canada

## ANALYTICAL PROCEDURE REPORTS FOR ASSESSMENT WORK

PROCEDURE FOR GOLD GEOCHEMICAL ANALYSIS.
Geochemical samples for Gold processed by Min-En Labaratories Ltd., at 705 W .15 th St., North Vancouver Laboratory employing the following procedures.

After drying the samples at $95^{\circ} \mathrm{C}$ soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed and pulverized by ceramic plated pulverizer.

A suitable sample weight 5.0 or 10.0 grams are pretreated with $\mathrm{HNO}_{3}$ and $\mathrm{HClO}_{4}$ mixture.

After pretreatments the samples are digested with Aqua Regia solution, and after digestion the samples are taken up with $25 \%$ HCl to suitable volume.

At this stage of the procedure copper, silver and zinc can be analysed from auitable aliquote by Atomic Absorption Spectrophotometric procedure.

Further oxidation and treatment of ac least 75\% of the original sample solutions are made suitable for extraction of gold with Methyl Iso-Butyl Retone.

With a set of suitable standard solution gold is analysed by Atomic Absorption instrumenta. The obtained detection 1 imit is 5 ppb .

ANALYTICAL PROCEDURE REPORT FOR ASSESSMENT WORK:
PROCEDURE FOR 31 ELEMENT TRACE ICP:

Ag, A1, As, B, Ba, Be, Bi, Ca, Cd, Co, Cu, Fe, K, Li, $\mathrm{Mg}, \mathrm{Mn}, \mathrm{Mo}, \mathrm{Na}, \mathrm{Ni}, \mathrm{P}, \mathrm{Pb}, \mathrm{Sb}$, Sr, Th, U, V, Zn, Ga, Sn, W, Cr

Samples are procesised by Min-En Laboratories., at 705 West loth Street, North Vancouver, employing the following procedures.

After drying the samples at $95^{\circ} \mathrm{C}$ soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized by ceramic plated pulverizer or ring mill pulverizer.
1.0 gram of the sample is digested for 4 hours with an aqua tegia $\mathrm{HClO}_{4}$ mixture.

After cooling samples are diluted to standard volume.

- The solutions are analysed by computer operated Jarrall Ash 9000 ICAP or Jobin Yvon 70 Type II Inductively Coupled plasma Spectrometers. Reports areformatted and printed using a dot-matrix printer.


## APPENDIX B

SAMPLE DESCRIPTIONS
Sample
No.

SCUO 11
20254 grab
20255 grab
20256 grab
SCUD 12
1267 grab

1268
grab

SCuO 12 cont.

| 1269 | grab | contact between feldspar porphory and mafic volcanic |
| :---: | :---: | :---: |
| 1270 | grab | brown orange weathered mafic volcanic with disseminated pyrite at contact with feldspar porphory |
| 1271 | grab | gossanous rock with Fe-staining, possibly intrusive |
| 1272 | grab | intermediate dyke within gossanous intrusive |
| 1273 | grab | rusty syenite with abundant epidote and quartz veining |
| 1626 | float | rusty siliceous mica schist talus |
| 1727 | float | quartz carbonate barite vein talus |
| 1924 | grab | dark orange weathered intermediate volcanic with chalcopyrite crystals and calcite veinlets |
| 1925 | grab | green schistose mafic biotite volcanic at contact with intermediate volcanic |

## SCUD 13

| 1885 | float rusty quartz carbonate ankerite zone within volcanics, talus |  |
| :--- | :--- | :--- |
| 1886 | grab | brecciated limestone unit |
| 1887 | float gossanous brecciated limestone with quartz carbonate zones, |  |
| 1888 | grab | trace disseminated pyrite, talus |
| 1884 | grab wide quartz ankerite zone |  |
| 1890 | grab sediment (siltstone) with $10 m$ wide gossanous ankerite zone |  |
|  |  | flesh colour gossan (volcanic?) with fine grained <br> disseminated pyrite |


| Sample <br> No. | $\begin{aligned} & \text { Sample } \\ & \text { lype } \end{aligned}$ | Descriplion |
| :---: | :---: | :---: |
| . . | -a |  |
| 1893 | silt |  |
| 1894 | 9ram | within creek, medium volcanic |
| 1895 | g(ab) | brecciated limestone |
| SCUD 14 |  |  |
| 1260 | grab | tan being weathered mixed felsic intrusive and coarse grained diorite with hornblende and pink and green feldspars |
| 1261 | grab | rusty brown weathered fine grained relsic dark green volcanic with disseminated pyrite |

SCUO 14 cont..

| 1262 | grab | rusty orange weathered fine grained dark grey felsic volcanic with disseminated pyrite |
| :---: | :---: | :---: |
| 1263 | grab | feldspar porphory, fine grained grey intermediate with disseminated pyrite |
| 1264 | grab | mafic volcanic with quartz veins with disseminated pyrite, chalcopyrite, malachite and molybdenite |
| 1265 $\ddots$ | grab | green weathered copper stained very siliceous coarse grained intrusive |
| 1266 | grab | mafic volcanic with silicified zone with malachite and azurite |
| 1912 | grab | felsic coarse grained granodiorite biotite and hornblende and pink and green feldspars |
| 1913 | grab | tan weathered siliceous fine grained volcanic..with biotite |
| 1914 | grab | tan weathered siliceous fine grained volcanic with biotite |
| 1915 | grab | rusty weathered coarse grained diorite with chlorite alteration |
| 1916 | grab | dark grey fine grained mafic volcanic with carbonate veinlets |
| 1917 | grab | rusty weathered contact of granitic intrusion into mafic volcanic, contact very siliceous |
| 1918 | grab | dark green to dark grey mafic volcanic with carbonate veinlets, epidote, blebs of chalcopyrite and quartz veins |
| 1919 | grab | dark green fine grained mafic volcanic with disseminated pyrite |

Sample
Sample 1ype

SCUO 14 cont.
1805
gra!

1805

Description
grat rusty weathered diorite plug with feldspat phenocrysts, minor chlorite and quartz veinlets
grab ultramafic volcanic strongly chloritized minor epidote with serpentine along fractures
grab green felsic volcanic lense with homblend cryslals and carbonate veinlets
rusty weathered granitic intrusion with pink and green feldspar crystals and secondary quartz veinlels within hosl mafic volcanic
grab dark coarse grained intrusive (gabbro) with calcite filled fractures
float fine grained medium to dark volcanic with finely disseminated pyrite, talus
grab very fine grained mafic volcanic with finely disseminated pyrite
float below shear zone, sheared mafic volcanic
grab siliceous fine grained volcanic with finely disseminated pyrite
grab shear zone within micaceous schist with minor disseminated pyrite
float medium to fine grained medium grey volcanic with
float flesh coloured weathered siliceous calcareous fracture zone

APPENDIX C
ANALYTICAL RESULTS
chroma comp.
isalit river resuris ahg. tyer
[valiacs If PPat]

| $\begin{gathered} \text { sctari } \\ 1 \end{gathered}$ | AG | Al | is | B | RA | Af | 81 | CA | [0 | C0 | (11 | $f 1$ | 1 | 11 | nc | H* | m | Ni | $N 1$ | F | 1 | ¢ | ¢: | : |  | $\because$ | is | 92 | 5 m | - | ${ }^{(P)}$ | 4:1-fP? |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 20254 | 1.1 | 13774 | 1 | 6 | $1 \leqslant 15$ | 0.9 | 6 | 20.41 | 3. . | 3. | 113 | 34i6 | $2: 13$ | 13 | 36,4 | 531 | 28 | 534 | (s) | 110:: | 1. | : | 4 | : |  | 1.1.: | 184 | i | 1 | 1 | 148 | s |
| aces: | 0.4 | 1335 | 10 | 8 | 317 | 0.8 | 1 | 2usi | 1.k | 3 SO | 14 | 4670 | $\therefore$ a | \% | 8340 | 35, | 13 | 54 | 574 | $5 \%$ | S | ; | $\therefore$ |  |  | -4.1 | 1.3 | 1 | \% | ! | 7 | is |
| $2025 \%$ | 1.7 | 1405\% | 13 | 15 | (1) | 0.6 | 10 | 36\% | 1.7 | 14 | 10 | 344\% | 2?s | 18 | 10391 | 209 | 4 | 739 | is | 20.3 | i: | : | i4 |  |  | 14. | $\because$ | ? | 7 | - | 7 | 15 |
| 54612 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 45 | $5!$ | fis | B | 84 | $9[$ | 81 | th | (0) | 0 | cu | 11 | 1 | 11 | ni | ${ }^{16}$ | n3 | N4 | $k$ | $r$ | P | \% | : | ! |  | ! | ? ${ }^{\text {a }}$ | 85 | St | * | CF | 20.prs |
| $126]$ | 1.2 | 2,335 | 1 | ; | 197 | 1.1 | 9 | 12737 | 1.8 | 5 | 140\% | 27\%1 | 2i4s | 4 | $135 \% 3$ | 550 | 12 | 3953 | 4 | 1'ic | $1:$ | J | $\because$ |  |  | 10. | 164 | 1 | ? | 1 | 11: | 10 |
| 12:8 | 1 | $414 a \dot{d}$ | $\therefore$ | 3.3 | 18 | 1.3 | 10 | 4626: | 0.7 | 26 | 17 | $3{ }^{29} 96$ | ibot | t | 112.2 | 430 | 7 | (H) | 11 | 106 | $i$ | 1 | $\therefore$ | , | ; | ! 36.2 | 17 | 1 | ? | 3 | 101 | ! |
| 1369 | 0.4 | 34400 | + | 19 | is | 3 | 11 | 36074 | 2.5 | 39 | 287 | 5siat | 113: | 3 | 11500 | 489 | 9 | 74 | 12 | S1\% | $1:$ | , | 1: | 1 |  | Sus. | d) | 1 | 3 | ? | $\%$ | 3 |
| 1770 | 0.4 | t5988 | 14 | 19 | 18 | 1.4 | 8 | 53541 | 0.5 | 34 | 606 | 3 sin 4 | 1538 | S | 5310 | 213 | 10 | 3 H | 3 | 119 | 13 | 1 | 1 |  |  | i3.0 | 4 | 1 | - | 1 | 14 | 5 |
| 1271 | 2 | 10707 | is | - | 9 | 1.6 | 8 | 21904 | 3.2 | 24 | 119 | 39172 | ? 697 | 4 | 8025 | 48 | 8 | 71 | 13 | 2160 | 2 | : | $\therefore$ |  | ! | 6.7 | $\therefore$ | ? | $i$ | ! | 93 | 5 |
| 1972 | 2.3 | 11201 | is | 3 | 81 | 1.9 | 8 | 33999 | 3.8 | 20 | 119 | 216s. | 3 ai | d | 735 | 621 | 8 | 885 | 15 | 17 | 15 | , | i: | ; |  | 31.4 | 4 | 7 | 1 | i | 1.3 | 13 |
| 1273 | 1.9 | 1126? | 1 | 1 | 33 | 1.7 | 8 | 75691 | 3.2 | 2 | io | 3236 | 2193 | 4 | 9817 | 729 | 9 | 7ns | 13 | 23:9 | 15 | 1 | ; | : | ! | 68.4 | S? | : | 1 | 1 | 69 | 5 |


| $\begin{gathered} \text { situ } 13 \\ i \end{gathered}$ | $25_{1}$ | 4 | as | 8 | Bf | 㫙 | el | Ch | co | co | ${ }^{\circ}$ | fk | \%. | 11 | nir | H\% | Mis | Wh | N1 | $\uparrow$ | Pt | S | Sr | i-i | : | $\checkmark$ | 's | 50 | 5. | : | (R) | and Prom |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1285 | 0.3 | ISis | 1 | 1 | 10 | 1.3 |  | 122722 | 7.1 | 26 | S | 323s: | 1179 | 37 | Sebct | 736 | 5 | 119 | 94 | 217 | 11 | 1 | i | ; |  | 35.6 | $\therefore 1$ | i | 1 | ; | 52 | $s$ |
| 1886 | 0.4 | 609 | 37 | 1 | 1 | 0.5 |  | 261017 | 4.8 | 15 | as | 2211 | :1i75 | 3 A | 1758 | 105 | 8 | 110 | 18 | 351 | :3 | 10 | 6 | ; |  | 12.4 | $1:$ | d | 1 | ? | 40 | 5 |
| 188) | 3 | 7537 | 39 | 1 | 305 | 0.9 | 11 | 7809 | 4.5 | 18 | 30 | 23884 | ifos | 49 | 88.0 | 82 | 11 | 651 | 20 | 3ii | ? | 10 | , | - | : | 34.9 | 4 | ; | 2 | E | 12\% | 5 |
| 1298 | 0.7 | 3976 | 4.6 | 11 | 638 | 2.6 | 6 | 37932 | 1.9 | 60 | 12 | 45467 | 264 | 3 | 62148 | 812 | 6 | 463 | 152 | 14 | 12 | is | 91 | ; | ; | \$6. | 3 F | i | 1 | 1 | 191 | 10 |
| 1889 | 2.8 | 12833 | 53 | 3 | 127 | 1.2 | 10 | 1088 | 3.4 | 16 | 17 | 37891 | 238 | 48 | 12290 | 78 | 14 | 659 | 21 | Sis | 22 | 10 | 13 | i | ; | 8.7 | 85 | 3 | ? | 5 | 108 | 5 |
| 1890 | 0.3 | 36314 | 34 | 4 | 174 | 1.8 | 8 | 2548 | 1.2 | 56 | 88 | 43137 | 155s | 53 | 58034 | 711 | 6 | 487 | 360 | 503 | 16 | i | 8 | ! | ; | 87.4 | 36 | 1 | : | 3i | 757 | is |
| 1891 | 0.7 | 12s76 | 32 | 4 | 186 | 1.3 | 9 | 8705 | 2.8 | 36 | 53 | 44384 | isel | 30 | 18456 | 761 | 12 | 594 | 205 | 1627 | 17 | 1 | 17 | \% | - | 59.7 | 112 | : | ; | 3 | 168 | s |
| 1892 | 0.4 | 24e34 | 17 | 8 | 114 | 1.2 | 7 | 10636 | 0.9 | 62 | 35 | 73:3? | ciss | 49 | 75353 | 484 | 2 | 61: | 613 | $45:$ | 11 | 1 | 3 | 1 | 1 | 131.6 | 14 | : | 1 | 1 | 361 | 10 |
| 1893 | 0.9 | 12578 | 17 | 1 | 124 | 1.2 | 8 | 8809 | 3.2 | 40 | 53 | 16:99 | 1550 | 50 | 33209 | 625 | 13 | 584 | 283 | 135? | E | 1 | 14 | i | 1 | 9 9 .3 | 27 | ? | 2 | 1 | 214 | 5 |
| 1894 | 1.1 | 18308 | 1 | 14 | 60 | 1.7 | 8 | 1997 | 0.6 | 78 | $s$ | 42775 | 1348 | < 1 | 101136 | 674 | 3 | 511 | 843 | 135 | 7 | 1 | 12 | : | i | 65.1 | 2 | i | 1 | $!$ | 412 | 5 |
| 1895 | 0.3 | 682 | 39 | 1 | 1 | 0.5 | 6 | 268807 | 4.6 | 16 | 24 | 168: | [193 | 37 | \$211 | 9 | 8 | 399 | 29 | 353 | 7 | 10 | - | ; | 1 | \%.i | 14 | , | 1 | 1 | 46 | \$ |
| 591014 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | * | HL | AS | 0 | 8 8 | ${ }_{6}$ | 81 | CA | CD | CO | cu | fE | $k$ | 11 | W | \% | N0 | H | MI | P | P9 | 58 | SR | If | * | * | is | 64 | SH | * | CR | AU-PP9 |
| 1260 | 2.5 | 17561 | 26 | 3 | 24 | 1.7 | 13 | 17762 | 3 | 22 | 160 | 25338 | 1758 | 46 | 7092 | 392 | 1 | 940 | 14 | 2350 | is | 2 | 11 | 1 | 1 | 82.2 | 11 | 2 | 2 | 1 | 11 | 5 |
| 1261 | 3.3 | 13151 | 36 | 3 | 13 | 0.9 | 13 | 15975 | 2.3 | 26 | 225 | 18296 | 1382 | 4 | 3618 | 107 | 11 | 761 | 38 | 1394 | 16 | 5 | 12 | , | 1 | \$4.1 | 24 | , |  | 3 | 82 | 5 |
| 1262 | 2.9 | 12568 | 23 | 3 | 21 | 1.2 | 13 | 15791 | 2.1 | 31 | . 140 | 31327 | 1438 | 14 | 3282 | 85 | 12 | 880 | 19 | 1313 | 13 | 1 | 13 | 1 | 1 | \$5. 6 | 23 | 2 | 2 | 2 | 67 | 5 |
| 1263 | 2.1 | 16789 | 31 | 2 | 235 | 1.3 | * | 16913 | 3.1 | 27 | 47 | 30381 | 1975 | to | 1776 | 576 | 2 | 1034 | 49 | 901 | 17 | 1 | 21 | 1 | 1 | 79.5 | 35 | 2 | $?$ | - | 148 | 5 |
| 124 | 1.2 | 62935 | 8 | 7 | 3 | 1.7 |  | 101496 | 0.6 | 23 | 64 | 22429 | 1295 | 4 | 6561 | 360 | 6 | 45 | 15 | 396 | 153 | 4 | 2 | 1 | 1 | 81.9 | 21 | I | 2 | 1 | 75 | 5 |
| 1265 | 2.7 | 13011 | 32 | 1 | 53 | 1.3 | 4 | 14845 | 5.1 | 25 | 5981 | 29099 | 2470 | 47 | 7928 | 518 | 10 | 1085 | 14 | 2193 | 3 | 1 | 19 | 1 | 1 | 74.1 | 81 | , | 2 | 1 | 11 | 5 |
| 1268 | 2.6 | 25336 | 22 | 5 | 4 | 1.1 | 3 | 12935 | 3.3 | 41 | 7420 | 32056 | 1963 | 50 | 11488 | 779 | 1 | 1080 | 14 | 1146 | 24 | 2 | 11 | i | 1 | \%.l | 67 | 1 | 2 | 1 | 52 | 5 |
| 1805 | 1.2 | 21800 | 15 | 5 | 39 | 0.0 | 10 | 15890 | 3 | 31 | 3 | 35860 | 1370 | 51 | 20170 | 573 | 5 | 960 | 61 | 600 | 12 | 2 | e | 1 | 2 | 114.7 | 37 | 1 | 1 | 2 | 103 | 5 |
| 1810 | 0.1 | 18800 | 6 | 7 | 57 | 1 | 2 | 16300 | 1 | 15 | 194 | 57430 | 1130 | 52 | 15460 | 453 | 25 | 2550 | 58 | 2090 | 1 | 2 | 24 | 1 | 1 | 116.8 | 137 | 3 | 1 | 1 | 122 | 5 |
| 1811 | 0.5 | 9640 | 16 | 40 | 14 | 1.3 | 2 | 7350 | 3.5 | 56 | 91 | 42050 | 1070 | 51 | 40270 | 453 | 3 | 1120 | 195 | 650 | 7 | , | 8 | 1 | 1 | S5. 7 | 48 | 1 | , | 1 | 270 | 5 |
| 1812 | 0.3 | 16000 | 10 | 6 | 4 | 0.8 | 3 | 9050 | 10.9 | 33 | 75 | 33170 | 1510 | 52 | 10200 | 319 | 52 | 1260 | 60 | 1100 | 14 | 3 | 8 | 1 | 1 | 23.6 | 137 | 2 | 2 | 1 | 168 | 10 |
| $\mathrm{K}_{1}$ | 0.2 | 3410 | 10 | 3 | 35 | 0.9 | 4 | 10600 | 2.9 | 14 | - | 23650 | 2060 | 4 | 7200 | 75s | 6 | 690 | - | 730 | 10 | 1 | is |  | 1 | 4 | 21 | 1 | , | 1 | 71 | 5 |
| 1814 | 0.3 | 16340 | 14 | 7 | 500 | 1 | 3 | 4950 | 2.7 | 12 | \% | 31470 | stue | 4 | 11270 | 368 | 6 | 2140 | 354 | 370 | S | 3 | 20 | 3 | 1 | 62.3 | 21 | 1 | 1 | 33 | 475 | 5 |
| 1815 | 0.1 | 15030 | 21 | 3 | 37 | 1.5 | 6 | 15530 | 1 | 30 | 391 | 32050 | 1178 | ${ }^{1}$ | 8280 | 204 | 6 | 130 | 36 | 1570 | 8 | 3 | 2 | 1 | , | 56.2 | 1s | 1 | 1 | 1 | 6 | S |
| 1116 | 0.4 | 23910 | 26 | 9 | 15 | 1.6 | 1 | 34940 | 3 | 4 | 61 | 43440 | 1190 | 78 | 88440 | 599 | 2 | 420 | 851 | 250 | 12 | 7 | 32 | 1 | 1 | 88 | 13 |  | 1 | 38 | 1033 | 5 |
| 1912 | 0.6 | 15810 | 21 | 7 | 34 | 1.3 | 5 | 16850 | 1.2 | 22 | 17 | 33120 | 1970 | 39 | 10970 | 522 | 7 | 1010 | - | 2690 | 11 | 1 | 25 | 1 | 1 | 109.1 | 50 | 1 | 2 | 1 | 7 | 5 |
| 1913 | 0.3 | 9010 | 12 | 4 | 50 | 9.8 | 4 | 785 | 1.4 | 20 | 204 | 31250 | 1760 | S | 7110 | 338 | 8 | 1810 | 11 | 2700 | 4 | 1 | 10 | 1 | 1 | 116.3 | 4 | 3 | 2 | 1 | 116 | 5 |
| 1914 | 2.1 | 5070 | 26 | 8 | 146 | 0.1 | 0 | 10330 | 3.7 | 11 | 31 | 7500 | 280 | 50 | 1670 | 502 | 8 | 730 | 10 | 480 | 6 | 6 | 43 | 1 | 1 | 14.1 | 131 | 11 | 1 | 1 | 0 | 10 |
| 1915 | 0.6 | 14740 | 1 | 7 | 4 | 1.3 | 7 | 19310 | 1.4 | 21 | 168 | 44960 | 140 | 58 | 13010 | tsi | 6 | 1330 | 11 | 3170 | 12 | 1 | 11 | , | 1 | 135.1 | 68 | 6 | 1 | 1 | 41 | 5 |
| 1916 | 0.9 | 47900 | 10 | 30 | 21 | 1.7 | 1 | 10679 | 0.1 | 12 | 40 | 4760 | $10 \%$ | 61 | 21350 | 1067 | 1 | 700 | 1 | 1280 | 13 | 7 | 1 | $?$ | 1 | 20.3 | 58 | 1 | 2 | 1 | 52 | 3 |
| 1917 | 0.6 | 12410 | 4 | 3 | 2 | -. | 2 | 35120 | 1.7 | 21 | 45 | 33270 | 1330 | 35 | 11220 | 647 | 7 | 330 | 9 | 2050 | 10 | 3 | 1 | 1 | 1 | 108.1 | 15 | 1 | 1 | 1 | 37 | 5 |
| 1918 | 0.5 | 25380 | 35 | 7 | 1 | 1.6 | 1 | 40710 | 0.9 | 10 | 381 | 61120 | 970 | 70 | 22590 | 1122 | 5 | 810 | 4 | 1150 | 7 | 3 | 1 | , | 1 | 23 | 76 | 1 | 3 | 1 | 52 | 5 |
| 1919 | 0.5 | 37340 | 21 | 26 | 34 | 1.7 | 3 | 30150 | 0.5 | 4 | 31 | 4470 | 1260 | 76 | 21810 | 1126 | 4 | 730 | 3 | 1270 | 8 | , | 1 | 3 | 1 | 256.1 | 4 | $s$ | 3 | 1 | 48 | 10 |
| 1920 | 0.7 | 7080 | 16 | 1 | 353 | 1.3 | 2 | 21460 | 1.1 | 18 | 159 | 33310 | 2450 | 3 | 1770 | 840 | 6 | 100 | 6 | 2580 | 12 | 2 | 31 | 1 | , | 4.8 | 57 | 1 | 1 | 1 | so | 5 |
| 1921 | 0.4 | 11100 | 10 | 5 | 0 | 1.2 | 4 | 17400 | 1.6 | 17 | 6 | 22210 | 250 | \$1 | 4720 | 414 | 6 | 900 | 7 | 170 | 15 | 1 | 39 | , | 1 | 4.7 | 41 | 1 | 1 | 1 | 48 | 3 |
| 1922 | 0.7 | 12990 | 32 | 24 | 11 | 1.1 | 1 | 3800 | 5.4 | 72 | 15 | 406\% | 2010 | 51 | 26350 | 37 | 3 | 710 | 927 | 290 | 1 | , | 10 | 1 | 1 | 4.1 | 13 | 1 | 1 | 3 | 481 | 10 |
| 1923 | 0.6 | 24230 | 28 | 1 | 14 | 1.2 | 3 | 10010 | 2.6 | 52 | 20 | 42010 | 120 | 41 | 57510 | 116 | 4 | 390 | 41 | 420 | 11 | 5 | 2 | 1 | 1 | 112.1 | 28 | 1 | , | 51 | 1142 | 5 |



