VANGUARD

SITE #49

MINFILE# 105M 010

1. LOCATION AND ACCESS

The site is located on the south slope of Keno Hill on the west side of Charity Gulch. Access is by an old 500m trail, connecting with the Keno 700 road at Charity Gulch that needs to be upgraded at Charity Gulch for four-wheel drive vehicle travel. The approximate UTM co-ordinates are 7 088 250m N and 489 300m E (Latitude: 63° 55' 22" N and Longitude: 135° 13' 05" W).

2. SITE PHYSIOGRAPHY

Vanguard is located right at treeline at an elevation of 4100ft (1250m). The vegetation is mostly large shrubs and moss with patchy spruce trees, alders and grassy areas. The soil layer is thin and there are a number of talus slopes at and near the site. Surface runoff drains into Charity Gulch which flows south into Lightning Creek, located 1km downslope.

3. GEOLOGY AND MINERALIZATION

The area is mainly underlain by near bedrock float of medium to thin bedded quartzite with porting of carbonaceous phyllite (Unit 2b). The bulldozer trench exposed a section of interbanded thinly bedded quartzite and 30 - 40% carbonaceous phyllite.

The best vein fault exposure is in the floor of the bulldozer trench where weak sheeted vein faults, up to 5cm wide with oxidized and fresh siderite occur over a 4m width. Along strike the siderite pinches out and the vein fault becomes a knife like break. This was seen in Shaft #2. At Shaft #3, abundant, generally fresh, siderite fragments from the shaft occurs on a wide bench. Minor very fine galena is associated with the siderite. This bench was used to sort galena from the vein for shipment in 45-gallon drums.

The adit is now collapsed and the portal area covered with broken thinly bedded quartzite with abundant carbonaceous phyllite. It is reported by local old timers, that the adit failed to intersect a mineralized vein fault, which is confirmed by the absence of siderite on the adit dump.

Based on field observations, it is likely that that the oreshoots occur in sheeted vein faults that have no strong lateral continuity.

4. SITE HISTORY

Between 1920 and 1949, a number of shafts were excavated and 11.6 tonnes of ore (8160 g/t silver, 65% lead) was shipped in 1934. In 1948 and 1949 another 31.8 tonnes of ore (10285 g/t silver, 51% lead) was shipped from the site. In 1962 and 1963 another 91.4m of underground crosscutting was completed.

5. MINE DEVELOPMENT

The main showing with the adit, four shafts and a bulldozer trench were examined. All prospecting shafts were caved 1 - 2m below the surface. No ore was processed at the site and no tailings were encountered. There is no wastewater treatment facility at the site. Site details can be found on Figure 1; site photos are in Attachment 1 and laboratory results for samples are in Attachment 2.

5.1 Mine Openings and Excavations

Shaft #1

Shaft #1 is located in the southwestern corner of the site, past the cabin. It has largely been removed by bulldozer trenching and the original dimensions are unknown. Some timbers partially covered by quartzite float are all that remain of the shaft.

Shaft #2 (photo 49-1)

Shaft #2 is located 12m northwest of the wood framed cabin. It is likely a shallow prospecting shaft. The shaft has collapsed roughly 1m below the surface. The area of collapse is about $2m^2$. A single log post is all that is visible of the original support structure.

Shaft #3 (photo 49-2)

Shaft #3 is located 75m northwest of Shaft #2, 30m south of the tent frame. The collar is supported with log cribbing that measures $1.5m^2$. The shaft has collapsed 2m below surface.

Shaft #4 (photo 49-3)

Shaft #4 is located 80m northwest of Shaft #3, 70m northeast of the adit. The shaft measures $1.5m^2$ and is still open to about 3m down. The walls are supported with log cribbing. Three sides of the walls are still in good repair, the fourth wall is beginning to rot at the top and has partially collapsed.

Vanguard Adit (photo 49-4)

The adit is located at the eastern edge of the site on the northern side of the road. The log cribbing that supported the portal have collapsed and the adit can no longer be accessed. Between the adit entrance and Shaft

#4, in the near bedrock talus, is an up to 3m deep depression. The collapse of the adit is the most probable explanation for the depression. According to local workers, the adit failed to intersect the mineralized vein fault.

Trench #1 (photos 49-5, 49-6)

There is an 'L-shaped' bulldozer trench at the southwestern end of the site. The entire trench is 100m long, averages 7m wide and is up to 12m in height. The trench walls are composed of bedrock outcropping and quartzite float. The walls have slumped in some areas but overall seem fairly stable. The trench is easily accessible.

5.2 Waste Rock Disposal Areas

There are three waste rock disposal areas associated with the Vanguard workings.

Waste rock pile #1

Waste rock excavated from the trench is piled along the trench walls. It is composed of thin to medium beds of quartzite and carbonaceous phyllite layers. There is a smaller volume of manganiferous siderite vein material. Very little oxidation was observed at the surface of the waste rock. There was no surface water on the waste rock at the time of the site visit.

Dimensions (L x W x H): 80m x 4m x 3m

Sampling: No samples were collected.

Waste rock pile #2

This waste rock pile, located near Shaft #3, appears to be the ore sorting area. The waste rock is composed of mostly thumb to fist sized pieces of manganiferous siderite and blocky quartzite. There was no surface water on the waste rock at the time of the site visit.

Dimensions (L x W x H): 40m x 20m x 2m

Sampling: A sample (Vanguard-Waste Rock-Sept.20/99) was collected for analysis. The field paste pH was 6.2 and the conductivity was 20μS/cm.

Waste rock pile #3

This waste rock pile is located outside of the adit. The waste rock is primarily carbonaceous phyllite. No oxidized areas were observed.

Dimensions (L x W x H): 60m x 20m x 2m

Sampling: No samples were collected.

6. MINE SITE INFRASTRUCTURE

There are two building remains, some rail and ties and a fuel storage area. Electricity was not provided to the site.

6.1 Building 49A (photo 49-7)

A log cabin was encountered on the north side of the road, to the west of the adit. The roof has lost most of its corrugated tin roofing and is collapsing and covered in moss. The fir is rotting and smelly. There is a two-person outhouse located nearby measuring 1m by 1m by 1.5m.

Dimensions (L x W x H): 5m x 4m x 2m

Asbestos: No asbestos was encountered.

Foundation: There is no foundation.

Non-Hazardous Contents: There is roughly $1m^3$ of metallic debris in and around the cabin.

Hazardous Contents: No hazardous contents were encountered.

Building 49B

There is a collapsed tent frame between Shaft #3 and Shaft #4. No hazardous contents were encountered.

6.2 Fuel Storage

There are twenty 45-gallon drums outside of the adit. Fourteen of the drums are empty and six of the drums are filled with rock.

6.3 Rail and Trestle (photo 49-8)

There is over 120m of steel gauge rail on the cleared area outside of the adit. Some of the rail is still in place but most of it is piled off to the side. No trestle was observed.

7. SOLID WASTE DUMPS (photo 49-9)

There is a fair amount of solid waste around the adit portal. There are scattered 45-gallon drums, steel rail, and various wood and metal debris. A 10cm-deep, $2.5m^2$ hydrocarbon stain was observed.

8. POTENTIAL CONTAMINANTS OF CONCERN

No hazardous waste was encountered at the site. Potential contaminants of concern include any metals washing from the waste rock piles or trench walls.

9. WATER QUALITY

No surface water was encountered at the site and no water samples were collected.

10. RECLAMATION

Vegetation is growing back very slowly. No active reclamation measures have been taken at the site.

11. REFERENCES AND PERSONAL COMMUNICATIONS

Minfile #105M 010

ATTACHMENT 2: 1999 VANGUARD WASTE ROCK LABORATORY RESULTS			
Site Number	**Detection Limit**	**Units**	**Vanguard - Waste Rock - Sept 20/99**
Sample Desciption			Waste rock from waste rock pile #2, a sorting area near Shaft #3.
Paste pH (field)	N/A	pH	6.2
Conductivity (field)	N/A	µS/cm	20
pH in Saturated Paste			
pH	0.1	pH	5.9
pH in Soil (1:2 water)			
pH	0.01	pH	6.2
ICP Semi-Trace Scan			
Aluminum	5	µg/g	17400
Antimony	2	µg/g	990
Arsenic	2	µg/g	101
Barium	0.05	µg/g	210
Beryllium	0.1	µg/g	<0.1
Bismuth	5	µg/g	<5
Cadmium	0.1	µg/g	35.2
Calcium	5	µg/g	612
Chromium	0.5	µg/g	14.6
Cobalt	0.1	µg/g	9.3
Copper	0.5	µg/g	663
Iron	1	µg/g	140000
Lead	1	µg/g	96000
Lithium	0.5	µg/g	6.8
Magnesium	1	µg/g	883
Manganese	0.5	µg/g	15300
Mercury	0.01	µg/g	2.5
Molybdenum	1	µg/g	4
Nickel	1	µg/g	20.8
Phosphorus	5	µg/g	1390
Potassium	20	µg/g	1880
Selenium	2	µg/g	<2
Silicon	5	µg/g	264
Silver	0.5	µg/g	2020
Sodium	5	µg/g	604
Strontium	1	µg/g	13
Sulphur	10	µg/g	10500
Thorium	1	µg/g	<1
Tin	1	µg/g	12
Titanium	0.2	µg/g	118
Uranium	5	µg/g	<5
Vanadium	1	µg/g	18
Zinc	0.5	µg/g	3240
Zirconium	0.1	µg/g	13.7

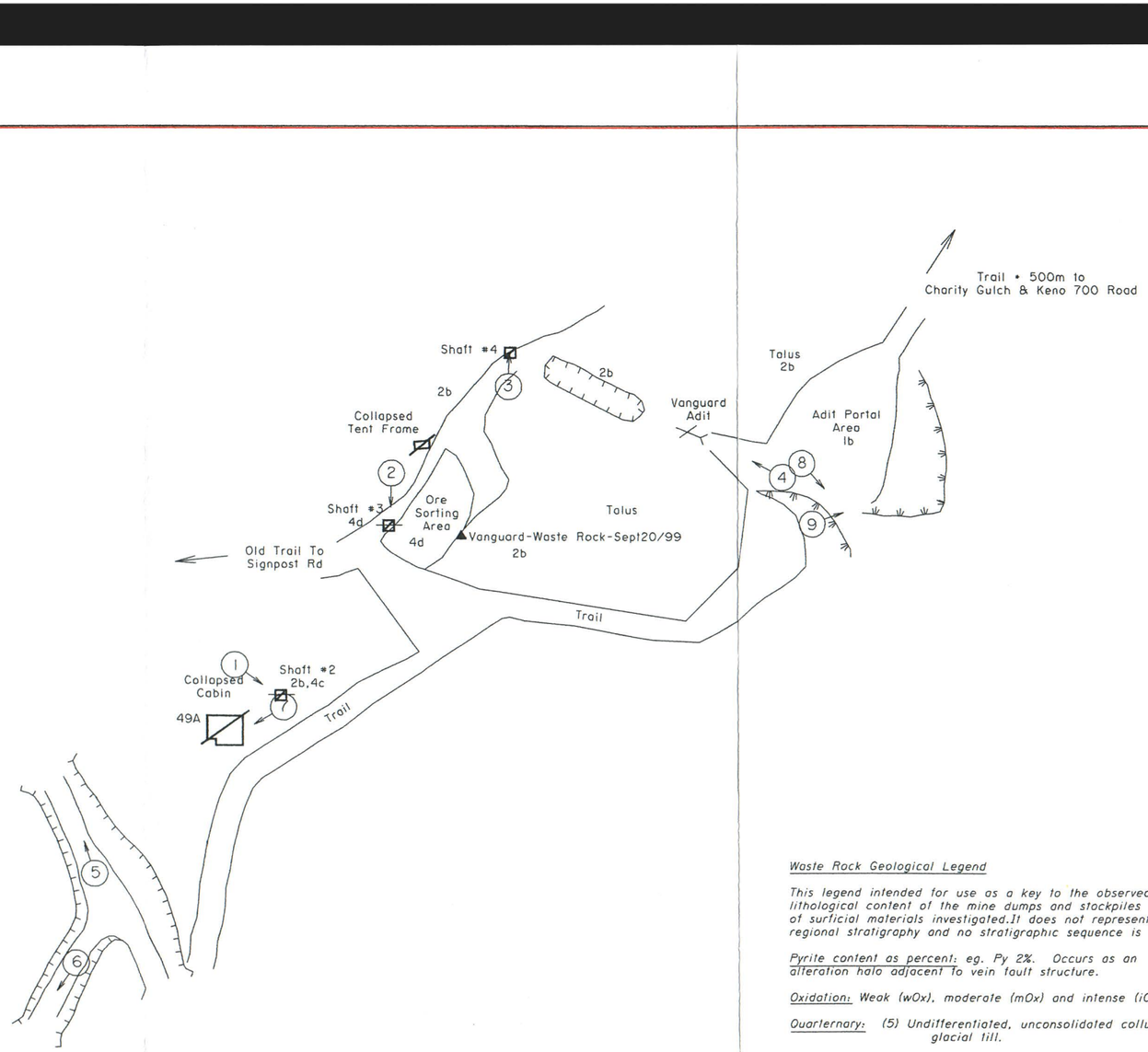
ATTACHMENT 2: 1999 VANGUARD WASTE ROCK LABORATORY RESULTS
MODIFIED SOBEK METHOD ACID-BASE ACCOUNTING TEST

SAMPLE	SITE DESCRIPTION	PASTE pH	S(T) %	S(SO4) %	AP	NP	NET NP	NP/AP
Vanguard - Waste Rock - Sept.20/99	Waste rock from waste rock pile #2, a sorting area near Shaft #3.	6.1	0.16	0.15	0.3	0.6	0.3	2.0

AP = ACID POTENTIAL IN TONNES CaCO3 EQUIVALENT PER 1000 TONNES OF MATERIAL.
NP = NEUTRALIZATION POTENTIAL IN TONNES CaCO3 EQUIVALENT PER 1000 TONNES OF MATERIAL.
NET NP = NET NEUTRALIZATION POTENTIAL = TONNES CaCO3 EQUIVALENT PER 1000 TONNES OF MATERIAL.
NOTE: WHEN S(T) AND/OR S(SO4) IS REPORTED AS <0.01, IT IS ASSUMED TO BE ZERO FOR THE AP CALCULATION.
N/D = NO DUPLICATE ASSAY. CALCULATIONS ARE BASED ON ASSAY RESULTS OF THE INITIAL SAMPLE.
RE = REPLICATE.

NOTE - A HIGH LEVEL OF SOLUBLE METALS (ESPECIALLY IRON) WERE OBSERVED IN MANY SAMPLES DURING THE ABA TITRATIONS.
SAMPLES WITH A NEGATIVE NET NP SHOULD BE TESTED FOR MOBILE METALS USING STANDARD SHAKE FLASK EXTRACTION TESTS.

- Building (22A: building site present reference*) Indicates Asbestos Material (22A*)
- Collapsed Building (22A)
- Adit
- Collapsed Adit
- Shaft
- Collapsed/Backfilled Shaft
- Mine Rock Dump
- Bedrock Open Pit
- Trench
- Stripped Overburden Stockpile
- Stripped / Disturbed Area
- Outcrop Boundary
- Highway
- Road (gravel, 2 wheel drive)
- Road (gravel, 4X4 accessible)
- Road (inaccessible)
- Trail
- Culvert
- 24501-01 1999 Soil Sample (this study)
- Pre 1999 Soil Sample (other sources)
- 25WR04-01 1999 Waste Rock Sample (this study)
- Pre 1999 Waste Rock Sample (other sources)
- WO-12-06 1999 Water Sample
- Pre 1999 Water Sample
- Tension Cracks
- Mass Movement (note: for Forms: BelleKeno)
- Groundwater Seep
- Surface Water Flow (Stream, Creek, River)
- Lake
- Settling Pond / Water Treatment Pond
- Tailings Dam / Tailings Pond / Mill Tails
- Ponded Water / Trench
- Barrels
- Abandoned Equipment (compressors, ore cars, rails, air and water pipe)
- Mine Rails / Trestle
- Collapsed Trestle
- Solid Waste Disposal Site
- Area of Soil Contamination
- *(6) Transformer Location (number of transformer in brackets)
- Power Line
- Power Line Collapsed
- Aerial Transmission Towers
- (5) Photo Site (arrow shows view direction)
- GPS Survey Location
- Former Building Site (Elsa)



Waste Rock Geological Legend

This legend intended for use as a key to the observed lithological content of the mine dumps and stockpiles of surficial materials investigated. It does not represent regional stratigraphy and no stratigraphic sequence is implied.

Pyrite content as percent: eg. Py 2%. Occurs as an alteration halo adjacent to vein fault structure.

Oxidation: Weak (wOx), moderate (mOx) and intense (iOx).

Quarternary: (5) Undifferentiated, unconsolidated colluvium, glacial till.

Veins:
(4a) Quartz veins;
(4b) Quartz-pyrite veins;
(4c) Quartz-siderite •trace galena-sphalerite veins;
(4d) Siderite-quartz •trace galena-sphalerite veins;
(4e) Suphide (galena-sphalerite) •quartz•siderite veins.

Greenstone: (3) Amphibole-chlorite-plagioclase metadiorite or metagabbro.

Quartzite:
(2a) Thick bedded, blocky gray quartzite;
(2b) Thin banded, broken, quartzite with carbonaceous phyllite interbeds;
(2c) Calcareous quartzite.

Phyllite:
(1a) Broken sericite-chlorite phyllite;
(1b) Carbonaceous phyllite.

0 20 40 60 80

Scale 1:2000

CAD FILE: SITE48.DGN

date:

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

Architectural & Engineering Services
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Drawing title: / Titre du dessin:

Vanguard Site #49
Site Assessment
Yukon Territory

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dwg. no. / dessin no. 1 of 1

Photo 49-1 : Vanguard. Shaft #2 has collapsed 1m below surface, the timber post in the bottom right hand corner is all that marks the location. (Azimuth 110 ^{o})

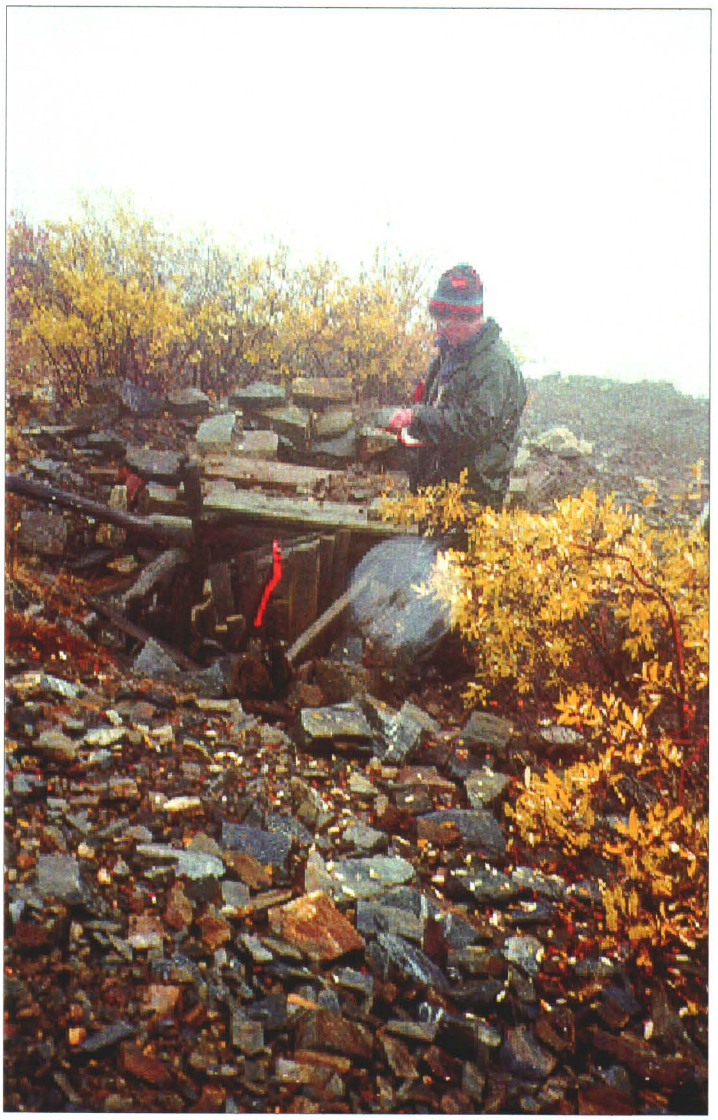

Photo 49-2 : Vanguard. The log cribbing supporting the collar of Shaft #3 is still in place but the shaft has caved 2m below surface. (Azimuth 180 ^{o})

Photo 49-3 : Vanguard. Shaft #4 is still open and in fairly good condition.

Photo 49-4 : Vanguard. The pile of broken logs and sheet metal marks the entrance to the Vanguard Adit. The first 30m of the adit have collapsed. (Azimuth 290 ^{o})

Photo 49-5 : Vanguard. View of Trench #1, looking to the northwest. (Azimuth 040 ^{o})

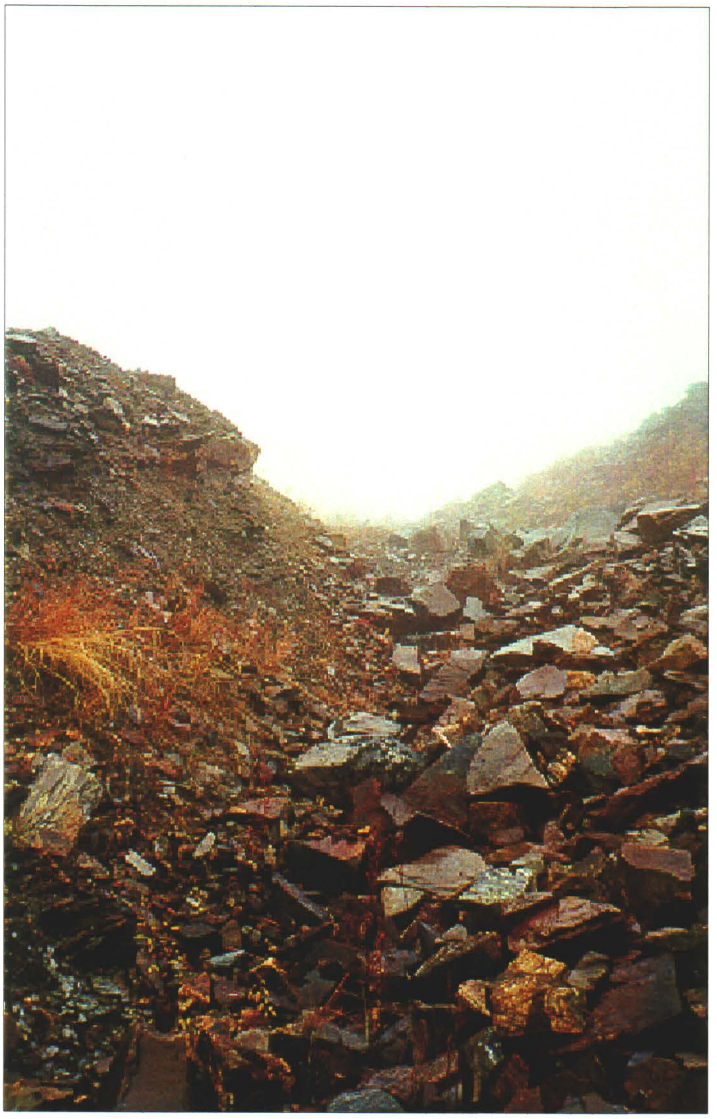

Photo 49-6 : Vanguard. View of Trench #1, looking to the southwest. (Azimuth 320 ^{o})

Photo 49-7 : Vanguard. View of Building 49A. (Azimuth 250 ^{o})

Photo 49-8 : Vanguard. Some rail is still in place but most of it is piled off to the sided. (Azimuth 135 ^{o})

Photo 49-9 : Vanguard. Solid waste dumped near the adit. (Azimuth 090 ^{o})