GEOLOGY OF SEM LAIM GROUP
Kamloops Mining Division
British Columbia

J. R. WOODCOCK CONSULTANTS LTD.

North Vancouver, B. C.

June 1969

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SEM CLAIM GROUP

Kamloops Mining Division

INTRODUCTION

The SEM Claim Group, staked for Cyprus Exploration Corporation Ltd. by Mr. Scott Wagenitz, cover an aeromagnetic low at the northern contact of the Guichon Creek Batholith. Mr. Donald Tully contracted J. R. Woodcock Consultants Ltd. to map the geology, prospect the favourable horizons, and outline the various claim groups.

The work was mostly done between May 149 and June 69. Mr. Colin J. Campbell, geologist, did most of the field mapping and all of the map compilation. Mr. Nick Wychopen, prospector, prospected the favourable horizons for mineralization, located many of the claim posts, and helped Mr. Colin J. Campbell measure the baseline, etc. Mr. J. R. Woodcock, P. Eng. spent four days in the field, at the beginning and at the end of the project. He also prepared the program and edited the maps and report.

The man days spent on the project are as follows:-

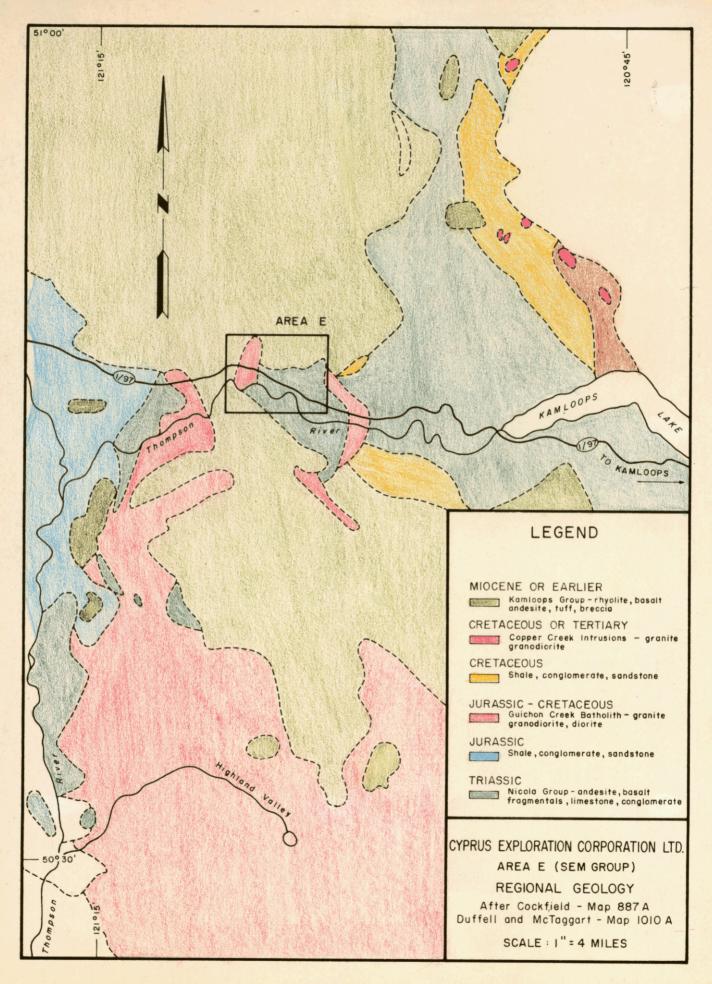
J. R. Woodcock, P. Eng.	4. 2
Field Work	4 days
Administration and Report	4 days
Mr. C. J. Campbell, geologist	
Field Work	16 days
Map and Report compilation	6 days
Mr. Nick Wychopen, prospector	
Prospecting & claim location	14 days

LOCATION AND ACCESS

The SEM claims are in the Kamloops Mining Division, approximately 12 miles east of Cache Creek and just north of Highway No. 1/97. Semlin, a Canadian Pacific Railway station and Anglesey, a Canadian National Railway station, are just south of the claim group.

The more southerly claims are accessible directly from the highway across privately owned ranch land. The northern claims can be reached via a sawmill road which turns north from Highway 1/97 approximately 18 miles east of Cache Creek.

The claim groups cover a steep rugged area of numerous outcrops and



cliff faces. This steep slope is the transition from the plateau to the valley of the Thompson River.

CLAIM AND OWNERSHIP

Mr. Carl Langlois cut a baseline and cross-lines and tied-in many claim posts in an attempt to sort out the claim situation. Subsequently, C. Campbell and N. Wychopen re-plotted Langlois' grid lines and located additional claim posts, and C. Campbell drafted the accompanying claim map (Figure II).

The SEM claim group and some of the claims of the other groups plotted by Wychopen and Campbell have been tied-in to the cross-lines cut by Langlois (corrected as mentioned under "Survey Control") and also into the Highway No. 97, mainly by pace-and-compass. The accuracy of the claim locations is mainly dependent on the accuracy of the cross-lines; however it should be sufficient for the present project.

The SEM group of claims staked for Cyprus Exploration Corporation Ltd. are subsequent to the intermingling "A & H", "ED", and "G" claim groups. The dates of location and recording for the various claims are included in the appendix and reference is made to this list.

The SEM claims 1 to 48 were staked for Cyprus Exploration Corporation Ltd. by Mr. Scott Wagenitz of Scobob Explorations Ltd. Five double rows of claims trending north or northeasterly include 47 of these claims. SEM 48 claim was staked to fill in a wide space between two of the lines of claims.

There is considerable confusion where the SEM claims intermingle with the "G" claims. Mr. Scott Wagenitz and Mr. Robert Devaney returned to the property to stake fractions in this confused area and merely added to the confusion. Subsequently, Mr. Carl Langlois of Cyprus Exploration Corporation Ltd. returned to the area to survey the claim. Langlois could not find many of the fraction claim posts and therefore staked the Jack No. 1, No. 2 and No. 3 claims to cover the space.

Mr. C. Campbell and Mr. N. Wychopen worked on the claim groups in early June, 1969 and in conjunction with their mapping and prospecting, attempted to sort out the claim mess. They also failed to find many of the posts of the SEM fractions 1 to 12.

In an attempt to correlate the legal descriptions recorded for the SEM No.'s 1 to 12 fractional claims with the claim map produced by Campbell and Wychopen, one draws the following conclusions:

- l. Most of the boundary descriptions for the fractional claims are illogical and in many places the described fractions are impossible.
- 2. SEM No. 1 fraction probably over-stakes the "G" 14 and "G" 16 claims and thus probably has no ground.

- 3. The SEM No. 2 fraction and the SEM No. 3 fraction are supposed to tie up the ground between the SEM 2, 4, 18 and 19 claims on the north and east sides, and the "G" claim group on the south. However the legal descriptions do not make sense.
- 4. The SEM 4 fraction is also geometrically impossible. The ground that it is supposed to cover has been covered by the Jack No. 1 claim. However if the SEM 4 fraction is valid, it is the prior claim.
- 5. The SEM 5 fraction has the same problems as the SEM 4 fraction, except that it has been re-staked as the Jack 2 claim.
- 6. The SEM 6 fraction has the same problem as the SEM 4 fraction except that the ground has been re-staked as the Jack 3 claim.
- 7. The posts for the SEM 7 fraction were also not found. From its legal description, it possibly covers the wedge of ground between the "G" 41 claim and the "G" 43 claim. However this wedge might be an internal fraction of the "G" claim group.
- 8. The legal description of the SEM 8 fraction indicates that it might cover a wedge of ground northeast of the "G" 43 claim. However the claim posts were not found and it is not known whether this wedge of ground actually exists.
- 9. The SEM 9 fraction is supposed to be near the southwestern edge of the claim group. However the boundary description is completely illogical.
- 10. The SEM 10 fraction appears to cover about half of the open ground between the SEM 7 and SEM 9 claims on the west and the SEM 44 and SEM 46 claims on the east.
- 11. The SEM 11 and SEM 12 fractions are in the open space between the SEM 4 and SEM 6 claims on the east, the SEM 19 and SEM 21 claims on the west, the "G" claims on the south, and the SEM 48 claim on the north. However none of the posts were found and the boundary descriptions cannot be correlated with the claim map.
- 12. One must also note that parts of the SEM 1, 2, 3, and 12 fractional claims might be included as internal fractions in the "G" claim group.
- 13. The SEM 48 claim covers part of the space between two of the lines of SEM claims. The No. 1 post was not found so the exact position is not known. The legal description merely states that it is within the SEM claim group.

SURVEY CONTROL

In order to facilitate the location of claim posts, the geological mapping, and the ground geophysical work, Mr. Carl Langlois of Cyprus Exploration Corporation Ltd. put a grid on the property. This grid in-

cluded an east-west baseline, blazed cross-lines at 1500 foot intervals, and stations at 100-foot intervals along cross-lines.

On the first day of mapping, Woodcock and Campbell discovered that the average distance between pickets on the cross-lines was about 120 feet rather than 100 feet. In addition there was some confusion at the baseline. Alternate picket lines were measured outward from the baseline and the intervening picket lines were measured back towards the baseline thus leaving a discrepancy in the vicinity of the baseline.

In order to clarify the picture, Colin Campbell and Nick Wychopen chained the baseline and tied-in all cross-lines. The interval of the cross-lines was then changed on the maps to 120 feet. The resulting corrected grid, as shown on Figures II and III, is sufficiently accurate for the present mapping program.

The outcrops on the SEM claims and on the adjacent ground are tied to the baseline or the cross-lines, directly or by pace-and-compass measurements. The area to the west of the SEM group was mapped on aerial photographs and then transferred to the base map (scale 1" = 500 feet).

REGIONAL GEOLOGY

The area of interest lies in the interior plateau of British Columbia in an area of extensive gently-dipping or flat-lying volcanic strata of the Kamloops Group. In the vicinity of the claim group, erosion along the valley of the Thompson River has exposed older rocks -- the north end of the Guichon Creek Batholith which is intrusive into the Nicola volcanics.

The SEM claim group, according to the published geology (see Figure I), should cover some Nicola volcanics and Guichon Creek intrusions. However the present detailed mapping proves that the claims are completely underlain by the Kamloops Group volcanics (lavas and pyroclastics).

Copper mineralization in southern British Columbia is largely restricted to the Guichon Creek Batholith and the Nicola volcanics. Mineralization does not occur in the relatively young (Miocene) Kamloops Group.

GEOLOGY OF THE SEM GROUP AND VICINITY (Figure III)

Nicola volcanics are scarce on the SEM claims, occurring only on the northwest part of SEM 11 claim. However they are widespread on the "G" claims to the south and the "ED" claims to the east. The Guichon Creek intrusions are also scarce on the SEM claims, occurring only on parts of the SEM 35 and SEM 37 claims in the western part of the claim group.

Nearly all of the claim group is underlain by volcanic rocks of the Kamloops Group and the flat-lying strata erode to form a series of steep cliffs just to the north of Highway 1/97.

Glacial drift is also widespread on the SEM claims and in the valley to the south. It is of quite variable thickness and many creeks crossing the SEM claims cut into drift for over 50 feet without exposing bedrock.

Nicola Volcanics:

The Nicola volcanics, which crop out over most of Ashdown's claim groups, are purple-weathering fragmentals and lava rocks, generally andesitic in composition. Epidote is a common mineral both as veinlets and as small grains; fine-grained pyrite occurs in many of the outcrops. The few Nicola rocks that crop out on the SEM claims are fresh andesitic porphyry -- dark grey rocks with white felspar phenocrysts. These are cut by many epidote and calcite veinlets; but sulphides are scarce or absent.

Immediately to the south of the unconformably overlying Kamloops Group (northern part of "G" ll claim) some of the Nicola volcanics are of intermediate composition -- probably dacite. Some limonite in the area indicates the former presence of minor pyrite.

A bed of fine-grained, grey limestone was mapped at the southeast end of the "ED" 1 claim. Exposures occur over a length of 1000 feet and over widths of 50 feet to 300 feet. The bed appears to dip steeply to the east. Skarn or skarn minerals were not observed in the exposures.

Guichon Creek Batholith:

A northward projection of the Guichon Creek Batholith is exposed along the west side of the SEM claim group. Another similar northward projection occurs east of the SEM claim group.

The batholithic rocks to the west are mainly fine- to medium-grained diorite consisting of white or greenish placioclase and small crystals of biotite. Locally a small amount of quartz is present.

In one exposure (800 feet by 200 feet), the diorite is cut by calcite veinlets and bands of pink felspar (?). One small fluorite veinlet (1/8") wide) was found; but no sulphides were seen.

In the northwest part of the map area an exposure of the diorite in a gully contains calcite veinlets and minor malachite along one fracture. However no sulphides were seen.

The lobe of Guichon Creek Batholith to the east of the SEM Claim Group is also composed of fine-grained diorite. An observed contact with Nicola andesites appears gradational across several tens of feet.

Rhyolite Porphyry:

A stock of rhyolite porphyry intrusive into Nicola volcanics occurs on the "D" claims. The rhyolite porphyry is light grey to white in colour and contains numerous quartz phenocrysts up to 1/4" diameter. The stock, about 1000 feet in diameter, and the intruded andesites are barren of sulphides and alteration.

In addition to this barren stock of rhyolite porphyry, there are lenses of similar rock which intrude the Nicola volcanics. Mineralization (pyrite, chalcopyrite, sphalerite) is spatially associated with these small lenses on the "ED" and the "A & H" claim groups.

Whether these rhyolite porphyry rocks are a phase of the Guichon Creek Batholith or whether they are one of the much younger Copper Creek intrusions mapped about 12 miles to the northeast is not known.

Kamloops Group Volcanics:

Rocks of the Kamloops Group underlie the SEM claims. They are a conformable series of flows, fragmentals and flow breccias. Locally the beds may have dips up to 10°, but regionally they are nearly horizontal. On the SEM claims the total thickness varies from about 300 feet on the southerly SEM claims to more than 1500 feet on the northerly SEM claims.

Stratigraphically, the lower flows tend to be dacitic in composition with thin intercalations of basic material. The upper flows (both topographically and stratigraphically) are definitely more basic in character -- mainly scoriaceous and amygdaloidal basalt carrying high magnetite content. To aid in description the volcanics were divided into three types - (a) flows, (b) fragmentals, (c) flow breccia. These will each be described separately.

The flows consist of vesicular and amygdaloidal basalts and dacites. The basalts are generally fine-grained, often being nearly glassy. They weather to a dark rusty-brown colour, possibly because of the abundance of minute magnetite grains. Dacites are generally grey in colour but can weather to a buff colour.

The fragmentals can be divided into two distinct types. The fine-grained tuffaceous beds are generally dacitic and form large blocky or massive exposures. The agglomerates are mainly basaltic and consist of bombs and vesicular flow tops. These agglomerates weather to a bright red colour that is readily visible in the cliffs north of the highway.

Along Battle Creek to the west of the SEM Claim Group, are beds of a fragmented, almost glassy basaltic rock. Included within this fragmented rock are concentricly-banded lenses of glassy basalt -- possibly some pillows. These beds exhibit a crude graded bedding or an alignment of large included "pillows" and they overlie the normal basalt flow. It is possible that they were formed by submarine extrusion which promoted rapid cooling and consequent fragmentation of the rapidly solidifying magma. Abundant zeolite crystals line many of the cavities in this fragmented fine-grained rock.

Similar fragmented rock is exposed over an area 2000 feet by 4000 feet in the centre of the SEM claim group. It forms a prominent hill over 500 feet high in which no bedding can be detected. This light-coloured "breccia" contains fragments of fine-grained glassy basalt (1/4" to 10 feet in diameter) in a matrix that is largely clay and contains considerable zeolite. The basalt fragments, which form approximately 10% of the rock, are magnetic. The rock, in general, is similar to that described along Battle Creek; however the lack of any bedding might indicate a different origin. It may be noteworthy that this large exposure of breccia lies in the centre of the aeromagnetic low.

MINERALIZATION

Traces of mineralization occur in several places on the map area. The most interesting are the showings on Ashdown's claim groups (showings CY 1 to CY 4 on Figure III) which appear to be spatially related to small lenses or dykes of rhyolite porphyry. A mineral showing described by Duffell and McTaggart (1952, pp.107-108) as the Fairview Group probably also occurs on Ashdown's claims. This showing was not found during the present mapping project and, according to Mr. Ashdown, was mined out.

The most interesting prospect is that found on the "ED" 3 claim, only 500 feet southeast of the stock of rhyolite porphyry. Two bulldozer trenches and a small pit expose the mineralization. A third bulldozer trench 400 feet to the northwest cuts only gravel. At the mineralized centre, a dyke of rhyolite porphyry up to 40 feet wide strikes N55°E. It appears to pinch on the southwest and may be faulted on the northeast by a north-south fault. This small lens of rhyolite porphyry intrudes andesitic rocks. Mineralization occurs along a zone striking northerly. This mineralization, except in the vicinity of the rhyolite lens consists of disseminated pyrite. At the eastern contact of the rhyolite lens some quartz cements a breccia of andesite. Chalcopyrite, sphalerite, and pyrite occur in the quartz and the altered andesite. Disseminated sulphides also occur at the southern end of the rhyolite lens. In the northern-most trench a silicified pod about one foot wide has associated sulphides. The pit (CY-3 on the geological map) was chip sampled across three feet and assayed as follows: Cu - 2700 ppm; Zn - 13000 ppm; Mo - 18 ppm; Ag - 6 ppm.

About 1000 feet to the east of the pit (CY-3) similar mineralization is found in old trenches. A cut (20 feet x 10 feet) exposes another small irregular silicified zone in the Nicola andesites. Mineralization includes small pods (up to 10 feet wide) of disseminated pyrite and sheared andesite; concentrations of highly pyritized rock (up to 1 foot diameter); and small siliceous zones in the Nicola andesites containing pyrite, sphalerite, and chalcopyrite. The zone (CY-1) strikes N60°E, is about 40 feet long, and is bounded on both sides by fresh, unaltered andesite. A small tripod, some poles, etc. indicates that this zone was probably tested by an X-ray drill hole many years ago.

Two samples were taken from this second zone. A chip sample (CY-1)

across 10 feet of pyrite-quartz-andesite assayed: Cu - 1060 ppm; Zn - 900 ppm; Mo - 60 ppm; Ag - 7 ppm. A second chip sample (CY-2) across three feet of andesite containing sphalerite, chalcopyrite and quartz assayed: Cu - 450 ppm; Zn - 3300 ppm; Mo - 50 ppm; Ag - 9 ppm.

Another 900 feet northeast of this central mineralized area, a bull-dozer trench exposes some altered andesite containing minor pyrite. A pit 10 feet above the bulldozer trench exposes another short dyke of rhyolite porphyry. This rhyolite porphyry contains fine-grained pyrite. A sample across six feet showed only trace of gold.

A second area of mineralization occurs in the Nicola volcanics adjacent to Highway 97/1 and east of "G" 6 claims. Two very old and very short adits in these volcanics have encountered traces of disseminated chalcopyrite and small stringers of specular hematite. Mineralization in place is hard to find and the showing is not significant enough to warrant sampling.

Mr. Nick Wychopen prospected the Nicola volcanics along and to the south of the SEM Claim Group and the Guichon Creek Batholith along and west of the SEM Claim Group. No new mineral showings were found in the Nicola volcanics; some disseminated pyrite was found in the Guichon Creek intrusives to the west. Mr. Campbell and Mr. Wychopen also prospected the Kamloops Group to a certain extent as they mapped; however they found no mineralization in the Kamloops Group.

MAGNETIC SURVEYS

The claim staking and subsequent work on the SEM Claim Group were instigated because of an attractive aeromagnetic negative anomaly on the government maps. Ground checking along the cross-lines, using a flux-gate magnetometer, was done by Mr. Peter Walcott of Eagle Geophysical Company. The location of the aeromagnetic low was transferred to the claim maps by Mr. Walcott and this has been copied onto the accompanying geological map by Mr. Campbell.

The following factors may have contributed to the airborne magnetic low:

- 1. The aeromagnetic low coincides with an area of steep cliffs -the sharp transition from the plateau to the valley of the Thompson River.
- 2. The uppermost volcanic strata of the Kamloops Group are magnetite-rich basaltic rocks that form extensive outcrops in cliffs to the north and to the east of the magnetic low. Along the north side of the highway and to the south of the magnetic low are outcrops of the Nicola volcanics, mainly andesites which also have some magnetite.
- 3. The Kamloops Group volcanics tend to be more dacitic in their lower parts. These lower strata would crop out in the vicinity of the magnetic low and to the southwest. In addition, the northern-most Nicola volcanics exposed beneath the uncomformity appear to be intermediate or dacitic in composition.

- 4. The centre of the aeromagnetic low is occupied by a large mass of "breccia" containing about 10% basalt fragments in a matrix of zeolite and clayey material. Although smaller than the aeromagnetic low the outcrop areas of this material occupy an area of shape very similar to that of the aeromagnetic low.
- 5. An intrusive, buried by the unconformably overlying Kamloops Group, could be postulated. However there is no field evidence for this.

CONCLUSIONS AND RECOMMENDATIONS

Several suggestions for the cause of the aeromagnetic low have been suggested and most of these include changes in composition of the exposed volcanic rocks of the Nicola and the Kamloops Group. In either case the aeromagnetic low appears to have no significance or importance to the economic geologist. A buried intrusive overlain by the Kamloops Group of volcanics could be postulated. However there is no evidence of this and even if it were present, exploration of such a buried intrusive without additional favourable evidence would not be warranted.

The SEM group of claims are largely covered by volcanics of the Kamloops Group which are unlikely to have mineralization. A minor amount of Nicola volcanics exposed in one small area along the south side and the minor amount of Guichon Creek Batholith exposed along the west side have been thoroughly prospected and nothing of significance has been found. Therefore the SEM Claim Group itself does not constitute an asset worthy of further work or worthy of the expense of applying assessment work. The claims should therefore be allowed to lapse.

Interesting mineralization occurs on the Ashdown claim groups to the east. This appears to be related to small rhyolite intrusions. Picket lines on the ground indicate that the area has been surveyed by other companies. Enquiries as to the type of survey have not been made. The exposed mineralization is merely small pods. The surveys done by prior companies probably indicated no targets of interest as physical work did not follow. Therefore this claim group does not warrant work by Cyprus Exploration Corporation Ltd.

Additional intrusions of Guichon Creek Batholith and of the rhyolite porphyry occur to the east of the Ashdown claim groups north of Highway 97/1. This may be a favourable area for prospecting. However the present program did not include any mapping, prospecting, or literature research on this area and therefore no significant recommendation can be made.

Colin J. Campbell

J. R. Woodcock, P. Eng.

A P P E N D I X

CLAIM DATA (on record in Vancouver, June 30, 1969)

NAME	RECORD NO.	LOCATION DATE	RECORD DATE	EXPIRY DATE	RECORDED OWNER
Ashdown Groups					
A & H 1 - 6	42724 - 29	May 3, 1963	May 14, 1963	May 14, 1969	Lloyd Humphreys
A&H 7-8	42859 - 60	May 3, 1963	May 21, 1963	May 21, 1969	J.R.Ashdown
A & H 9 - 10	42805 - 06	May 3, 1963	May 17, 1963	May 17, 1969	J.R.Ashdown
ED 1 - 6	50083 - 88	May 10, 1965	May 19, 1965	May 19, 1969	T.A.Winters
Lucky 1 - 2	68724 - 25	April 3, 1969	April 11, 1969	April 11, 1970	J.E. Ashdown
Lucky 3 - 6	68974 - 77				
Bozo 1 - 2	6999 8 - 99	July 10, 1968	July 23, 1968	July 23, 1969	Lloyd Humphreys
Eagle River Mines	Groups				
G 1 - 8	76237-44	February 3, 1969	February 19, 1969	February 19,1970	G. Wolanski
G 9 - 57	76245-72	February 4, 1969	February 19, 1969	February 19, 1970	G. Wolanski

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NAME	RECORD NO.	LOCATION DATE	RECORD DATE	EXPIRY DATE	RECORDED OWNER
Cyprus Exploration	Corp. Ltd.				
sem 1 - 8	76171 - 78	Feb. 8, 1969	Feb. 19, 1969	Feb. 19,1970	H.S.Wagenitz
SEM 9 - 10	76179 - 80	Feb. 9, 1969	Feb. 19, 1969	Feb. 19,1970	H.S. Wagenitz
SEM 11 - 17	76181 - 87	Feb. 10, 1969	Feb. 19, 1969	Feb. 19,1970	H.S.Wagenitz
SEM 18 - 25	76188 - 95	Feb. 12, 1969	Feb. 19, 1969	Feb. 19,1970	R. Devaney
SEM 26 - 42	76196 - 76212	Feb. 13, 1969	Feb. 19, 1969	Feb. 19,1970	R. Devaney
SEM 43 - 47 SEM 48 SEM Fr. 1 - 9	76213 - 17 79773 76218 - 26	Feb. 15, 1969 Apr. 25, 1969 Feb. 17, 1969	Feb. 19, 1969 May 1, 1969 Feb. 19, 1969	Feb. 19,1970 May 1, 1970 Feb. 19, 1970	R. Devaney R. Devaney
SEM Fr. 10 - 12	79770 - 72	Apr. 24, 1969	May 1, 1969	May 1, 1970	R. Devaney
Jack 1 - 3	79779 - 81	May 7, 1969	May 7, 1969	May 7, 1970	C. Langlois
Miscellaneous Group	ps				
Count 1 - 2	75418 - 19	Dec. 8, 1968	Dec. 20, 1968	Dec. 20, 1969	L.Ovington
ASTRO 1 - 6	74846 - 51	Nov. 10, 1968	Nov. 22, 1968	Nov. 22,1969	Eric Larsen
ASTRO 7 - 8	74852 - 53	Nov. 17, 1968	Nov. 22, 1968	Nov. 23,1969	Eric Larsen

