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EXPLORATION LICENCE NO. 26 / 70 – BEACONSFIELD TASMANIA

T W DAVIES SYNDICATE

PROSPECTING REPORT FOR 6 MONTHS TO 16 OCTOBER 1971

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PROSPECTING REPORT FOR 6 MONTHS TO 16TH OCTOBER, 1971

INTRODUCTION

During the past six months the T.W. Davies Syndicate has carried out further geological exploration including trenching and costeaning, sampling, geochemical and mineralogical examinations and chemical analysis of samples from specific areas.

The results of this work have enabled the Syndicate's Geologist, Mr V. Pitulej to interpret the geology of the most interesting area and a summary of this latest interpretation is included in this report.

Recent work in the Barnes Hill area has included an independent assessment by R.H. Wilpolt, Consulting Geologist. Wilpolt concluded that reserves of some 47,000 tons of 55% Cr_2O_3 concentrate existed in the Barnes Hill deposit and this conclusion is supported by the writer.

Further investigations have also been carried out into the metallurgy of this chromite by the Launceston Office of the Tasmanian Mines Department. This work involved further examination of the ore feed material and a closer study of the beneficiation methods which may be used to recover the chromite in the most economical way.

The resultant report recommends that froth flotation should be used, as this method is the only one in which high recoveries can be maintained in the minus 300 mesh grain size range. As some 30% of the total chromite occurs in this fraction, this is a very important consideration. In addition, it is believed that a flotation plant offers further advantages in reduced capital and establishment costs.

Continued investigations on the marketing of the chromite have revealed that several Australian Companies, as well as the Japanese, are very interested to see samples of the concentrated chromite product.

Further interest has also been shown in the presence of the alumina clays located to the North of Barnes Hill which extend over approximately 160 acres and contain up to 22% aluminium as revealed by trenching and subsequent sample assays. Possible outlets for this material are currently being followed up as interest has been shown by manufacturers of alumina

refractories.

Additional work in the form of costeaning and trenching in the vicinity of Frenchman's Quarries has been carried out to further the Syndicate's knowledge of the occurrence of asbestos in the area. However, this work was only partially successful due to the effects of heavy rain on the red surface clay which made observations and sampling difficult.

GEOLOGY

The following description is a result of the continued field observations of the Syndicate's Geologist, Mr V. Pitulej.

A large ultrabasic rock belt occurs in bushland on the western and eastern sides of the Anderson Creek Valley. This belt is occupied by serpentine, decomposed serpentine to form mottled clays, laterite, iron gravels and early Tertiary re-washed sand and gravels, presumably originating from the serpentine belt. The area can be divided into 2 separate parts.

The first is a gently undulating lower belt on the south western side and close to Andersons Creek which includes the large hill known as Barnes Hill. Through this area occurs a late Devonian acidic intrusion in the form of rodingite which occurs in small dykes and lenses in shear planes within the serpentine. The rodingite does not carry any trace of nickel and is evidently not the source of this mineralisation. However, it is believed by Mr V. Pitulej that the rodingite was the source of hydrothermal solutions in which the calcium present has acted to precipitate the re-mobilised nickel from solutions close to the rodingite contact. The belts of serpentine close to visible surface lenses of rodingite generally contain nickel values which are up to 3 times higher than the average nickel contents of the rock and clay occurring in the general area. Garnierite and other secondary nickel minerals occur in joint and shear planes as thin films, in contrast to the evenly disseminated primary peridote in the main ultrabasic rock zone. The rock in the enriched rodingite zone collected from numerous surface outcrops gave an average assay of 0.9% nickel and 0.3% cobalt. The fluctuation of nickel values at depth is not known as no deep drilling in the rodingite area has been carried out except for one hole drilled to 160ft. by the Tasmanian Mines Department in which values up to 0.8% nickel and 0.3% cobalt were obtained. Serpentine rock in the belt which has been intruded by rodingite is deeply decomposed, forming large and small basins of clay, often with a thin cover of laterite. Nickel contents of the clay in the intruded belt have assayed as high as 1.45% nickel and .35% cobalt.

The second part of the ultrabasic area is the topographically higher one with hills rising up to the 500ft. level. The ultrabasics in this area are formed by a pyroxene rich serpentine, in which the contained magnesium silicate

mineral is not peridote as in the lower area, but olivine which is richer in iron but contains only traces of nickel. The rock is compact and hard and has not undergone decomposition to form clay to any great extent, but has been partially laterised. This higher area of ultrabasics is partly intruded by microdiorite which comprises nearly half the rock type in this area and intersects the ultrabasics in numerous dykes which cross cut the trend of the serpentine and rodingite. Microdiorite forms 3 separate hills in the highest level of the area called "Settlers Ridge". The ultrabasics in this area are coarsely crystallised, especially in the contact zone with the microdiorite and gradually change from a coarse pyroxene serpentine to a coarsely crystalline gabbro rock. The contact ultrabasics are rich in iron but very poor in nickel and nowhere on the surface has nickel in any commercial quantity been detected. In the gabbro and gabbroidal rocks the presence and thickness of coarse fibre chrysotile asbestos increases to approximately 1 inch on average and one sample ranging up to a thickness of 12 inches across has been collected. No nickel except for traces of up to .2% have been found in this area, except under the "Cap" of lateritic iron at Mount Vulcan and Scotts Hill, where the laterite and iron ochre is slightly richer in nickel, but again not in commercial quantity or quality. Lateritic clay has not been formed by rock decomposition in this area, except for a thin 1ft. mantle close to creeks and drains which contains less than .3% nickel.

The work to date in this E.L. has thus isolated several areas having the potential for future commercial exploitation.

These are as follows :-

1. Chromite sands deposit in Barnes Hill.

2. Low grade nickel formation over a wide area.

3. High alumina clay deposit.

4. Asbestos deposit.

Obviously, further more detailed work is required on each of these areas to establish whether they could support an economically viable operation. Recommendations for this future work are included below.

RECOMMENDATIONS

1. Chromite sands - Barnes Hill

Almost 50,000 tons of chromite concentrates have been indicated in this deposit. However, in order to establish these reserves as "proven" and also to test the possibility of extending the tonnage available, several

drill holes should be undertaken.

It is therefore recommended that at least 3 vertical auger holes are drilled from the surface of Barnes Hill to bottom the chromite formation.

(i) Each distinct stratigraphic horizon, e.g. chromite sand and alternating clay, should be carefully sampled and bulked for metallurgical testing and analysis.

(ii) The thickness of each stratigraphic horizon encountered should be carefully noted and vertical sections drawn to scale to enable proper correlation and geological interpretation.

Further work should also be requested from the Tasmanian Mines Department (Launceston Office) on the flotation of representative feed material from Barnes Hill. This work should establish :-

(i) The quantities of reagents per ton of feed necessary to achieve optimum results.

(ii) Whether magnetite is present and, if so, the method by which it should be removed.

(iii) The best method of dewatering the final product, e.g., filtration tests to determine the capacity required in disc filtering.

(iv) The method of tailings disposal and operation of the water clarification circuit.

(v) A suitable premixing system to ensure a reasonably consistent quality feed to the processing plant.

(vi) The most suitable method of attrition scrubbing in order to remove the clay particles prior to flotation with minimal losses of chromite.

2. Low Grade Nickel Formation

Although the Syndicate has completed several sketch plans of the area it is recommended that detailed geological plans be prepared. This detailed mapping associated with further sampling and assay work will enable more precise estimations of the enricked nickel areas to be made.

These detailed plans will then enable several diamond drill holes to be sited in those areas most likely to give maximum information on the subsurface nickel mineralisation as well as provide further data on the reserves and grade available.

It is recommended that initially one vertical diamond drill hole be drilled to 200 ft. The core so obtained should be carefully studied to determine the variation of the nickel mineralisation with depth. Providing that the nickel is persistent throughout the hole and not confined to an enriched surface zone, a further three holes should be undertaken in the same way.

At the end of this programme an overall assessment of the area should be made involving the preparation of a feasibility study in the light of current world demand for nickel.

3. High Alumina Clay Deposit

4. Asbestos Deposit

It is recommended that in both these areas further exposures should be made over the full extent of the deposits by means of costeaning and trenching.

Bulk samples should be prepared from these different points and examined for consistency of quality, and submitted for initial metallurgical testing by the Tasmanian Mines Department.

The marketing efforts by the Syndicate should be continued, particularly in relation to the alumina clays and the possibility of a local industry being established.

R.L. Wildy.
Geologist.

16th October, 1971.

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842007

9th October, 1970.

T. W. DAVIES SYNDICATE BEACONSFIELD AREA

Exploration Licence No. ~~5270~~ and existing leases

Prospecting Report 6 months to October 1970

1 61 new trenches from 4' to 11' have been excavated and examined for determination of extra chromium and nickel reserves in areas not previously tested.

2 On the Barnes Hill chromite deposits several deeper cuts have been bulldozed around the base of the hill to the level of 200'. Previous testing as set forth in the existing Department reports was limited to the 300' level. The investigation has proved an extra 160 acre area of chromite, gravel and sand of average 20% chromite. Alluvial chromite ore reserves in this area are now estimated at 50,000 tons minimum.

3 In addition to this testing of nickeliferous clay has proved an area of 800 acres of depth of 3 - 7 feet average which carries a considerable amount of recoverable chromite averaging 5 - 8%. This can be recovered from tailings after nickel extraction.

The presence of nickel sulphate minerals (morenosite) in road cuts has been detected in serpentine rock.

4 Further exploration and prospecting work will be directed to close examination of nickeliferous clay including suitable process and pilot extraction plant operations and drilling the richer parts of rock in deeper drill holes where it contains .8% nickel in rock.

5 Magnetometric investigations are to be carried out on the western boundary of the contact zone of serpentine and cambrian sediment intruded by aplite to be followed by detailed geophysical work mapping and drilling if necessary.

Work and production report

6 Six acres of Barnes Hill have been stripped and cleared for start of mining operations for removing gravel and washing chromite.

Four acres down the base of the hill have been cleared

for location of washing and screening plant.

Half a mile of pipe line from Anderson's Creek to the 200' level plant site has been installed together with water storage tanks.

A sluice 60' x 8' has been constructed and is virtually ready for operation. This is to be replaced by jig concentrator later when production is increased.

Two miles of gravelled and levelled road and one bridge have been constructed to the operational site.

Four leases have been approved and surveyed and at least two and possibly more are to be applied for immediately. It is planned to continue taking out leases to cover probably 800 acres as prospecting progresses.

Orders have been placed for machinery to screen fine sands pending the installation of classifiers. There is a minimum of 400 acres of gravel which will have to be treated for chromite.

Chromite marketing investigations are well advanced. One Japanese company has indicated a desire to purchase 500 tons per week (in probable shipments of 3,000 tons) and we are awaiting information of this initial order upon their completing check sample analysis.

Initial production of 100 tons per week can commence as soon as the first screen is installed probably in 3 - 4 weeks and will be expanded to 500 tons per week depending on the availability of equipment.

An oral arrangement for the sale of 30,000 tons of gravel overburden has been made and this should be moved over the next 8 weeks.

Interest is being shown locally in the alumina clays located to the north of the Barnes Hill area over approximately 160 acres containing 5 - 7% aluminum as revealed by four test trenches and marketing aspects of this material are being followed up.

A gossanous section has also been discovered in the same general area. This section has a nickel content and is to be further investigated.

Samples of the nickel clays have been sent to Western Mining Corporation for their investigation of possible extraction methods for use in their own refinery. So far no report is to hand.

An agreement has been entered into with Allstates Exploration for work on the asbestos in the area on completion of their present programme.

General

1. In view of the amount of exploratory work yet to be done on the exploration sites in the area an extension of 12 months is requested.
2. The Syndicate will shortly incorporate and will be requesting a transfer of the Exploration Licence and also of the leases to the new company with consolidation of leases.
3. Pending chromite production reaching the initial 500 tons per week target such relief as is possible is requested from labour covenants.
4. The Syndicate's general programme in this area is :
   (a) Develop production of alluvial chromite to 500 tons per week;
   (b) Expand this production as much as possible consistent with available markets;
   (c) Develop the gravel and fine sand market for the gravel and sand content of the alluvial chromite deposits;
   (d) Negotiate a market for the alumina clays;
   (e) Investigate the economics of nickel production and process.
   (f) Continue exploration and analysis to quantify chromite and nickel reserves;
   (g) Further general exploration of the area under licence.

P.S. The survey work has been completed to show the location of chromite reserves and a copy of the survey will be forwarded to you as soon as it is available from the surveyor.

003

842010

GRIFFITH-INTECO (AUSTRALIA) PTY. LTD.

REGISTERED OFFICE: 4-8 GWYNNE STREET, RICHMOND, VICTORIA, AUSTRALIA, 3121
TELEPHONE: 42 4706 42 4707 TELEX: 31961 CABLES: GRINLABS MELBOURNE

25th August, 1970.

70/581

T.W. Davies Syndicate,
29 Cooper Crescent,
Launceston,
TASMANIA. 7250

Red Hill Beaconsfield
?

Sample No.	Cu ppm	$\%Al_2O_3$	%Al
RH 3	125	19.64	6.16
4/1	65	30.53	9.58
4/2	60	16.50	5.18
5/1	90	24.23	7.61
5/2	160	24.99	7.84

Method : Cu -,Atomic Absorption ± 15% relative accuracy.

Al_2O_3 & Al - Chemical Analysis.

(Mrs.) I. Hopper
GENERAL MANAGER.

003

842011

GRIFFITH-INTECO (AUSTRALIA) PTY. LTD.

INTECO

REGISTERED OFFICE: 4-8 GWYNNE STREET, RICHMOND, VICTORIA, AUSTRALIA, 3121
TELEPHONE: 42 4706 42 4707 TELEX: 31961 CABLES: GRINCABS MELBOURNE

1st September, 1970.

70/568

T.W. Davies Syndicate,
29 Cooper Crescent,
Riverside,
Launceston,
TASMANIA. 7250

BEACONSFIELD - RED HILL - ALUMINA CLAYS

	No. 1	No. 2	No. 3	No. 4
SiO_2	77.40	71.88	87.28	53.48
Al_2O_3	6.10	12.48	3.10	21.70
Fe_2O_3	11.36	7.98	6.81	10.00
TiO_2	*	1.94	0.25	0.30
CaO	*	*	*	2.74
MgO	1.94	0.52	0.82	4.40
Ignition	3.38	5.62	1.90	7.38
F	*	*	0.24	0.31
P	0.08	0.10	0.05	0.04
	100.26	100.52	100.45	100.35
		LESS O ≡ F	0.10	0.13
			100.35	100.22

Analyst : Mr. J.R. Dickson

* = Not Detected

J. Hopper
(Mrs.) I. Hopper
GENERAL MANAGER

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842012.

GRIFFITH-INTECO (AUSTRALIA) PTY. LTD.

REGISTERED OFFICE: 4-8 GWYNNE STREET, RICHMOND, VICTORIA, AUSTRALIA, 3121
TELEPHONE: 42 4706 42 4707 TELEX: 31961 CABLES: GRINLABS MELBOURNE

24th August, 1970.

70/612

T.W. Davies Syndicate,
29 Cooper Crescent,
Launceston,
TASMANIA. 7250

GOSSAN AREA
BEACONSFIELD, TRENCH.

Sample No.	%Ni	%Fe
R - 1	0.08	7.0

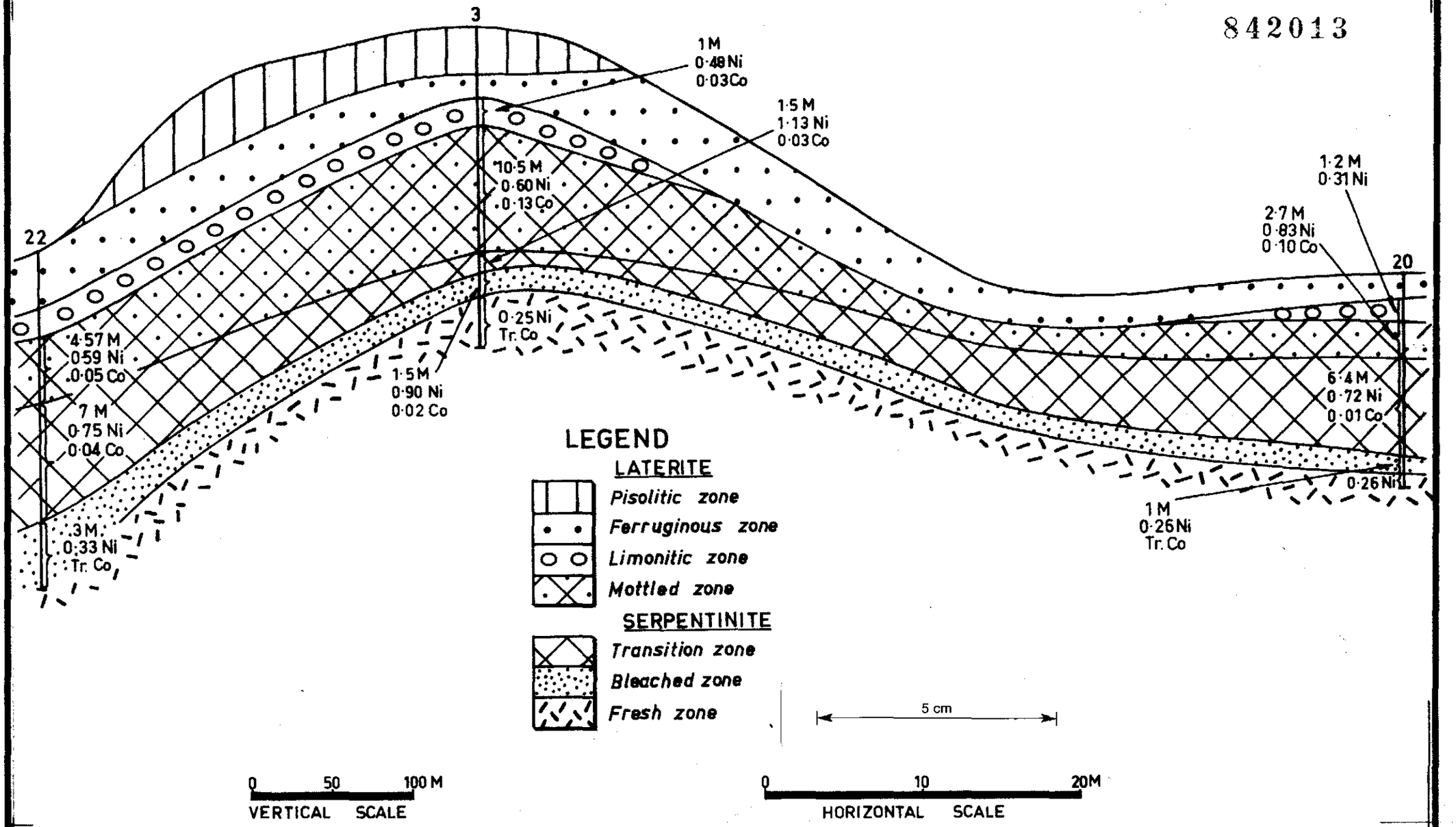
Method : Atomic Absorption ± 7% relative accuracy.

pp

(Mrs.) I. Hopper
GENERAL MANAGER

71-825 M141/1

842013



TYPE SECTION THROUGH DRILL HOLES 22,3&20

AFTER P. J. ANTHONY

210

50·5%

X 1/2

8000E 10000E 12000E 14000E 16000E 18000E 20000E 22000E 24000E 26000E 28000E

37000N 35000N 33000N 31000N 29000N 27000N 25000N 23000N 21000N 19000N 17000N 15000N 13000N

TO BEACONSFIELD

SCOTTS HILL

MT VULCAN

THE FLAT

BARNES HILL STH

BARNES HILL

DAM

TO BEACONSFIELD

TO HOLWELL

CREEK

ANDERSONS

Reduce ½

Yellow - Granodiorite/porphyry/Alluvium

Green - Serpentinite

Red - Nickeliferous Laterite

Brown - Metamorphics

5 cm

842014

GEOPEKO LTD	71-825	Scale: 1in-1000ft
BEACONSFIELD 013		Date: Nov '69
DIAMOND DRILL HOLE LOCATION PLAN	Drawn:	GB-3
	Traced: A.M.T.	
	Checked:	