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## Hydraulic Engineering Laboratory Reports

### Title

Recent Marine Sediments of Bolinas Bay, California: Part B -- Mineralogical Data

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### Publication Date

1969-04-01

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RECENT SEDIMENTS OF  
BOLINAS BAY  
CALIFORNIA

PART B. MINERALOGICAL DATA

by

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L. OSUCH  
T. YANCEY  
P. WILDE

HYDRAULIC ENGINEERING LABORATORY  
COLLEGE OF ENGINEERING



UNIVERSITY OF CALIFORNIA  
BERKELEY  
APRIL, 1969

University of California  
Hydraulic Engineering Laboratory

Technical Report

HEL-2-22

This work was supported by Contract DACW-72-67-C-0015  
with the Coastal Engineering Research Center,  
Corps of Engineers, U.S. Army

RECENT MARINE SEDIMENTS OF BOLINAS BAY, CALIFORNIA

Part B: Mineralogical Data

by

C. Isselhardt  
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T. Yancey  
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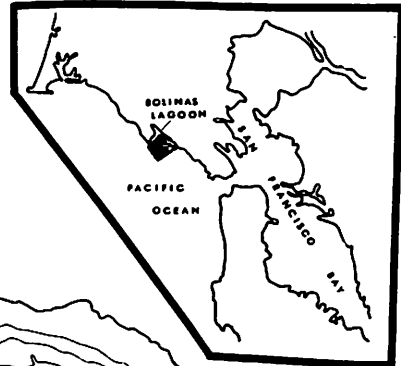
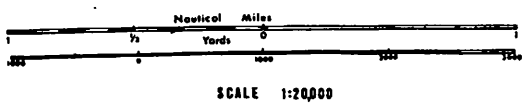
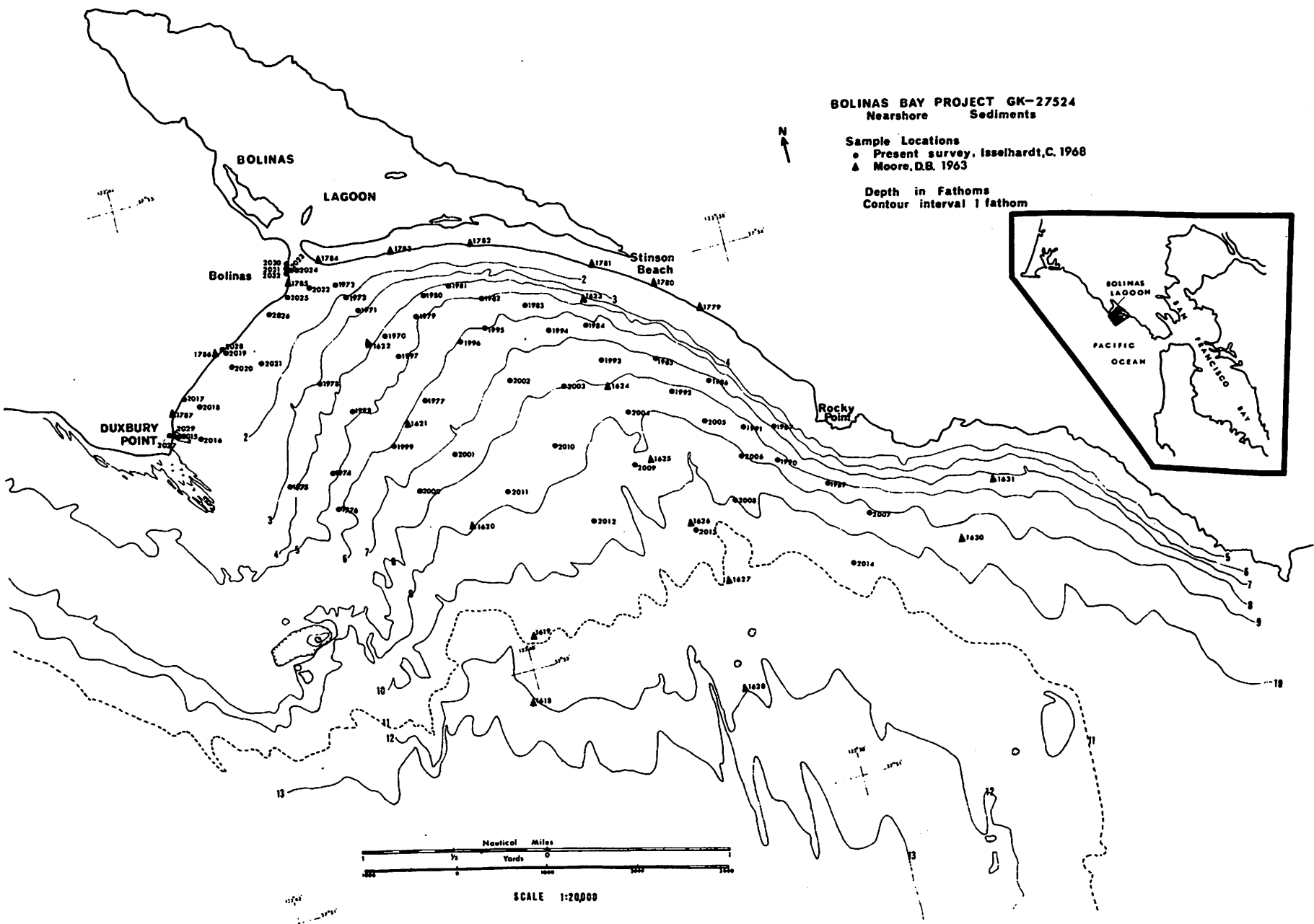
Berkeley, California

April 1969

## INTRODUCTION

This section of the study of Bolinas Bay deals with the heavy mineralogy of the 0.175 - 0.124; 0.124 - 0.088; and 0.088 - 0.061 mm size fractions of 49 sediment samples (Fig. 1) [see Isselhardt and others (1968) for grain size and sizing procedure] plus the 0.124 - 0.088 and 0.088 - 0.061 mm size fractions of one disaggregated cliff sample 2030. Offshore rock samples 1974, 1975, 1976, 1977, 1998 and 2000 and cliff and shore samples 2027, 2028, 2029, 2031, and 2032 were not disaggregated for mineralogical analyses. These rock samples will be discussed in Part C. Sample 1988 was lost and 2007 was too small for analysis.

The treated size fractions were divided further by separation in the heavy liquid tetrabrom-ethane (Krumbein and Pettijohn, 1938, p. 325) with a density of 2.95 gms/cc. Particles with a density greater than 2.95 gms/cc were called heavy. Particles with a density equal or less than 2.95 gms/cc were designated light. Grain mounts were made of both the heavy and light particles of each size fraction on glass slides with Cadex mounting media (index of refraction = 1.55).



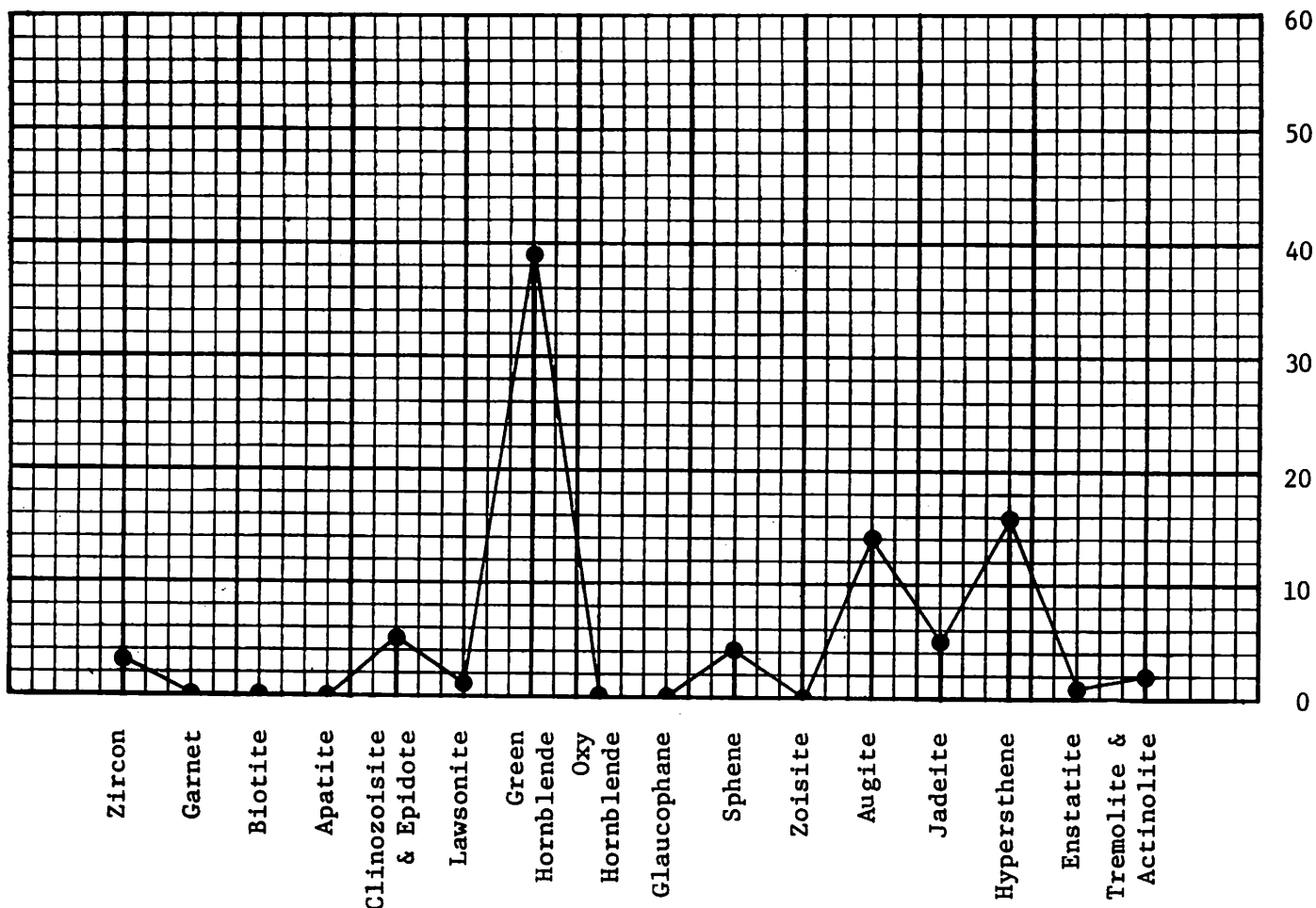
### IDENTIFICATION PROCEDURE

For this report only minerals of the heavy fraction were identified. The grain mounts of the light minerals will be made available to the U. S. Geological Survey for use in their aspect of the Bolinas Bay study.

For each heavy fraction grain mount, individual grains were identified with a Leitz Laborlux polarizing microscope under 28, 80, and 360 power until approximately 100 transparent grains were counted. Opaque grains were identified with oblique reflected light. Alterites (Van Andel, 1958) were considered unidentifiable unaltered grains. Unknowns were considered unidentifiable unaltered grains. Rock fragments were grains of composite mineral composition. Identifications were checked with reference to diagnostic tables in Krumbein and Pettijohn (1938, p. 412-462); Milner (1962, p. 15-207) and by comparison with standard specimens in the University of California, Berkeley, Geological Museum's reference mineral collection. As an additional check of accuracy, 12 slides from samples 1980, 2002, 2014, and 2018 were counted in replicate by Isselhardt, Osuch, and Yancey with small discrepancies.

SAMPLE 1970

Location 37°53'53"N 122°40'27"W Wt. % of SF/Total Sample 24.36  
 Depth 7.62 meters 4.16 fathoms Wt. % of HM/SF 0.37  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 303  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 32.0  
 % Opaques 17.5  
 % Alterites and Unknowns 50.5



Other Transparent Minerals

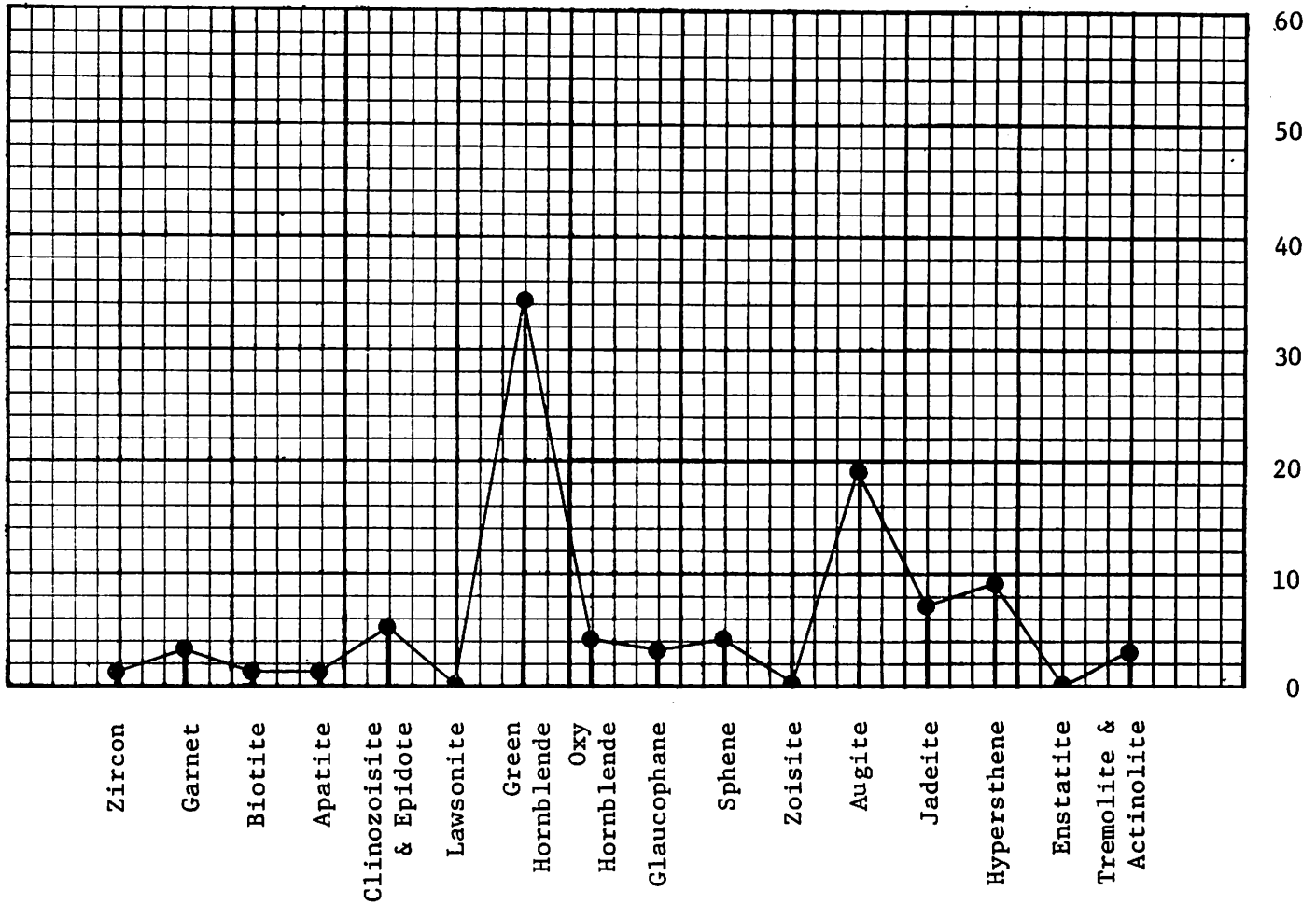
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Chlorite	1
Carbonate	7

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	27
Magnetite	18
Picotite	3
Rock Frag.	3

Analyst T. Yancey

## SAMPLE 1970

Location 37°53'53"N 122°40'27"WWt. % of SF/Total Sample 50.00Depth 7.62 meters 4.16 fathomsWt. % of HM/SF 1.76Size Fraction (SF) 0.124 - 0.088 mmTotal Grains Counted 298Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 33.2% Opaques 15.8% Alterites and Unknowns 51.0Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	3
Tourmaline	1

Other Opaque Minerals

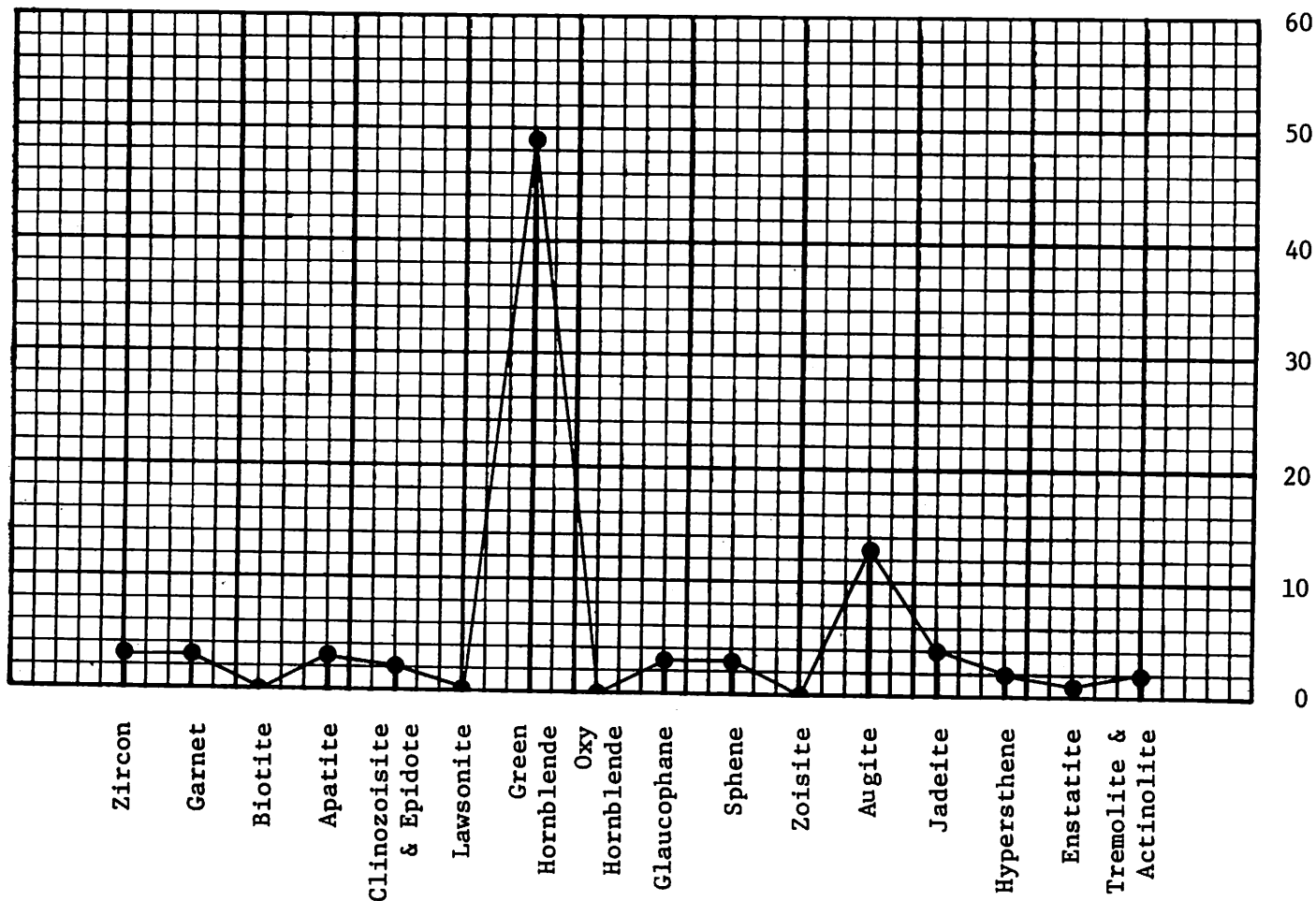
<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	12
Magnetite	26
Picotite	2
Pyrite	1
Rock Frag.	6

Analyst T. Yancey



SAMPLE 1970

Location 37°53'53"N 122°40'27"W Wt. % of SF/Total Sample 8.93  
 Depth 7.62 meters 4.16 fathoms Wt. % of HM/SF 10.54  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 293  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 32.8  
 % Opaques 13.7  
 % Alterites and Unknowns 53.5



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Chlorite	1
Carbonate	9

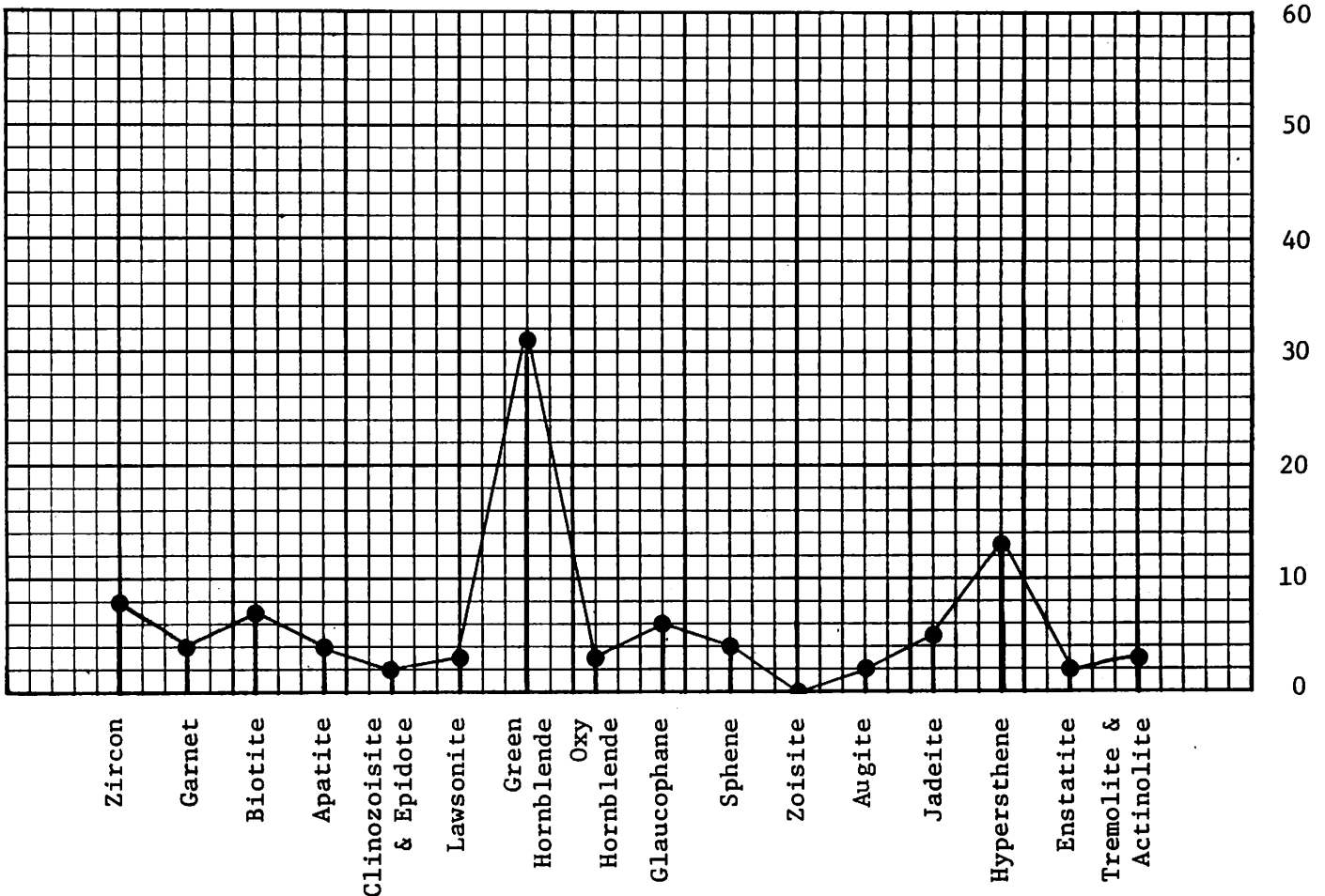
Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	23
Picotite	4
Pyrite	1
Rock Frag.	7

Analyst T. Yancey

SAMPLE 1971

Location 37°54'N 122°40'31"W Wt. % of SF/Total Sample 35.30  
 Depth 5.28 meters 2.83 fathoms Wt. % of HM/SF 0.23  
 Size Fraction (SF) 0.124 - 0.175mm Total Grains Counted 205  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 48.8  
 % Opaques 7.8  
 % Alterites and Unknowns 43.4



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Chlorite</u>	<u>2</u>
_____	_____
_____	_____
_____	_____
_____	_____

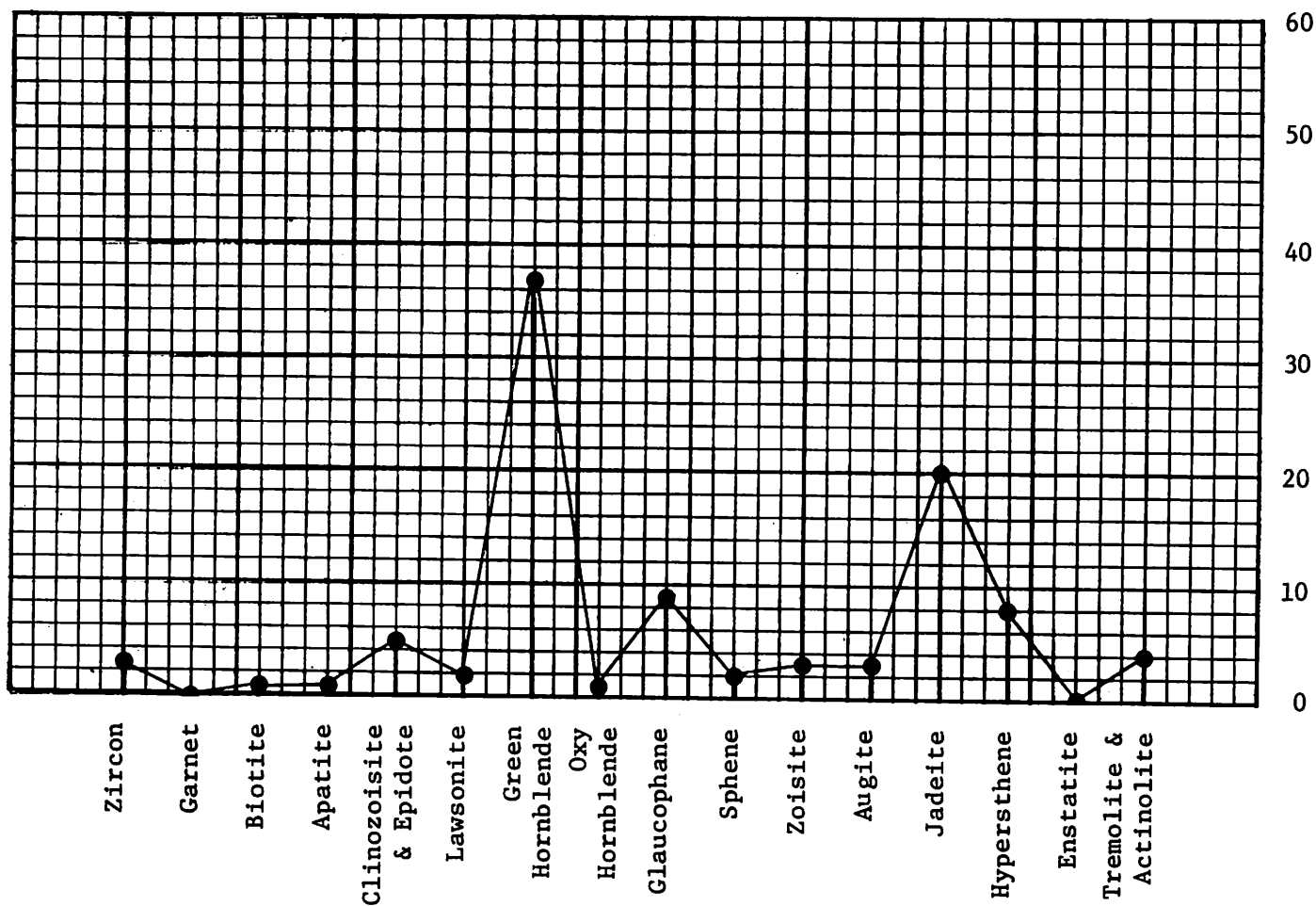
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>7</u>
<u>Magnetite</u>	<u>5</u>
<u>Rock Frag.</u>	<u>4</u>
_____	_____
_____	_____

Analyst C. Isselhardt

SAMPLE 1971

Location 37°54'N 122°40'31"W Wt. % of SF/Total Sample 41.80  
 Depth 5.28 meters 2.83 fathoms Wt. % of HM/SF 1.53  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 180  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 55.6  
 % Opaques 11.1  
 % Alterites and Unknowns 33.3



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1

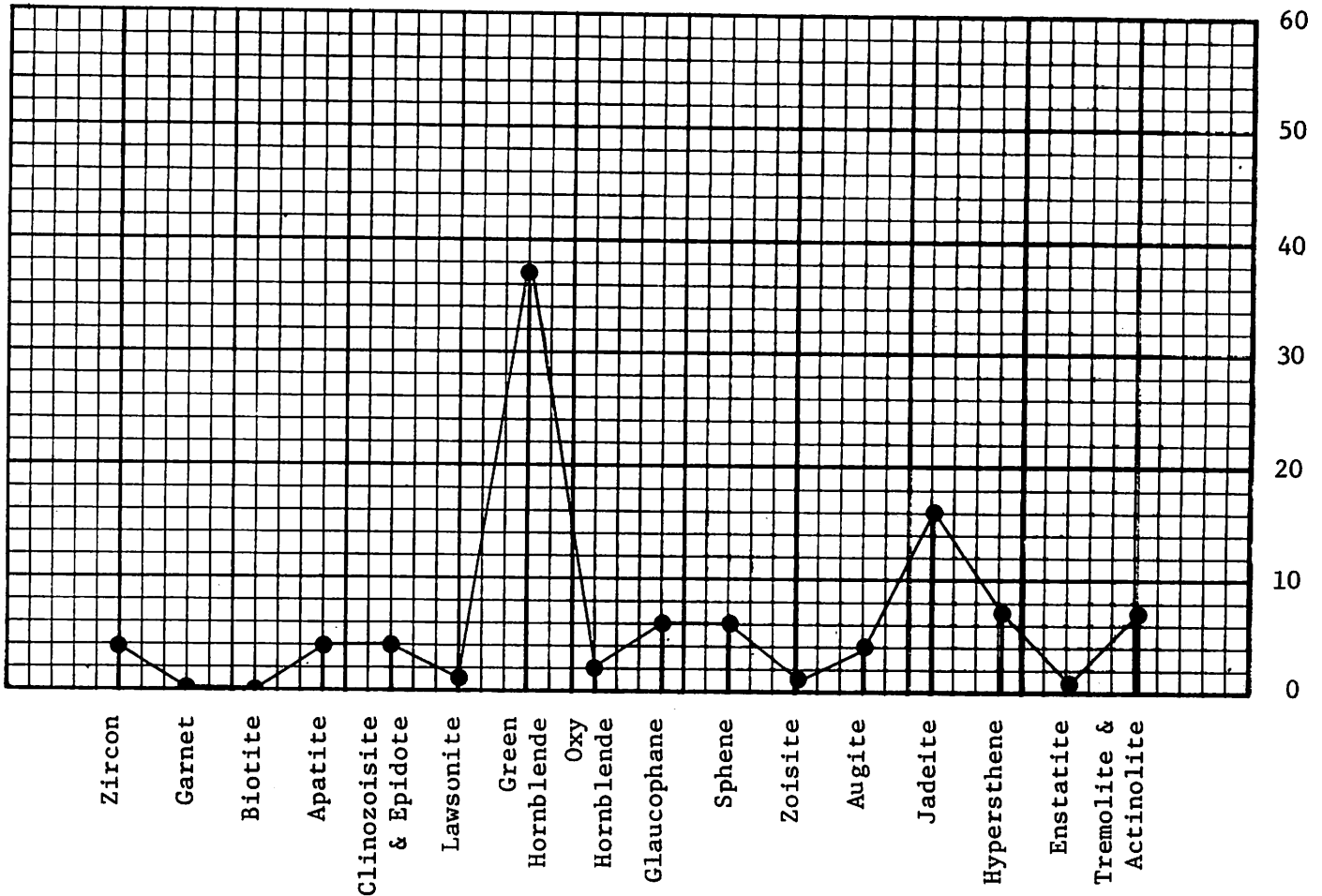
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	5
Picotite	2
Rock Frag.	9

Analyst C. Isselhardt

SAMPLE 1971

Location 37°54'N 122°40'31"W Wt. % of SF/Total Sample 7.72  
 Depth 5.28 meters 2.83 fathoms Wt. % of HM/SF 10.32  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 147  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 68.0  
 % Opaques 10.2  
 % Alterites and Unknowns 21.8



Other Transparent Minerals

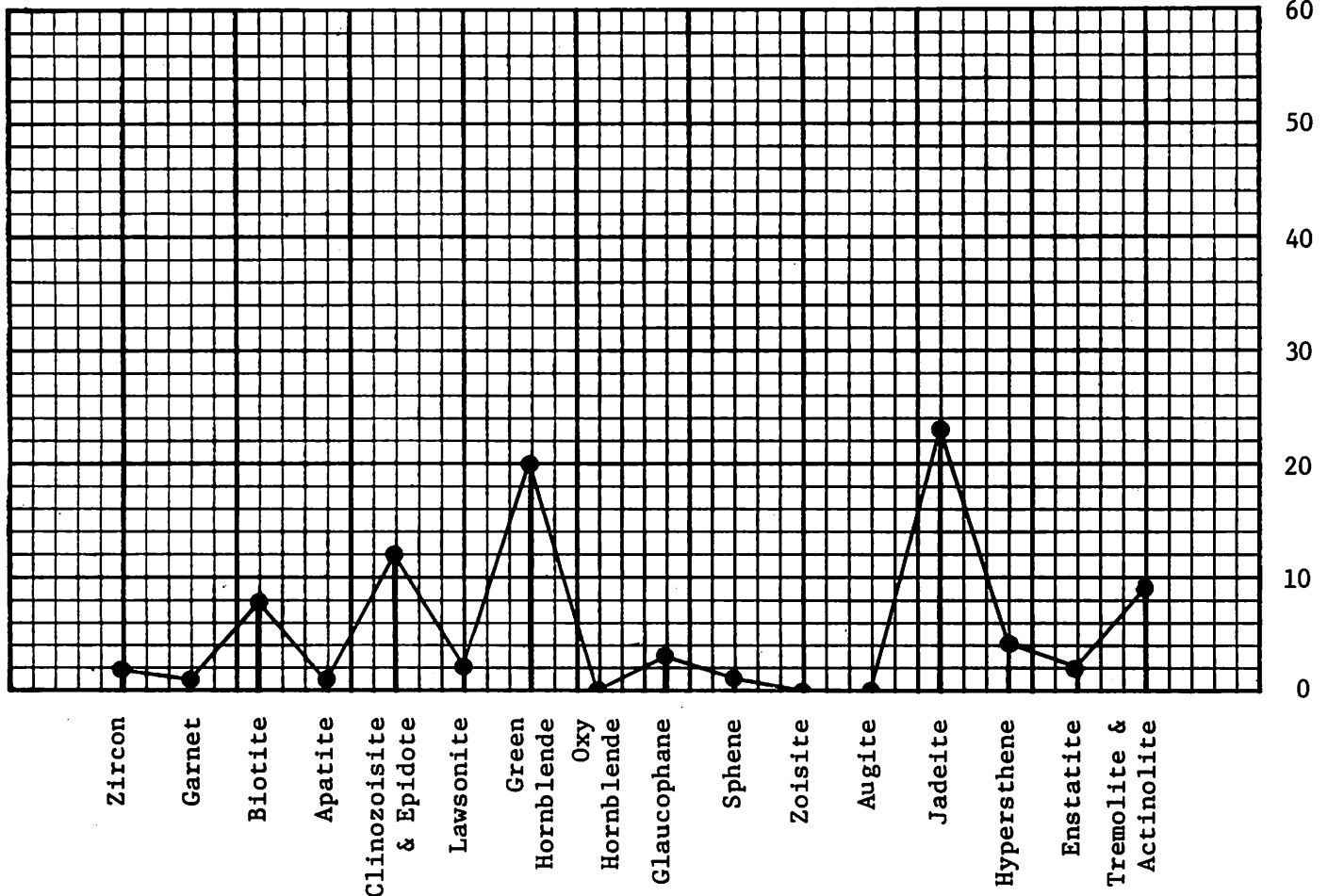
<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	1
Picotite	3
Rock Frag.	7

Analyst C. Isselhardt

Location 37°54'6"N 122°40'34"W Wt. % of SF/Total Sample 22.10  
 Depth 4.27 meters 2.33 fathoms Wt. % of HM/SF 0.30  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 259  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 48  
 % Opaques 18  
 % Alterites and Unknowns 35



Other Transparent Minerals

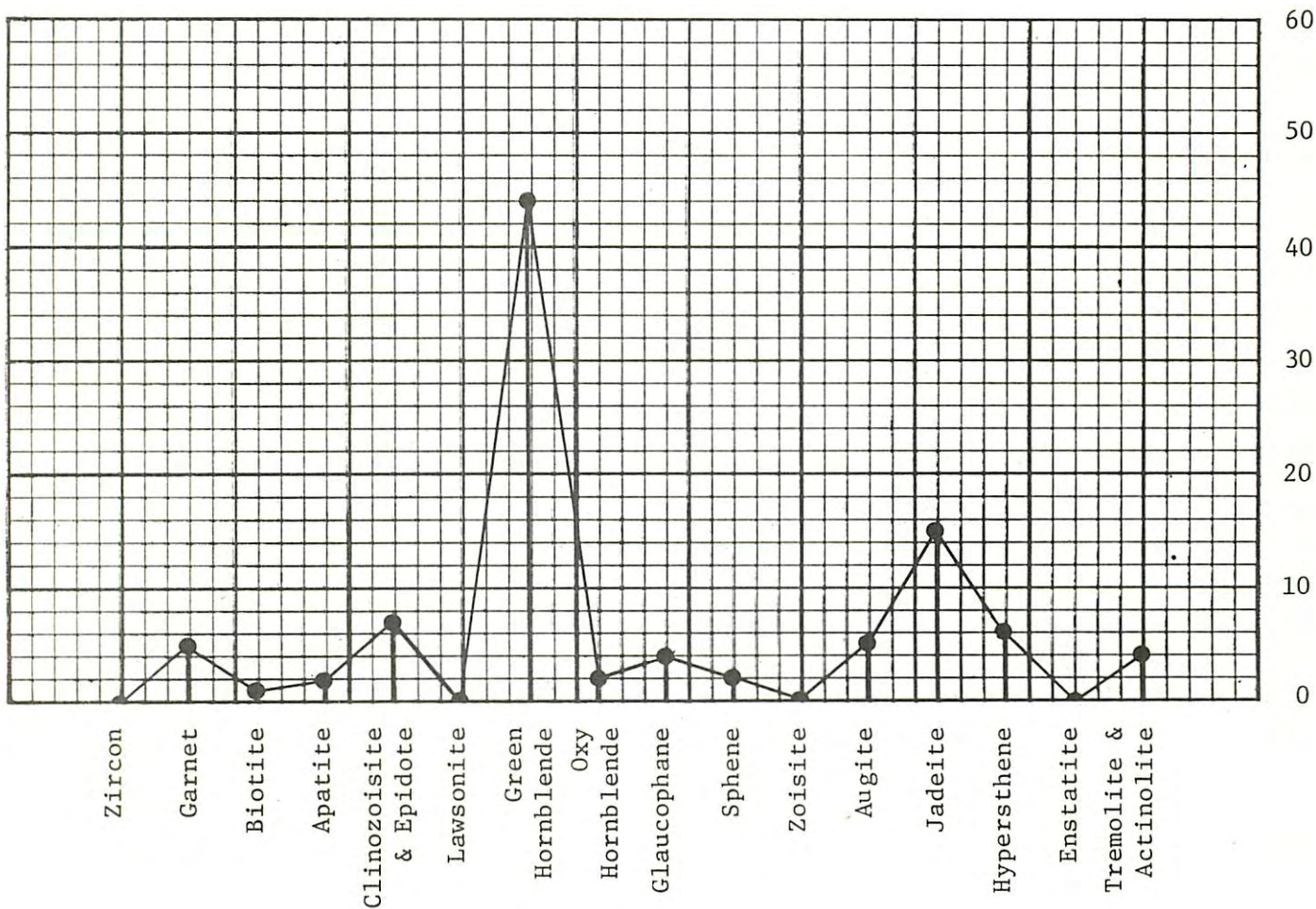
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	7
Carbonate	5
Chlorite	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	18
Magnetite	6
Picotite	4
Rock Frag.	20

Analyst L. Osuch

## SAMPLE 1972

Location 37°54'6"N 122°40'34"WWt. % of SF/Total Sample 55.50Depth 4.27 meters 2.33 fathomsWt. % of HM/SF 1.23Size Fraction (SF) 0.124 - 0.088 mmTotal Grains Counted 192Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 56% Opaques 15% Alterites and Unknowns 29Other Transparent Minerals

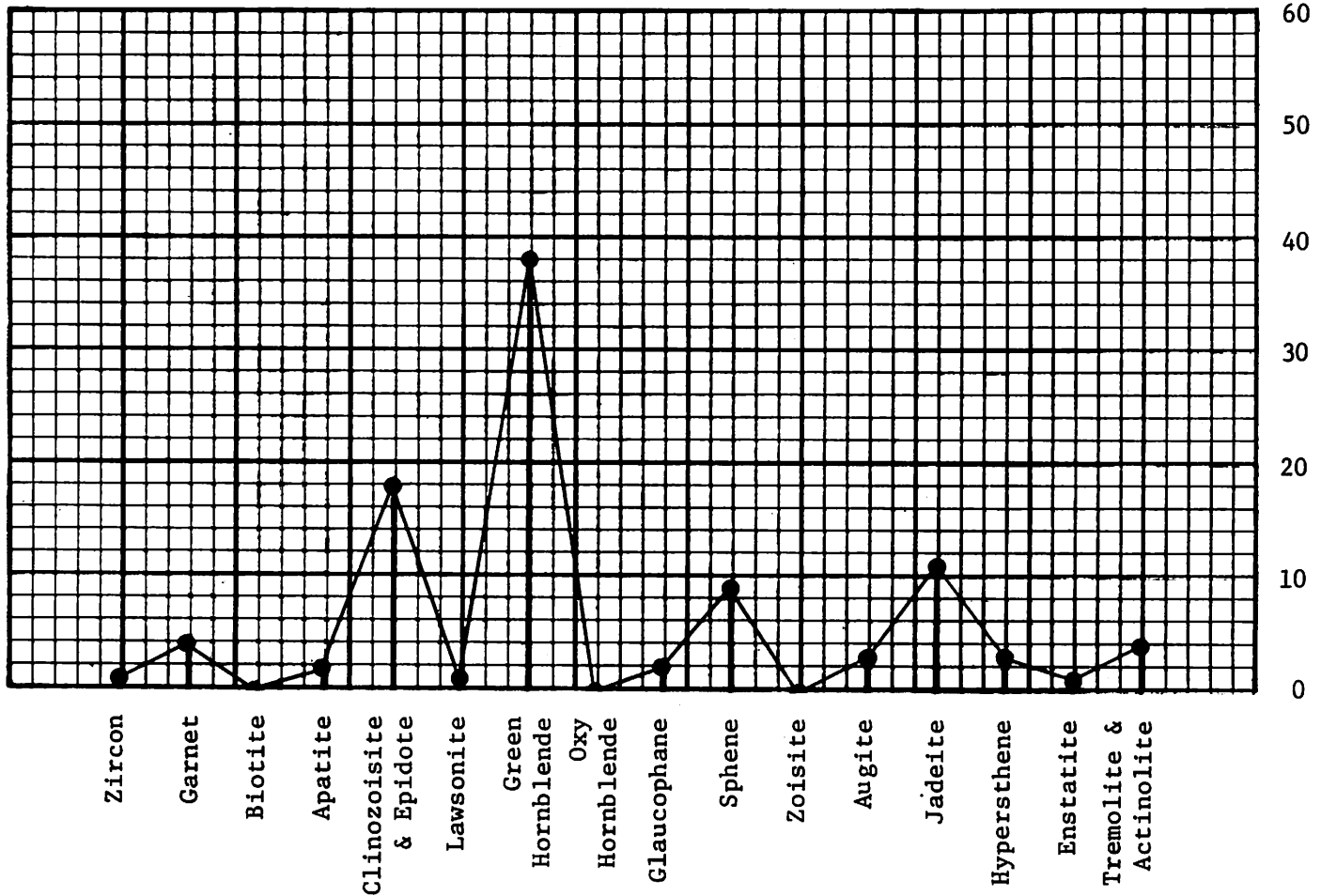
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	4
Chlorite	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	7
Rock Frag.	17

Analyst L. Osuch

Location 37°54'6"N 122°40'34"W Wt. % of SF/Total Sample 5.43  
 Depth 4.27 meters 2.33 fathoms Wt. % of HM/SF 12.13  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 189  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 54  
 % Opaques 21  
 % Alterites and Unknowns 25



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Carbonate</u>	<u>2</u>
<u>Chlorite</u>	<u>1</u>

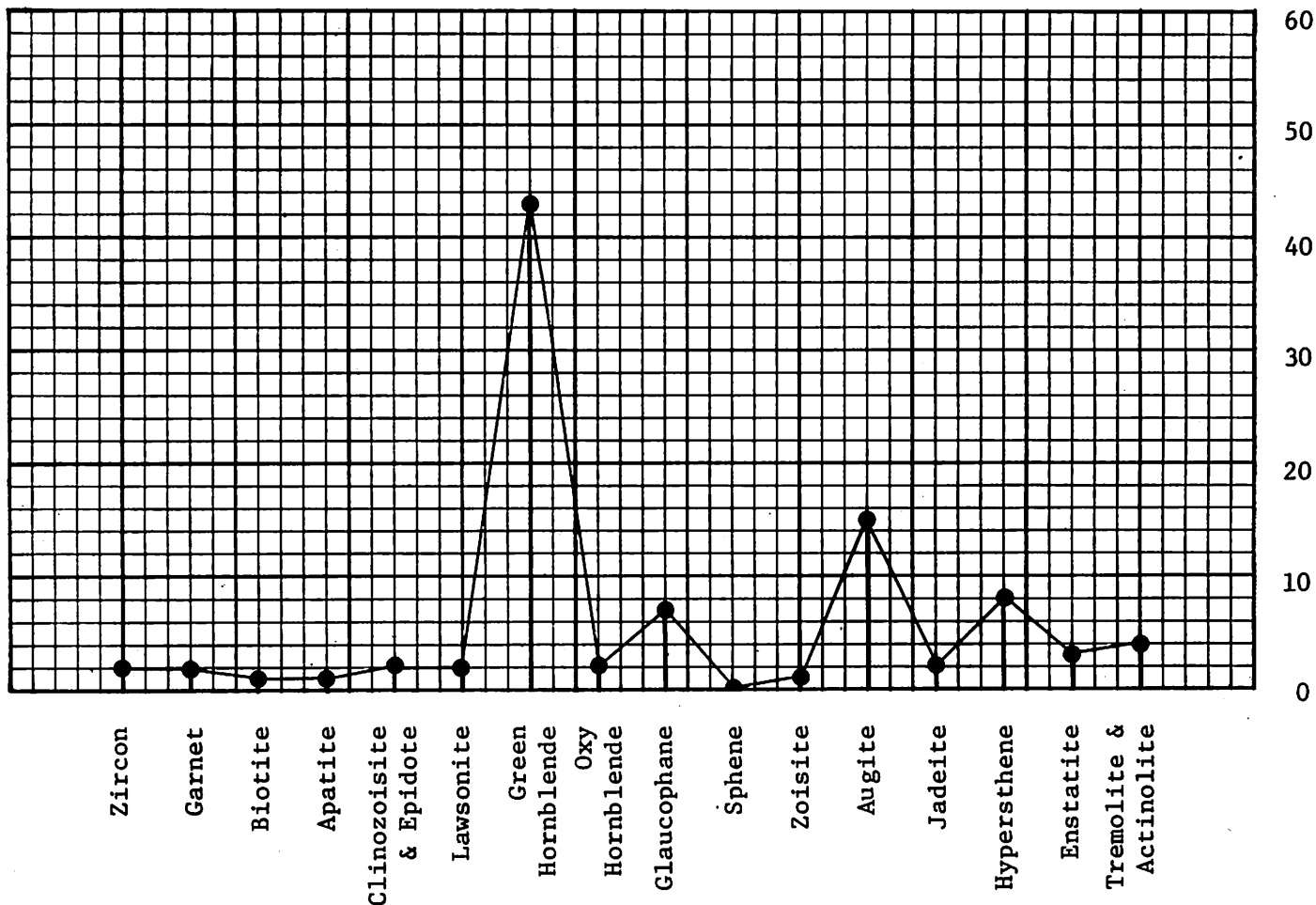
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>4</u>
<u>Magnetite</u>	<u>14</u>
<u>Picotite</u>	<u>1</u>
<u>Rock Frag.</u>	<u>21</u>

Analyst L. Osuch

SAMPLE 1973

Location 37°54'11"N 122°40'38"W Wt. % of SF/Total Sample 44.25  
 Depth 3.66 meters 2.00 fathoms Wt. % of HM/SF 0.24  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 331  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 30.2  
 % Opaques 10.6  
 % Alterites and Unknowns 59.2



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	4

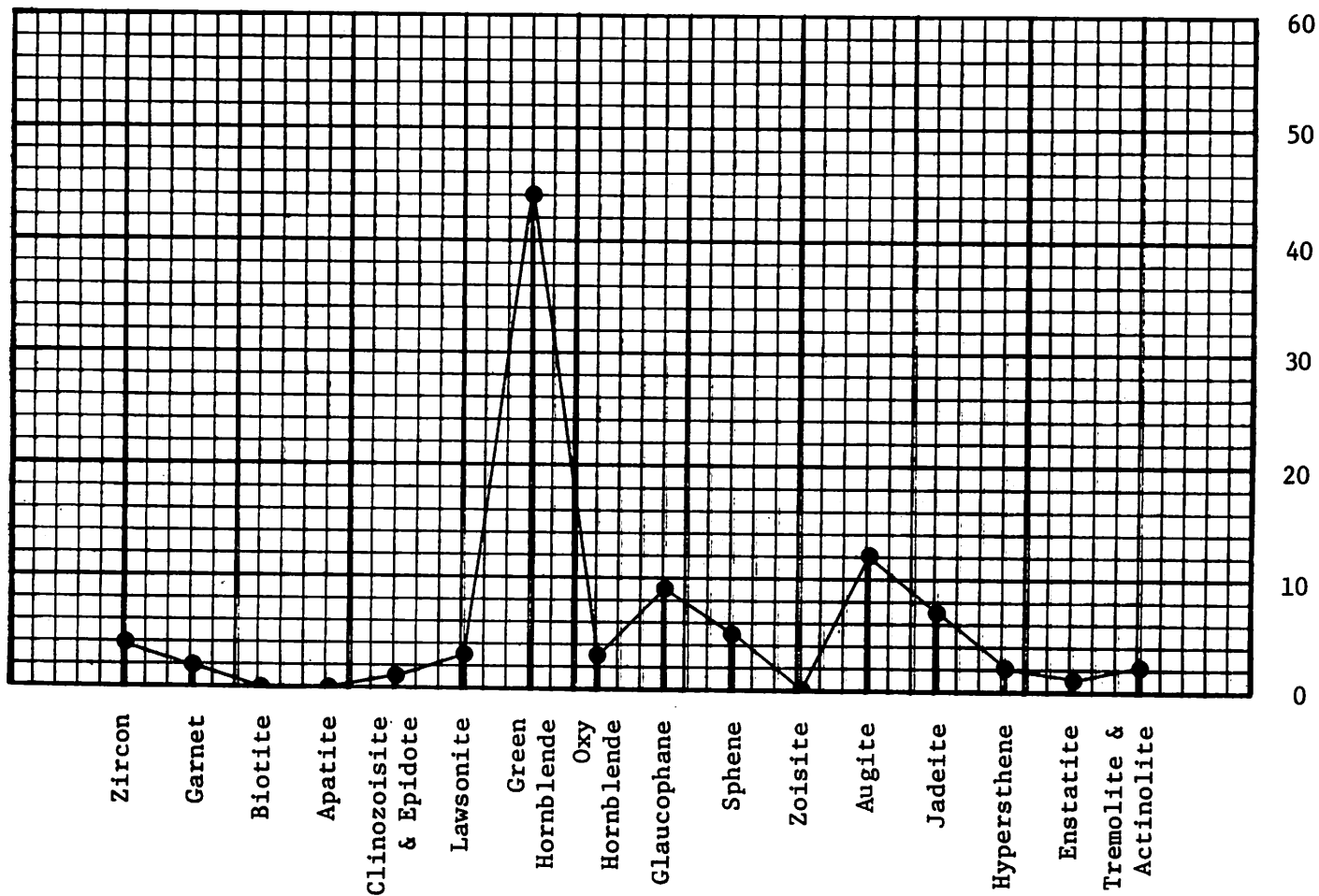
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	16
Magnetite	13
Picotite	2
Pyrite	2
Rock Frag.	2

Analyst T. Yancey



Location 37°54'11"N 122°40'38"W Wt. % of SF/Total Sample 30.70  
 Depth 3.66 meters 2.00 fathoms Wt. % of HM/SF 2.15  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 275  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 34.2  
 % Opaques 10.5  
 % Alterites and Unknowns 55.3



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>2</u>
<u>Carbonate</u>	<u>2</u>
_____	_____
_____	_____
_____	_____

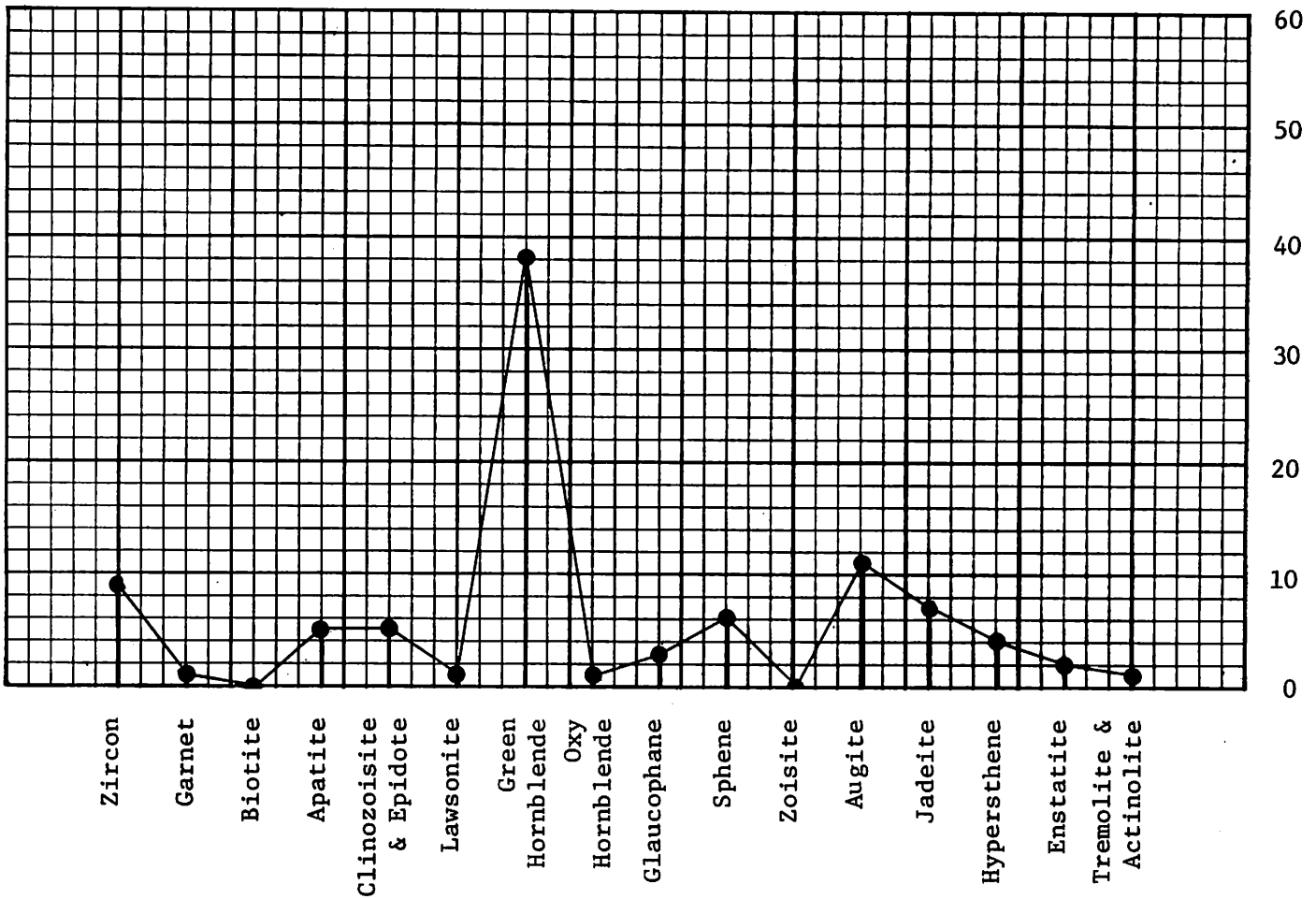
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>2</u>
<u>Magnetite</u>	<u>15</u>
<u>Picotite</u>	<u>7</u>
<u>Rock Frag.</u>	<u>5</u>
_____	_____
_____	_____

Analyst T. Yancey

SAMPLE 1973

Location 37°54'11"N 122°40'38"W Wt. % of SF/Total Sample 2.72  
 Depth 3.66 meters 2.00 fathoms Wt. % of HM/SF 18.23  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 199  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 49.2  
 % Opaques 15.1  
 % Alterites and Unknowns 35.7



Other Transparent Minerals

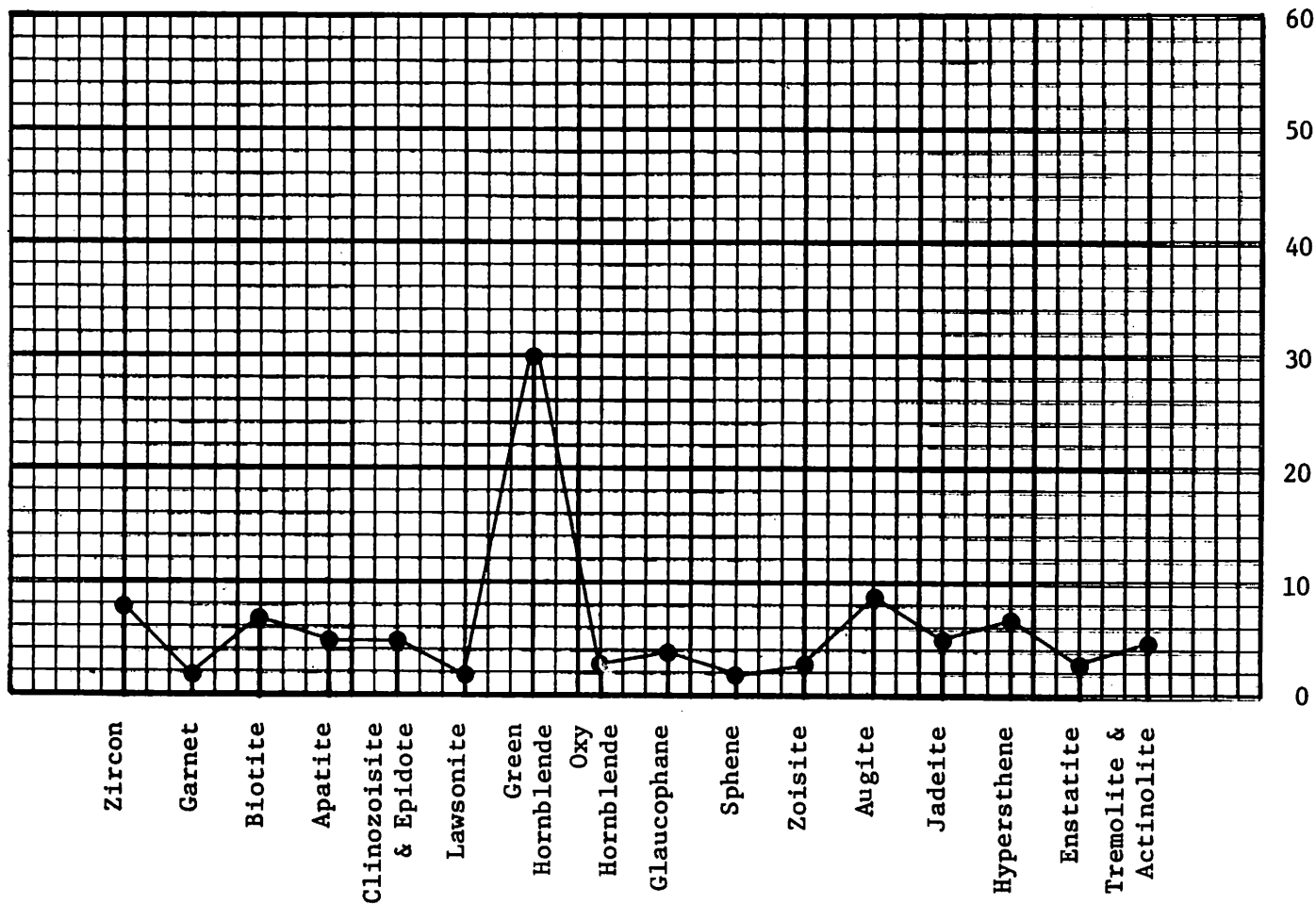
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	4

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	22
Picotite	2
Pyrite	1
Rock Frag.	2

Analyst T. Yancey

Location 37°53'45"N 122°40'55"W Wt. % of SF/Total Sample 25.60  
 Depth 5.79 meters 3.17 fathoms Wt. % of HM/SF 0.39  
 Size Fraction (SF) 0.124 - 0.175 mm Total Grains Counted 240  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 46.2  
 % Opaques 14.2  
 % Alterites and Unknowns 39.6



Other Transparent Minerals

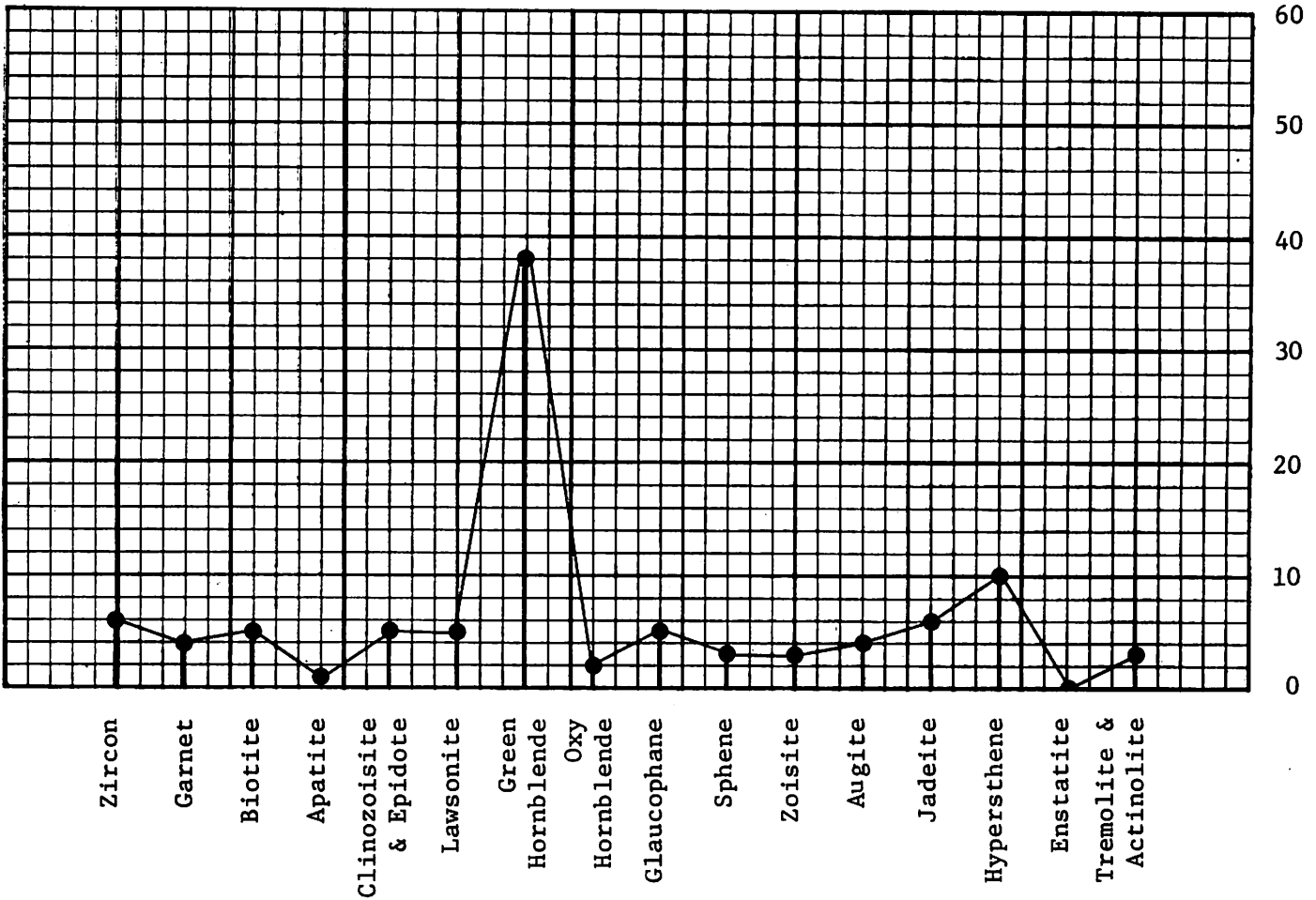
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>	<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Chlorite</u>	<u>1</u>	<u>Hematite</u>	<u>12</u>
<u>Rutile</u>	<u>1</u>	<u>Magnetite</u>	<u>4</u>
<u> </u>	<u> </u>	<u>Picotite</u>	<u>1</u>
<u> </u>	<u> </u>	<u>Pyrite</u>	<u>1</u>
<u> </u>	<u> </u>	<u>Rock Frag.</u>	<u>13</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

Analyst C. Isselhardt

SAMPLE 1978

Location 37°53'45"N 122°40'55"W Wt. % of SF/Total Sample 33.3  
 Depth 5.79 meters 3.17 fathoms Wt. % of HM/SF 1.2  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 208  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 48.0  
 % Opaques 10.6  
 % Alterites and Unknowns 41.4



Other Transparent Minerals

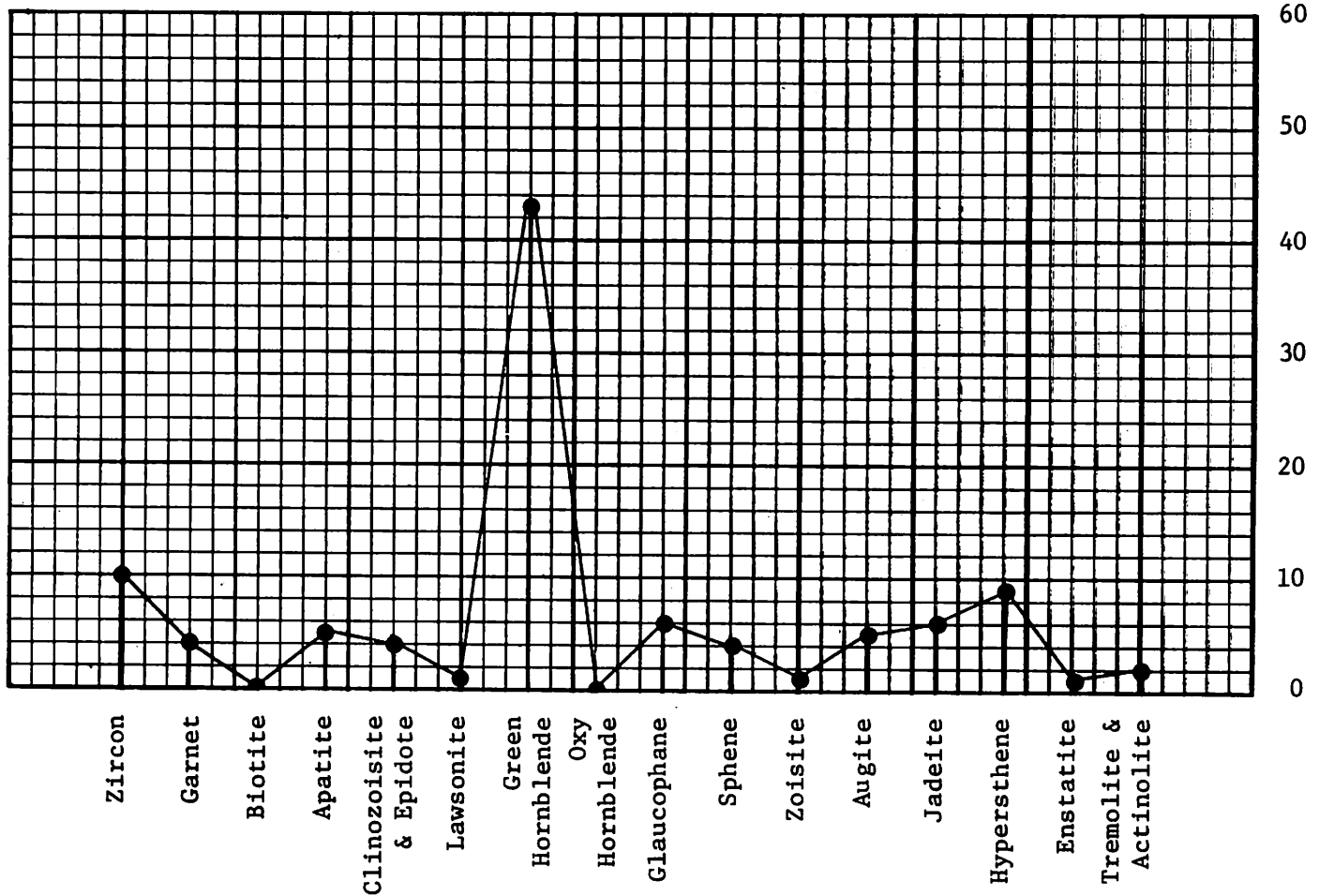
<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	8
Magnetite	7
Picotite	1
Pyrite	1
Rock Frag.	5
_____	_____

Analyst C. Isselhardt

Location 37°53'45"N 122°40'55"W Wt. % of SF/Total Sample 10.02  
 Depth 5.79 meters 3.17 fathoms Wt. % of HM/SF 5.44  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 229  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 50.2  
 % Opaques 17.0  
 % Alterites and Unknowns 32.8



Other Transparent Minerals

Other Opaque Minerals

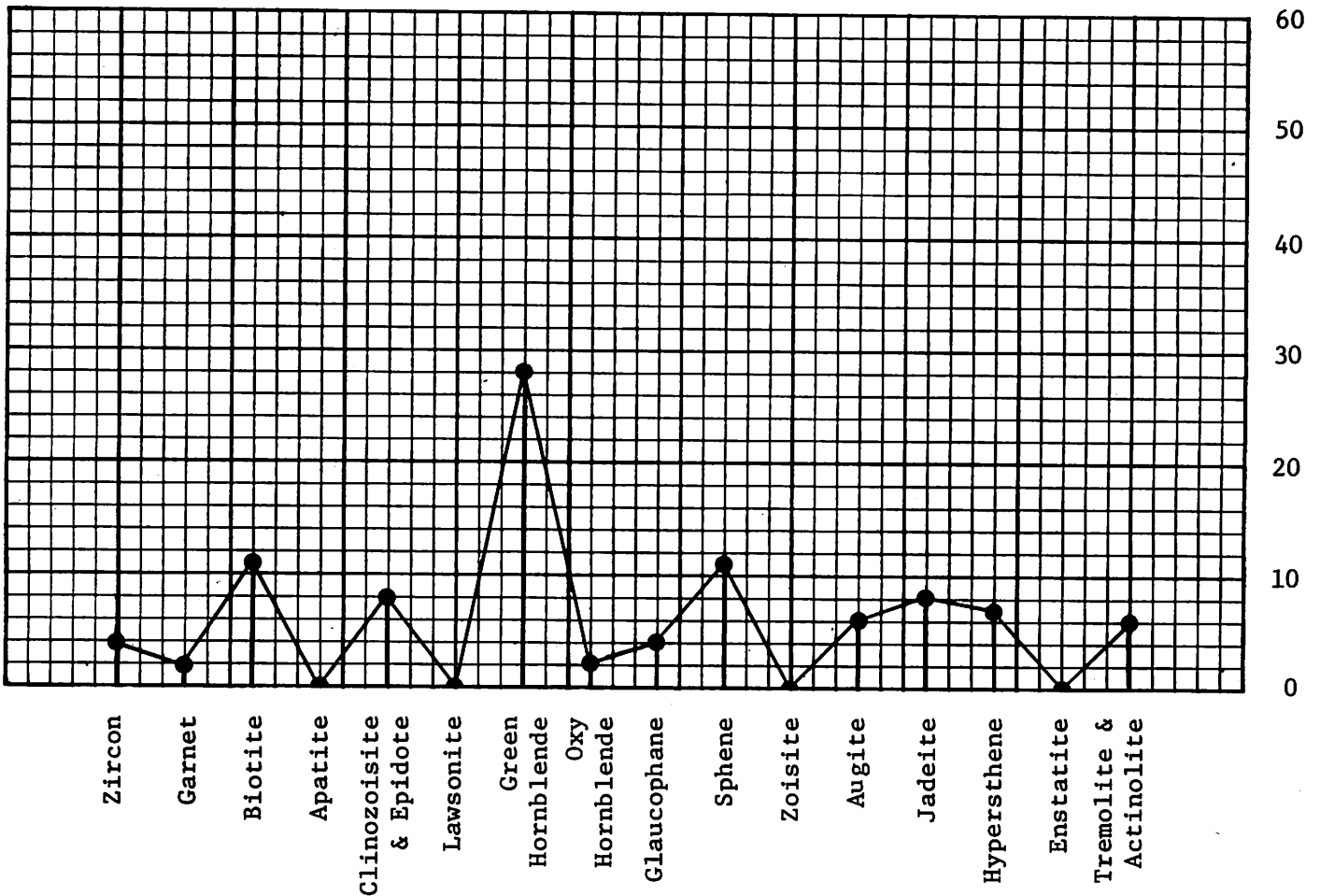
<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1
Carbonate	2

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	6
Magnetite	17
Picotite	1
Pyrite	8
Rock Frag.	7

Analyst C. Isselhardt

SAMPLE 1979

Location 37°53'57" 122°40'9"W Wt. % of SF/Total Sample 38.00  
 Depth 6.00 meters 3.83 fathoms Wt. % of HM/SF 0.04  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 261  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 43  
 % Opaques 27  
 % Alterites and Unknowns 30



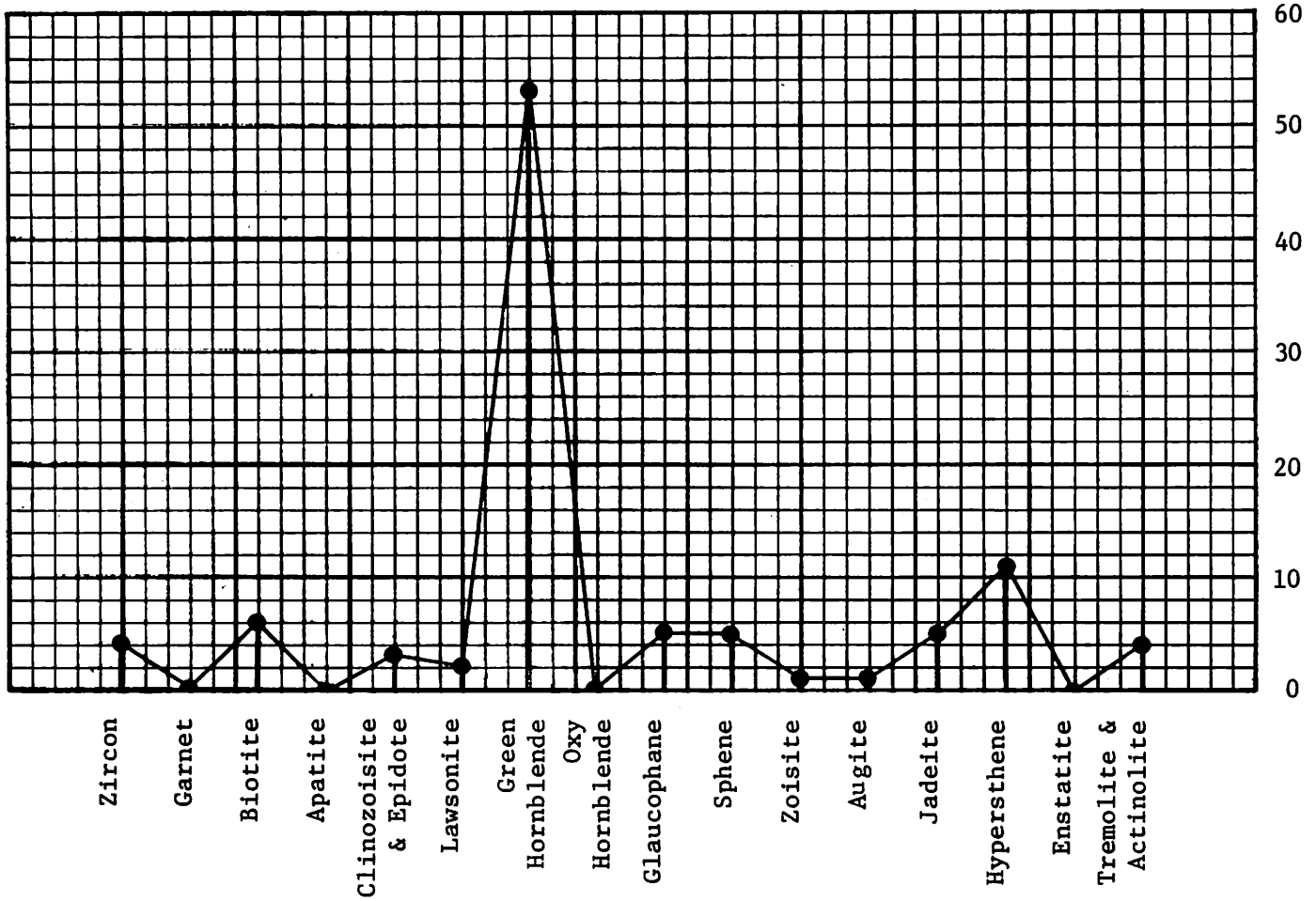
Other Transparent Minerals

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>	<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Carbonate</u>	<u>4</u>	<u>Hematite</u>	<u>28</u>
<u>Chlorite</u>	<u>1</u>	<u>Magnetite</u>	<u>23</u>
_____	_____	<u>Rock Frag.</u>	<u>20</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Analyst L. Osuch

Location 37°53'57"N 122°40'9"W Wt. % of SF/Total Sample 43.60  
 Depth 6.00 meters 3.83 fathoms Wt. % of HM/SF 1.37  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 285  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 36  
 % Opaques 13  
 % Alterites and Unknowns 51



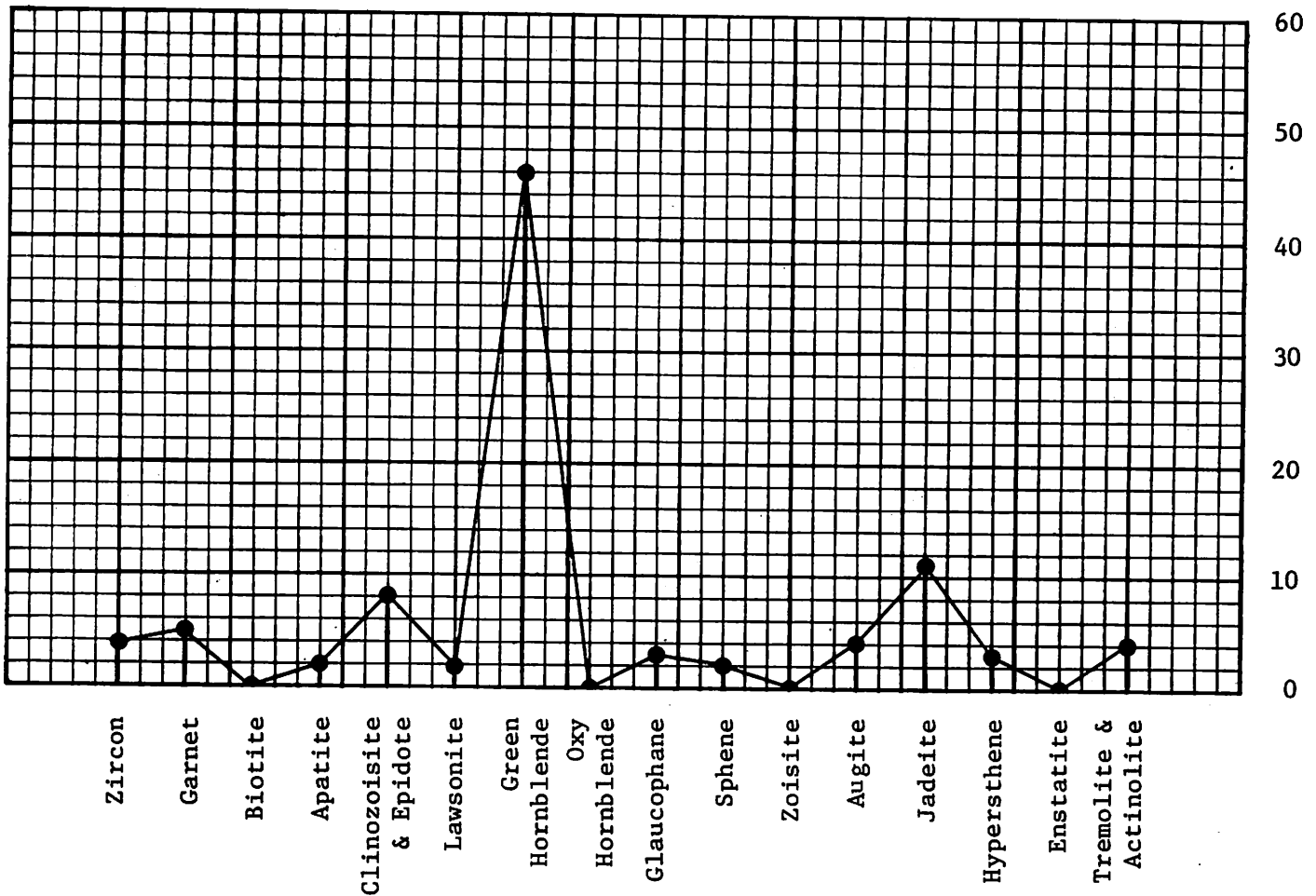
Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	13
Magnetite	7
Picotite	3
Rock Frag.	15

## SAMPLE 1979

Location 37°53'57"N 122°40'9"Wt. % of SF/Total Sample 6.63Depth 6.00 meters 3.83 fathomsWt. % of HM/SF 7.47Size Fraction (SF) 0.088 - 0.061 mmTotal Grains Counted 183Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 55% Opaques 27% Alterites and Unknowns 19Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	5

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	21
Picotite	4
Pyrite	1
Gold	1
Rock Frag.	17

Analyst L. Osuch



Location 37°54'02"N 122°40'06"W

Wt. % of SF/Total Sample 38.10

Depth 6.71 meters 3.67 fathoms

Wt. % of HM/SF 0.22

Size Fraction (SF) 0.175 - 0.124 mm

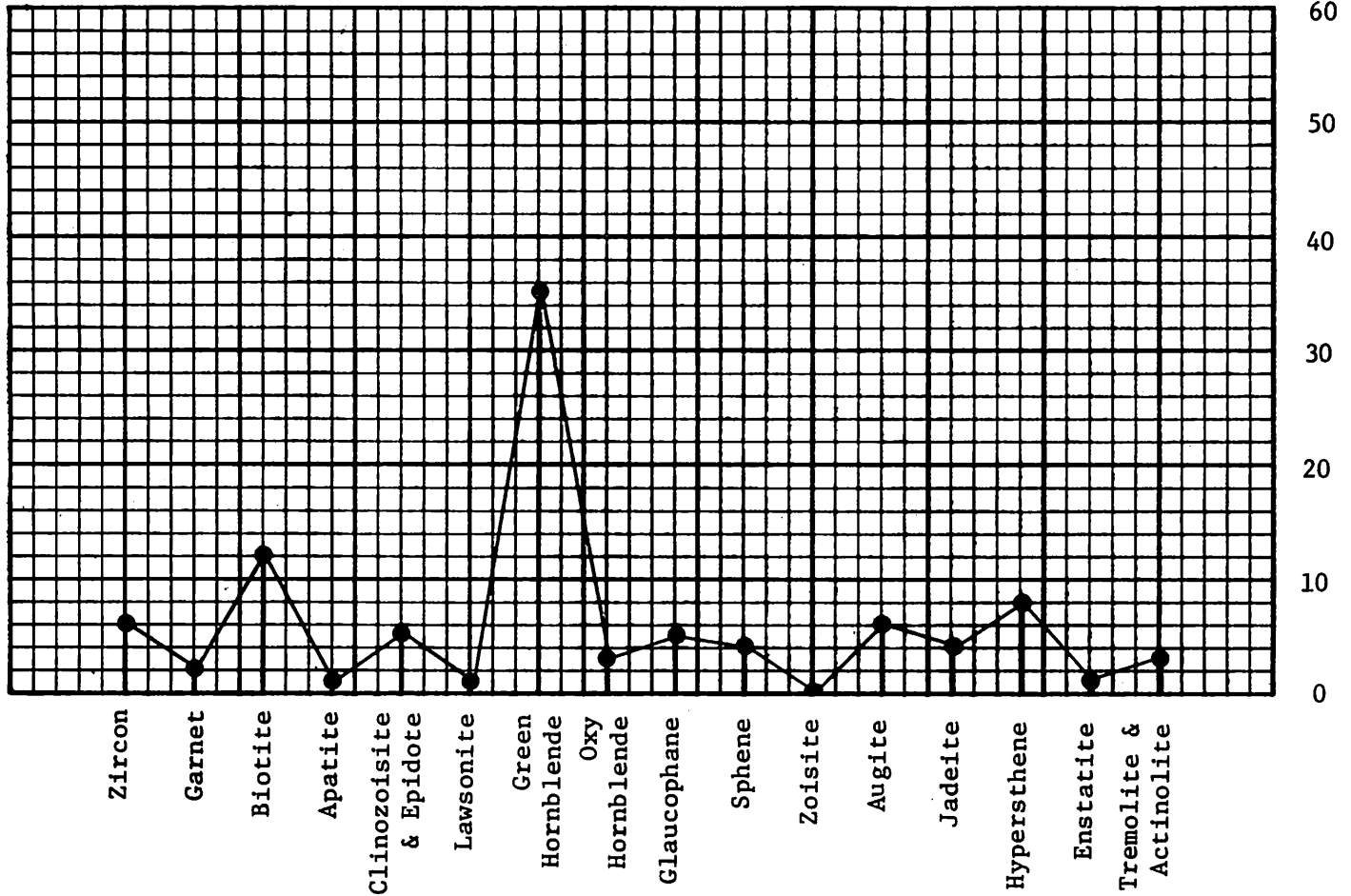
Total Grains Counted 211

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 50

% Opaques 12

% Alterites and Unknowns 38



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	4
Rutile	1

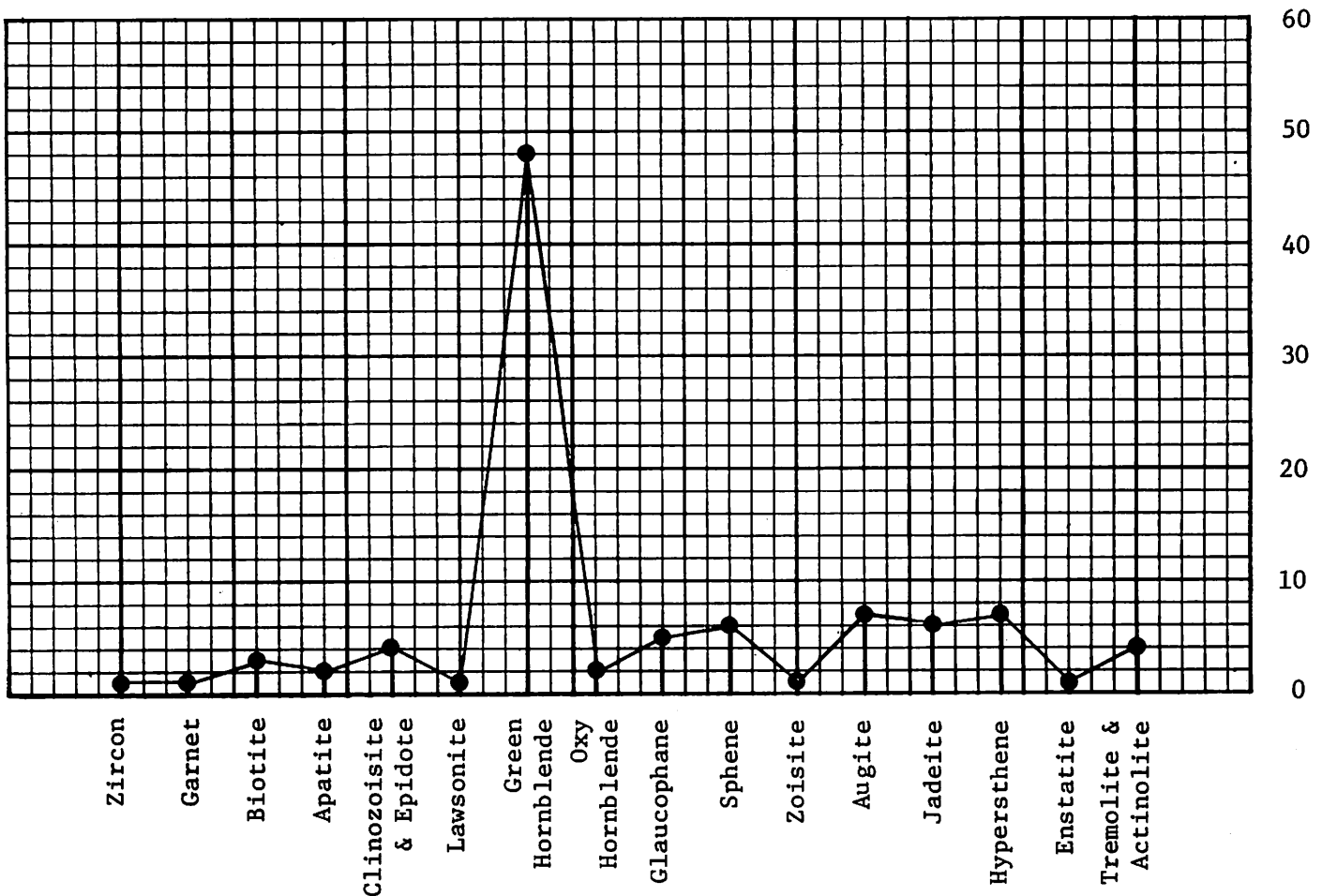
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>

Analyst C. Isselhardt  
L. Osuch  
T. Yancey

SAMPLE 1980

Location 37°54'02"N 122°40'06"W Wt. % of SF/Total Sample 44.60  
 Depth 6.71 meters 3.67 fathoms Wt. % of HM/SF 1.32  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 204  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 52  
 % Opaques 7  
 % Alterites and Unknowns 41



Other Transparent Minerals

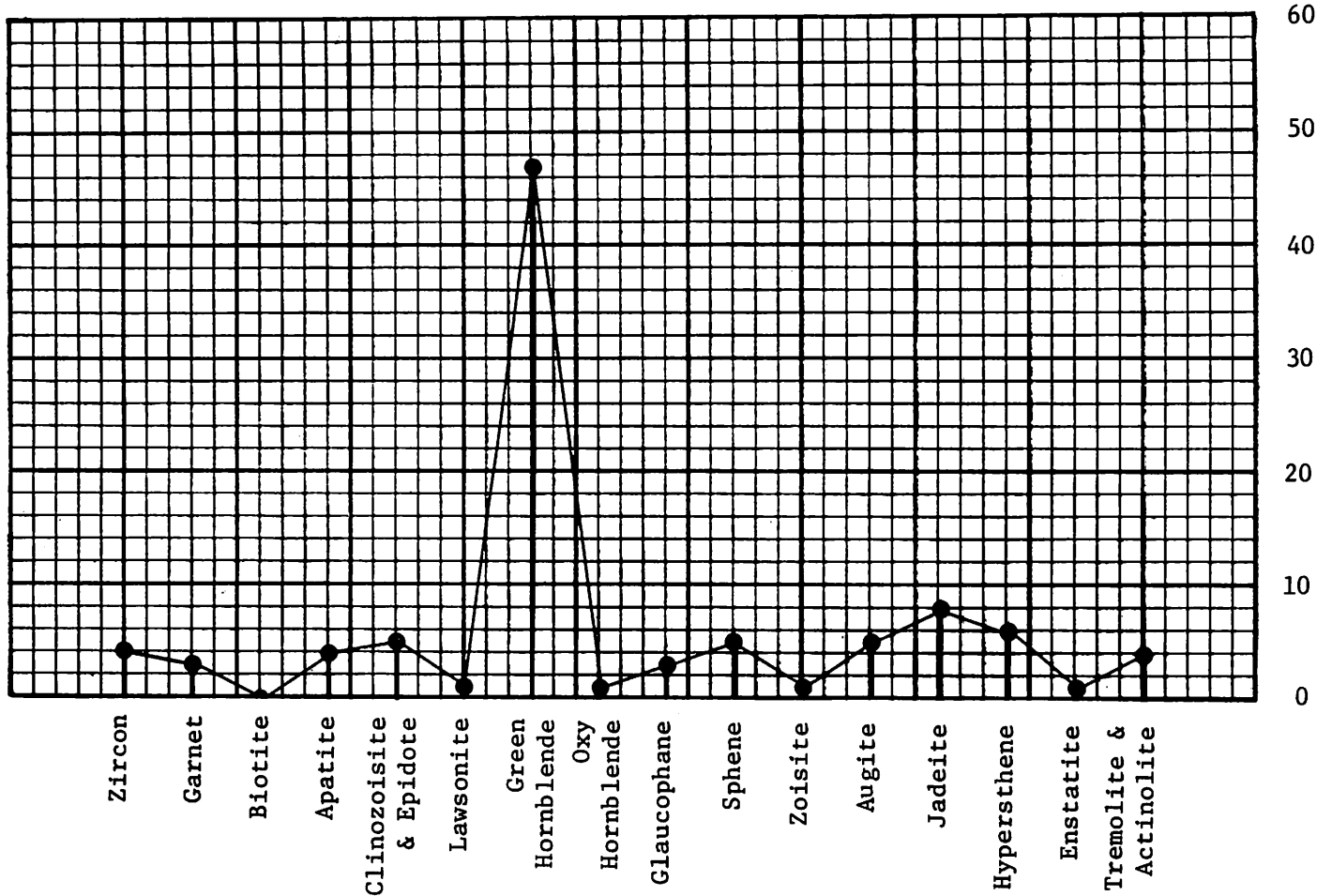
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>

Analyst T. Yancey  
C. Isselhardt  
L. Osuch

Location 37°54'02"N 122°40'06"W Wt. % of SF/Total Sample 6.12  
 Depth 6.71 meters 3.67 fathoms Wt. % of HM/SF 9.47  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 171  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 57  
 % Opaques 16  
 % Alterites and Unknowns 27



Other Transparent Minerals

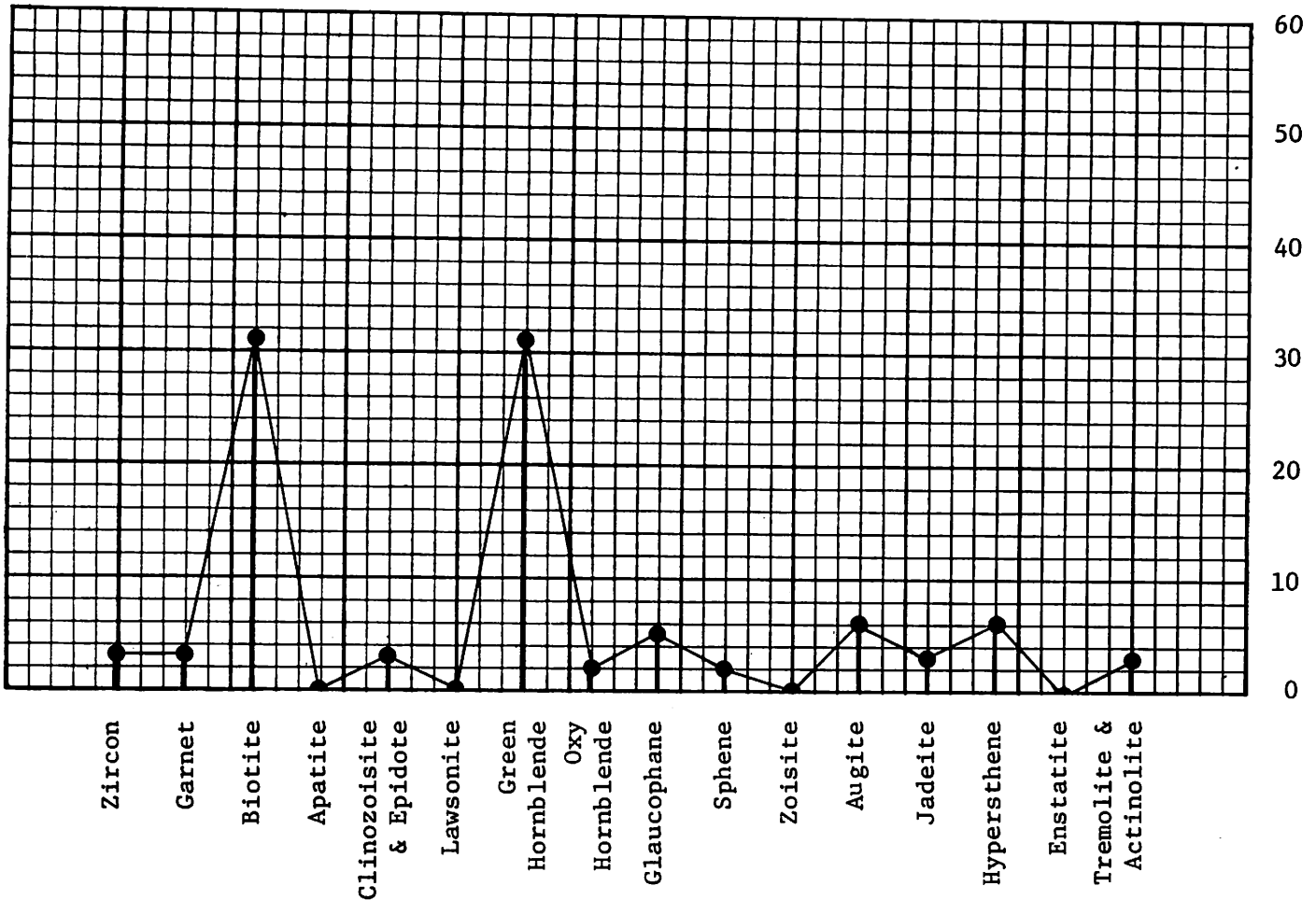
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2
Rutile	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>

Analyst T. Yancey  
L. Osuch  
C. Isselhardt

## SAMPLE 1981

Location 37°54'7"N 122°39'56"WWt. % of SF/Total Sample 17.80Depth 7.62 meters 4.17 fathomsWt. % of HM/SF 0.14Size Fraction (SF) 0.175 - 0.124 mmTotal Grains Counted 210Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 61% Opaques 9.5% Alterites and Unknowns 29.5Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Chlorite</u>	<u>1</u>
<u>Carbonate</u>	<u>4</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

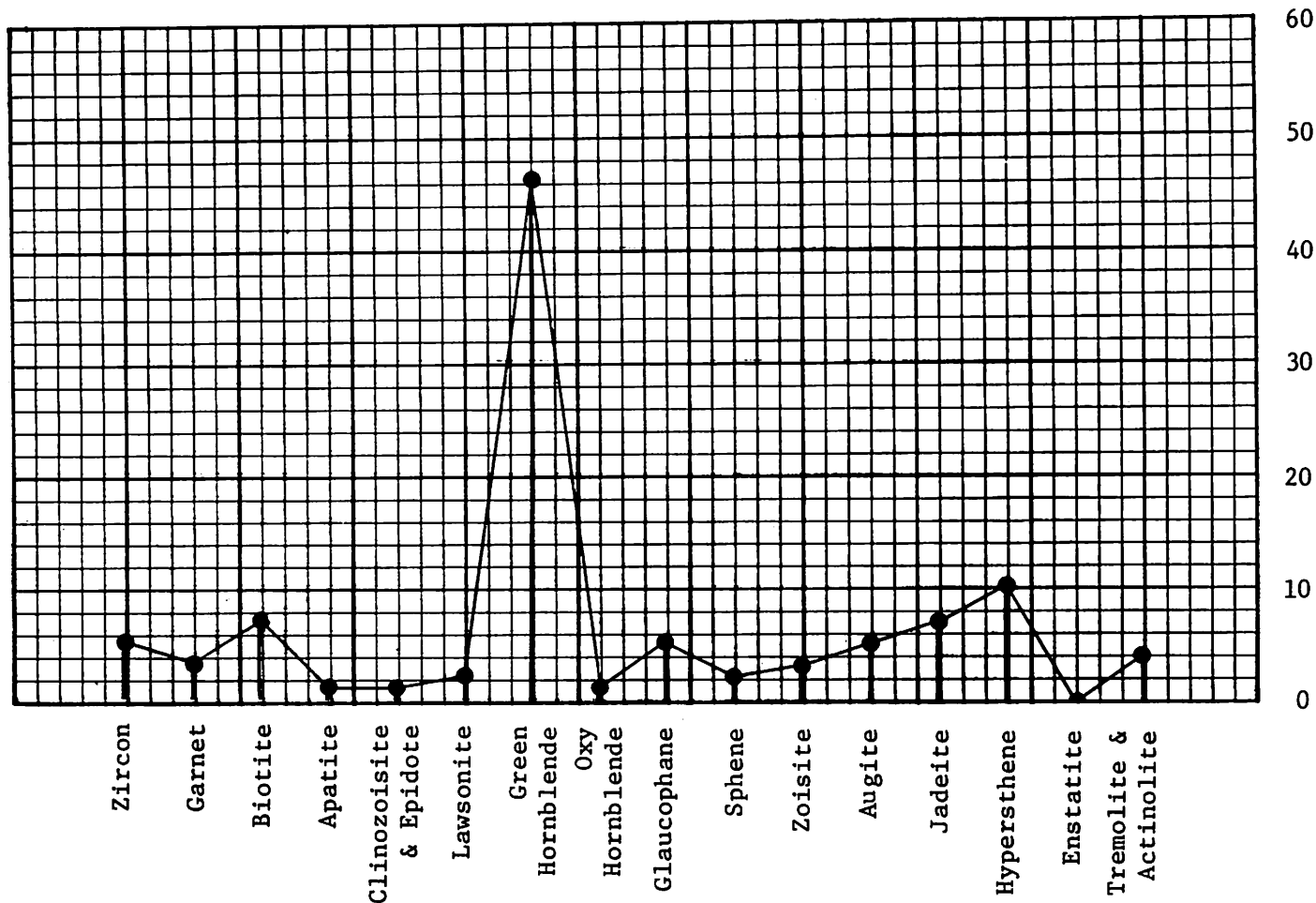
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>9</u>
<u>Magnetite</u>	<u>6</u>
<u>Picotite</u>	<u>2</u>
<u>Rock Frag.</u>	<u>3</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Analyst C. Isselhardt

SAMPLE 1981

Location 37°54'7"N 122°39'56"W Wt. % of SF/Total Sample 53.15  
 Depth 7.62 meters 4.17 fathoms Wt. % of HM/SF 0.95  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 209  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 52.7  
 % Opaques 7.6  
 % Alterites and Unknowns 39.7



Other Transparent Minerals

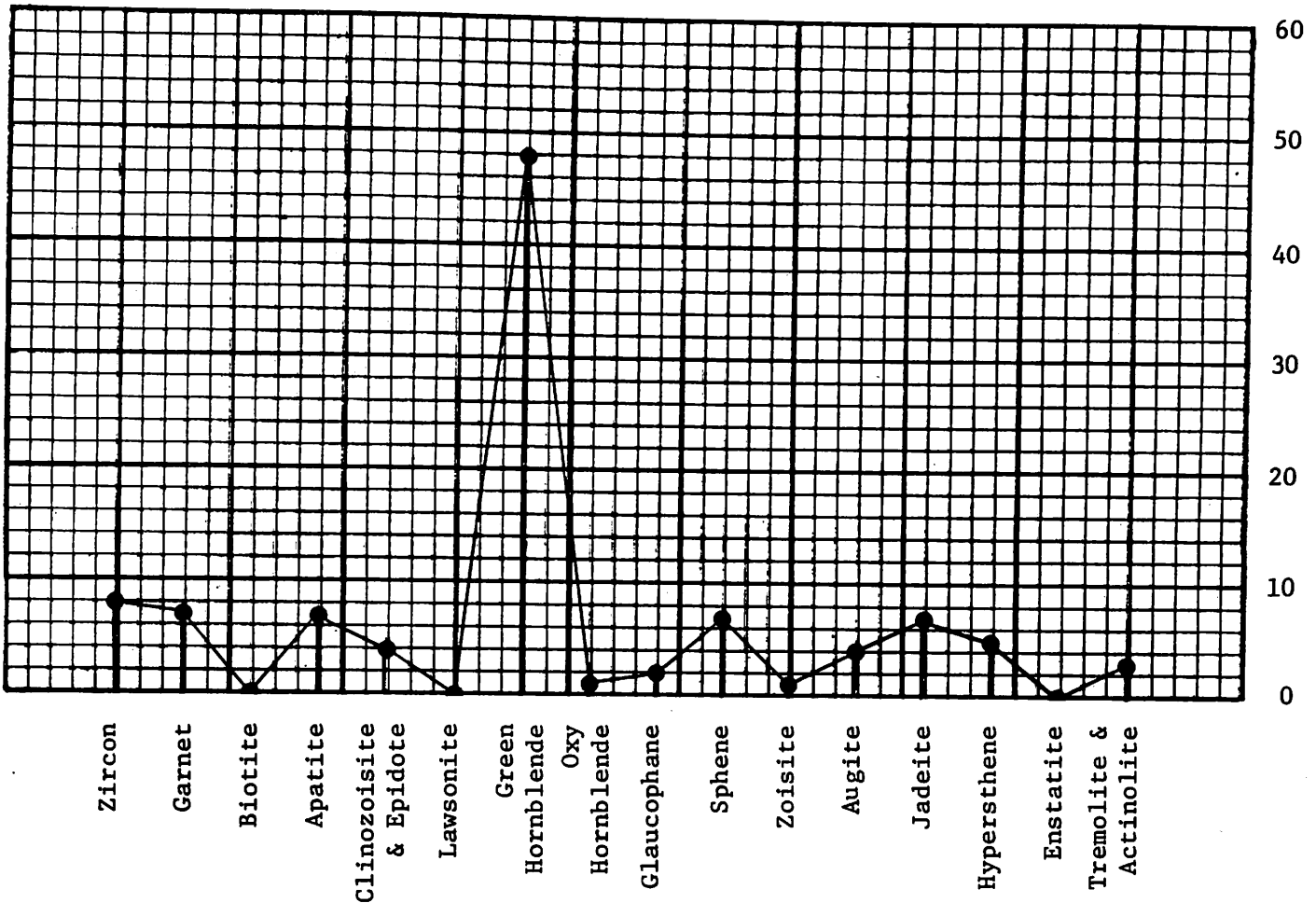
<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	3
Picotite	3
Pyrite	2
Rock Frag.	5

Analyst C. Isselhardt

## SAMPLE 1981

Location 37°54'7"N 122°39'56"WWt. % of SF/Total Sample 18.90Depth 7.62 meters 4.17 fathomsWt. % of HM/SF 3.81Size Fraction (SF) 0.088 - 0.061 mmTotal Grains Counted 215Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 50.2% Opaques 13.0% Alterites and Unknowns 36.8Other Transparent Minerals

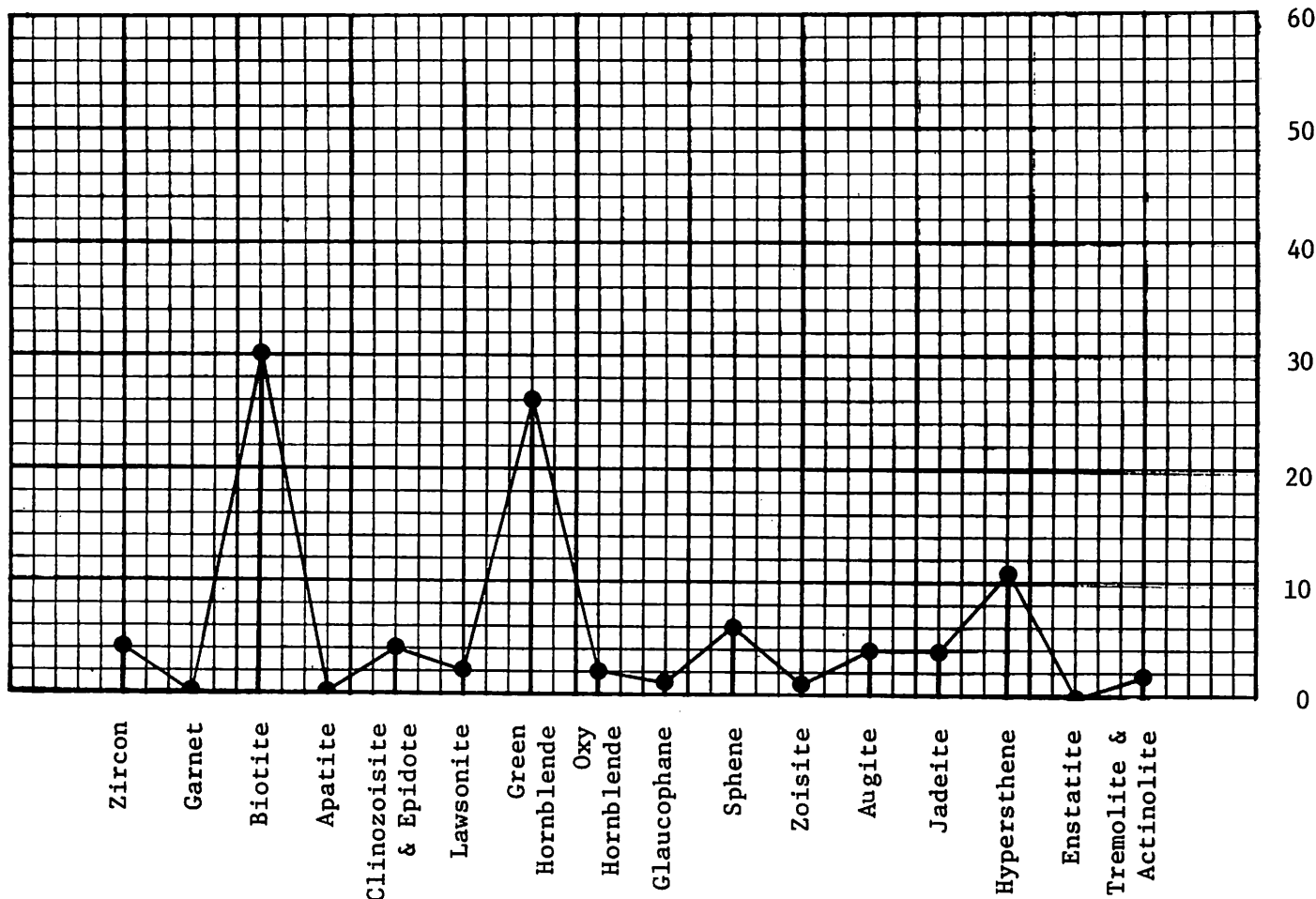
<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	12
Picotite	7
Rock Frag.	6
_____	_____
_____	_____

Analyst C. Isselhardt

Location 37°54'N 122°39'43"W Wt. % of SF/Total Sample 17.80  
 Depth 8.84 meters 4.83 fathoms Wt. % of HM/SF 0.53  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 236  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 58  
 % Opaques 16  
 % Alterites and Unknowns 26



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Chlorite</u>	<u>2</u>
<u>Pumpellyte</u>	<u>1</u>
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>23</u>
<u>Magnetite</u>	<u>3</u>
<u>Picotite</u>	<u>5</u>
<u>Rock Frag.</u>	<u>8</u>
_____	_____
_____	_____

SAMPLE 1982

Location 37°54'N 122°39'43"W.

Wt. % of SF/Total Sample 53.15

Depth 8.84 meters 4.83 fathoms

Wt. % of HM/SF 1.10

Size Fraction (SF) 0.124 - 0.088 mm

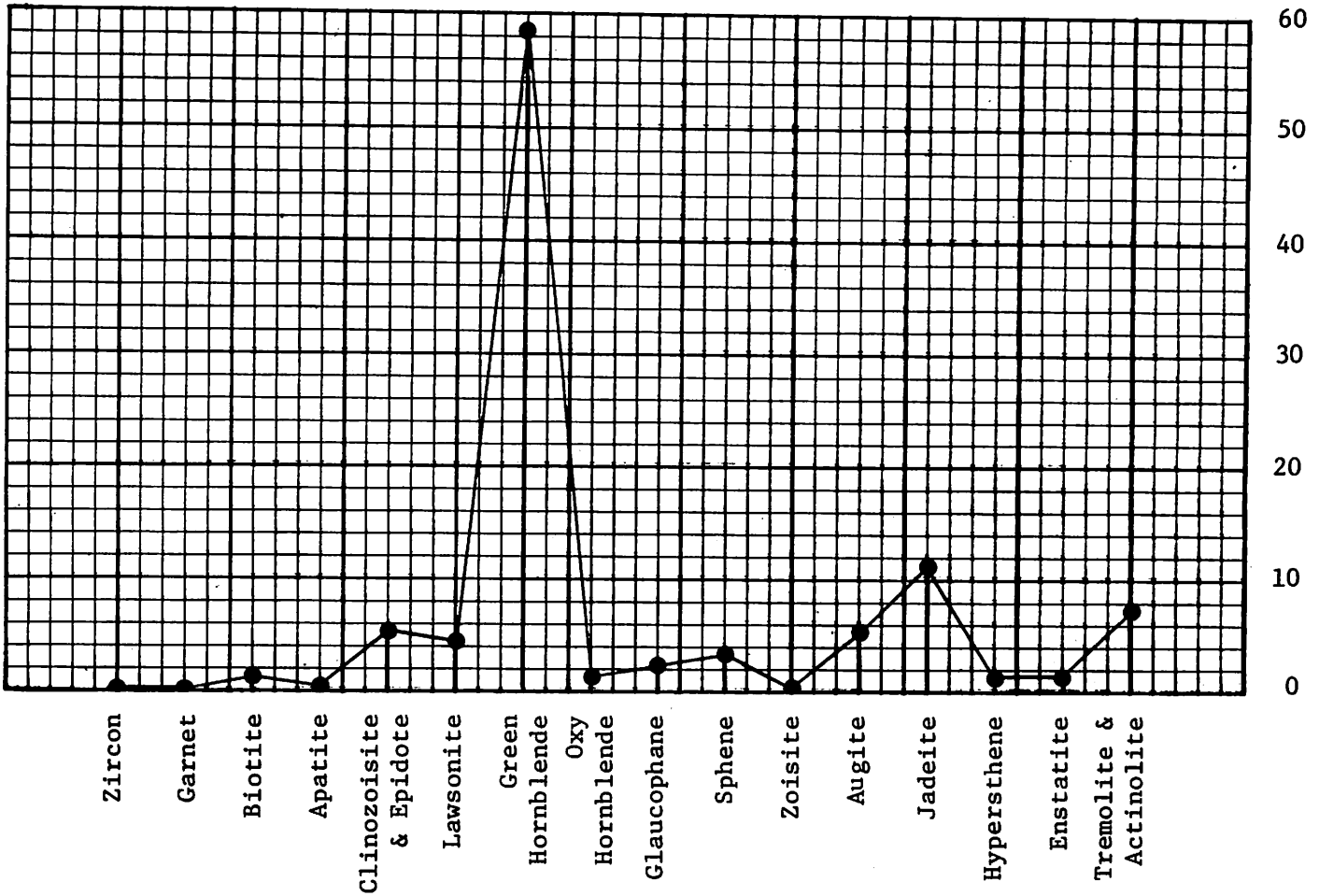
Total Grains Counted 194

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 53

% Opaques 9

% Alterites and Unknowns 38



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Carbonate</u>	<u>1</u>
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

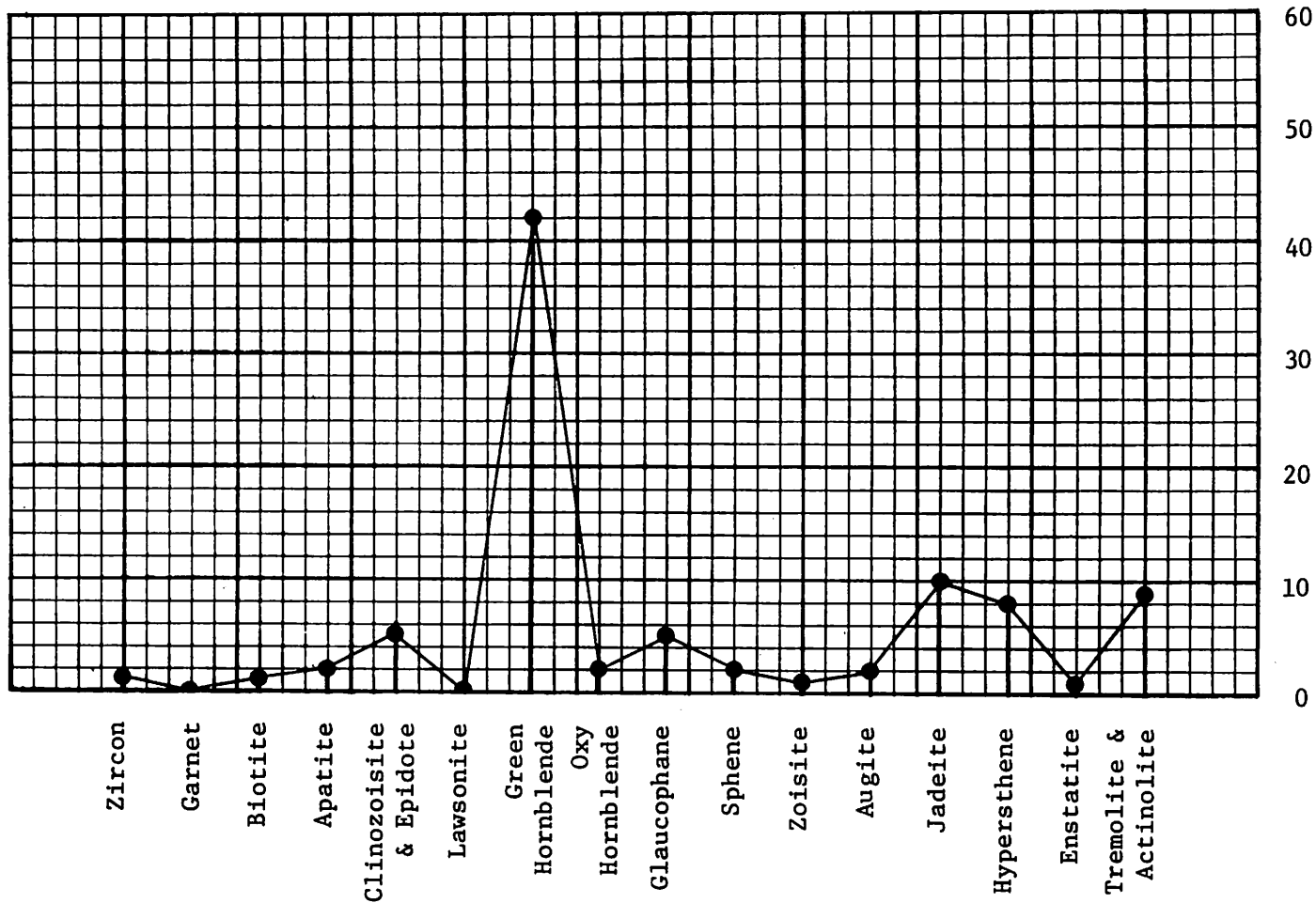
<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>7</u>
<u>Magnetite</u>	<u>3</u>
<u>Picotite</u>	<u>1</u>
<u>Rock Frag.</u>	<u>7</u>
_____	_____
_____	_____

Analyst L. Osuch



SAMPLE 1982

Location 37°54'N 122°39'43"W Wt. % of SF/Total Sample 18.90  
 Depth 8.84 meters 4.83 fathoms Wt. % of HM/SF 2.20  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 159  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 66  
 % Opaques 15  
 % Alterites and Unknowns 19



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	3
Carbonate	9

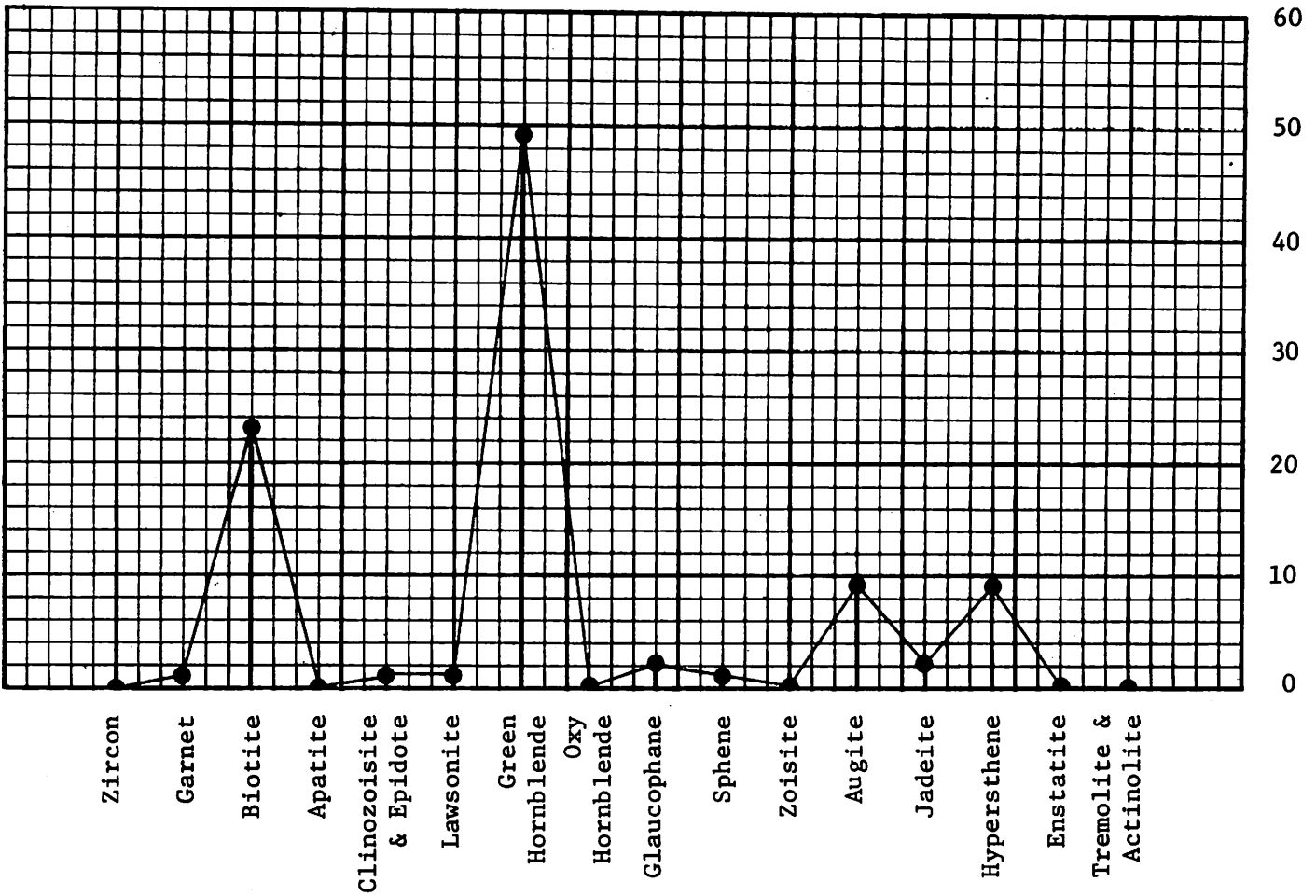
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	8
Picotite	2
Pyrite	1
Rock Frag.	12

Analyst L. Osuch

SAMPLE 1983

Location 37°53'51"N 122°39'25"W Wt. % of SF/Total Sample 10.67  
 Depth 9.75 meters 5.33 fathoms Wt. % of HM/SF 0.50  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 199  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 64.8  
 % Opaques 7.0  
 % Alterites and Unknowns 28.2



Other Transparent Minerals

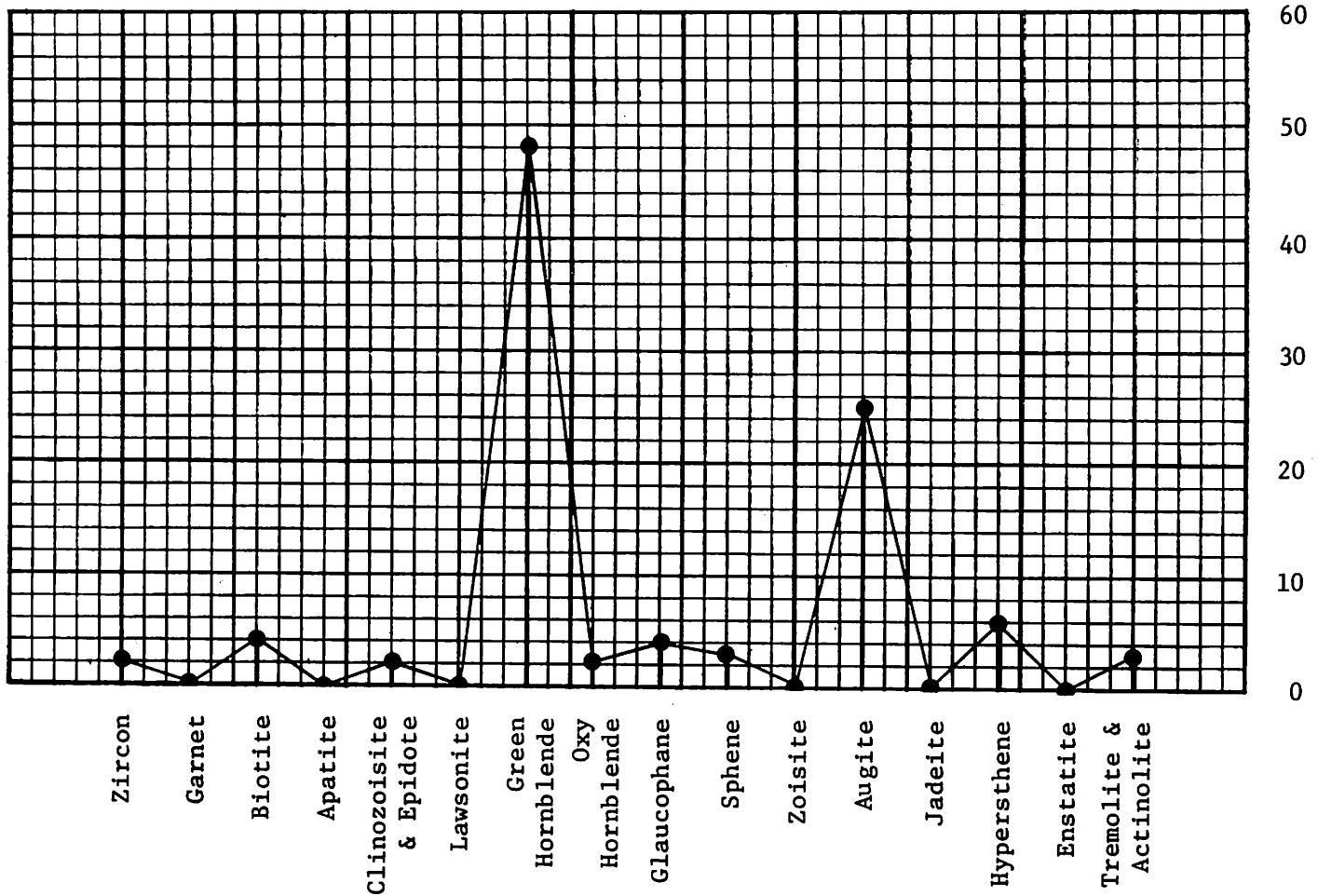
<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Carbonate</u>	<u>5</u>
<u>Pumpellyite</u>	<u>1</u>
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>10</u>
<u>Magnetite</u>	<u>4</u>
_____	_____
_____	_____
_____	_____
_____	_____

Analyst T. Yancey

Location 37°53'51"N 122°39'25"W Wt. % of SF/Total Sample 55.01  
 Depth 9.75 meters 5.33 fathoms Wt. % of HM/SF 1.22  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 194  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 52.1  
 % Opaques 8.2  
 % Alterites and Unknowns 39.7



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

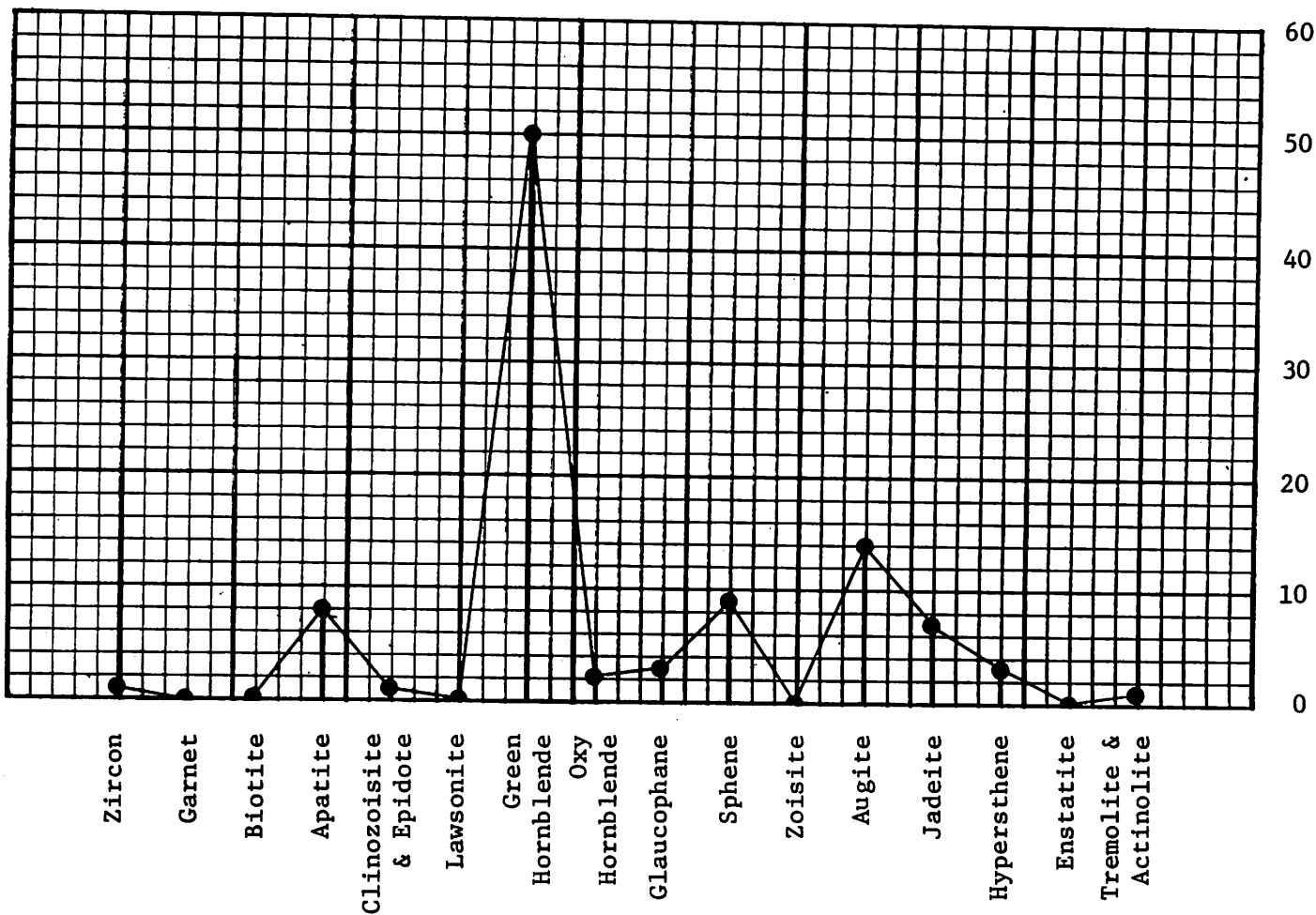
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	10
Picotite	3

Analyst T. Yancey

SAMPLE 1983

Location 37°53'51"N 122°39'25"W Wt. % of SF/Total Sample 24.99  
 Depth 9.75 meters 5.33 fathoms Wt. % of HM/SF 3.13  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 212  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 43.9  
 % Opaques 18.4  
 % Alterites and Unknowns 37.7



Other Transparent Minerals

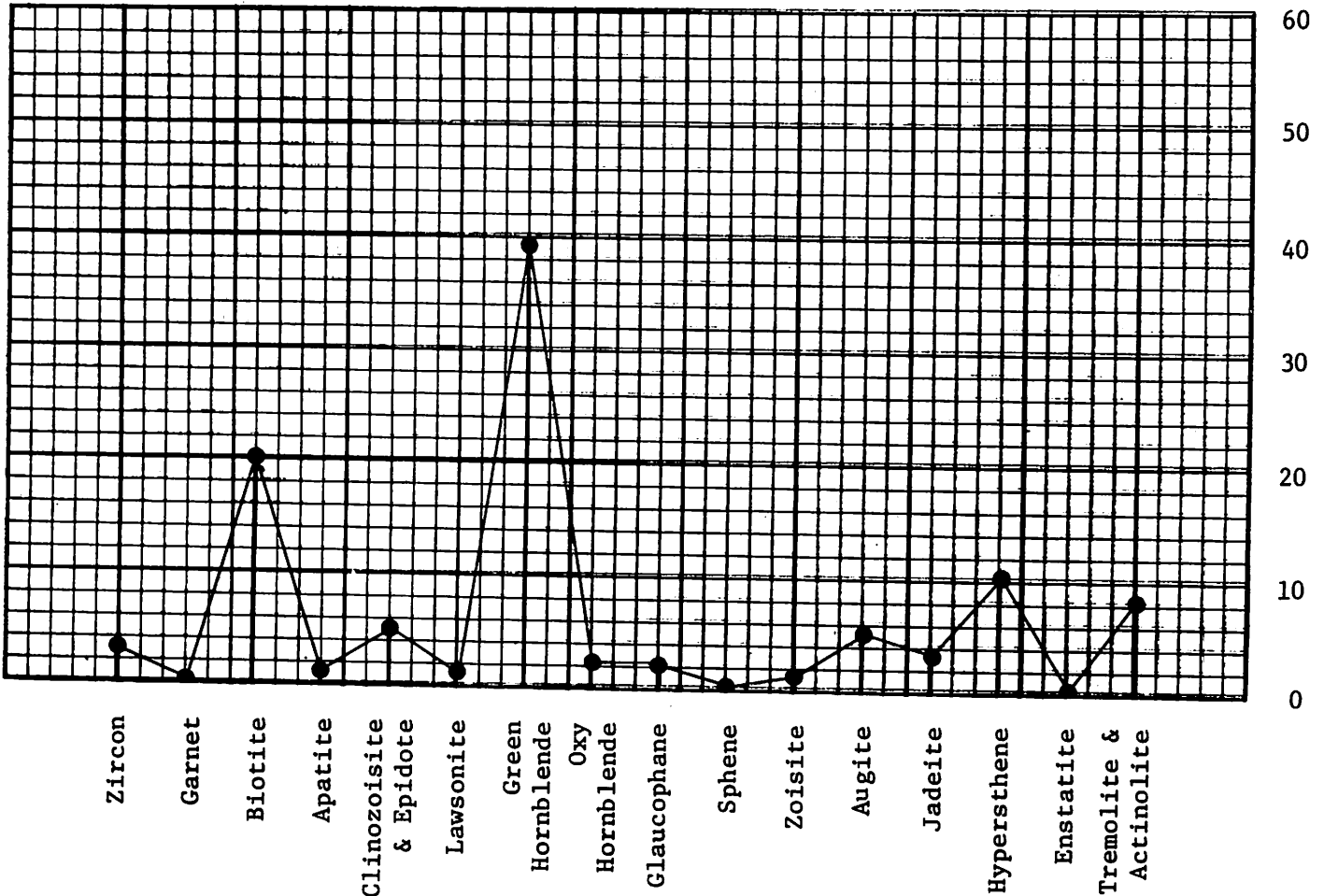
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	29
Picotite	7

Analyst T. Yancey

Location 37°53'42"N 122°39'3"W Wt. % of SF/Total Sample 11.05  
 Depth 11.58 meters 6.33 fathoms Wt. % of HM/SF 0.24  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 220  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 59.6  
 % Opaques 4.5  
 % Alterites and Unknowns 35.9



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Pumpellyite</u>	<u>1</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

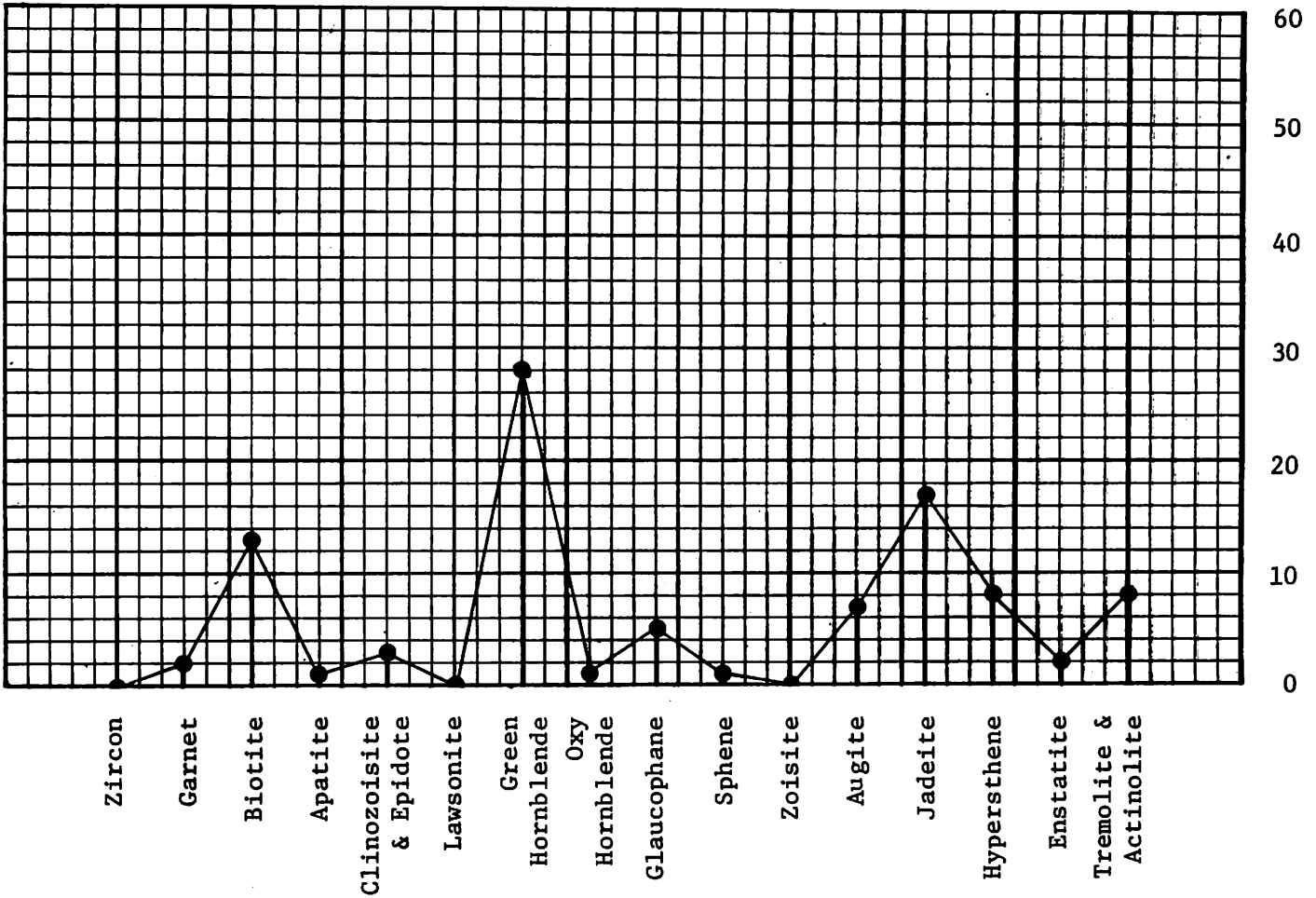
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>1</u>
<u>Magnetite</u>	<u>3</u>
<u>Rock Frag.</u>	<u>6</u>
_____	_____
_____	_____
_____	_____

Analyst C. Isselhardt

SAMPLE 1984

Location 37°53'42"N 122°39'3"W Wt. % of SF/Total Sample 58.99  
 Depth 11.58meters 6.33 fathoms Wt. % of HM/SF 0.79  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 172  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 63.9  
 % Opaques 4.7  
 % Alterites and Unknowns 31.4



Other Transparent Minerals

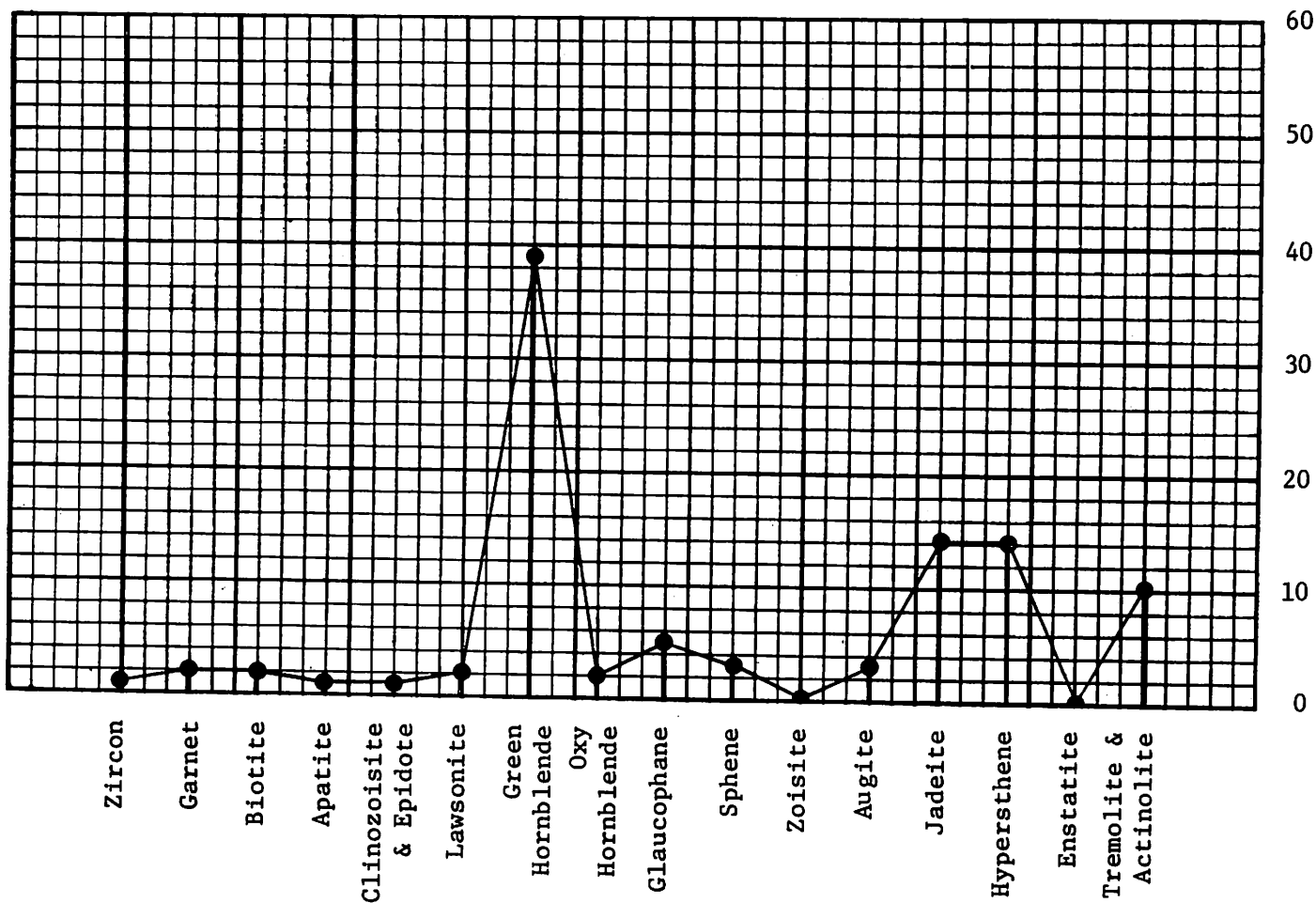
<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	2
Carbonate	2
Pumpellyite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	2
Rock Frag.	3

Analyst C. Isselhardt

Location 37°53'42"N 122°39'3"W Wt. % of SF/Total Sample 19.47  
 Depth 11.58 meters 6.33 fathoms Wt. % of HM/SF 2.22  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 184  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 57.1  
 % Opaques 11.4  
 % Alterites and Unknowns 31.5



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1
Pumpellyite	1

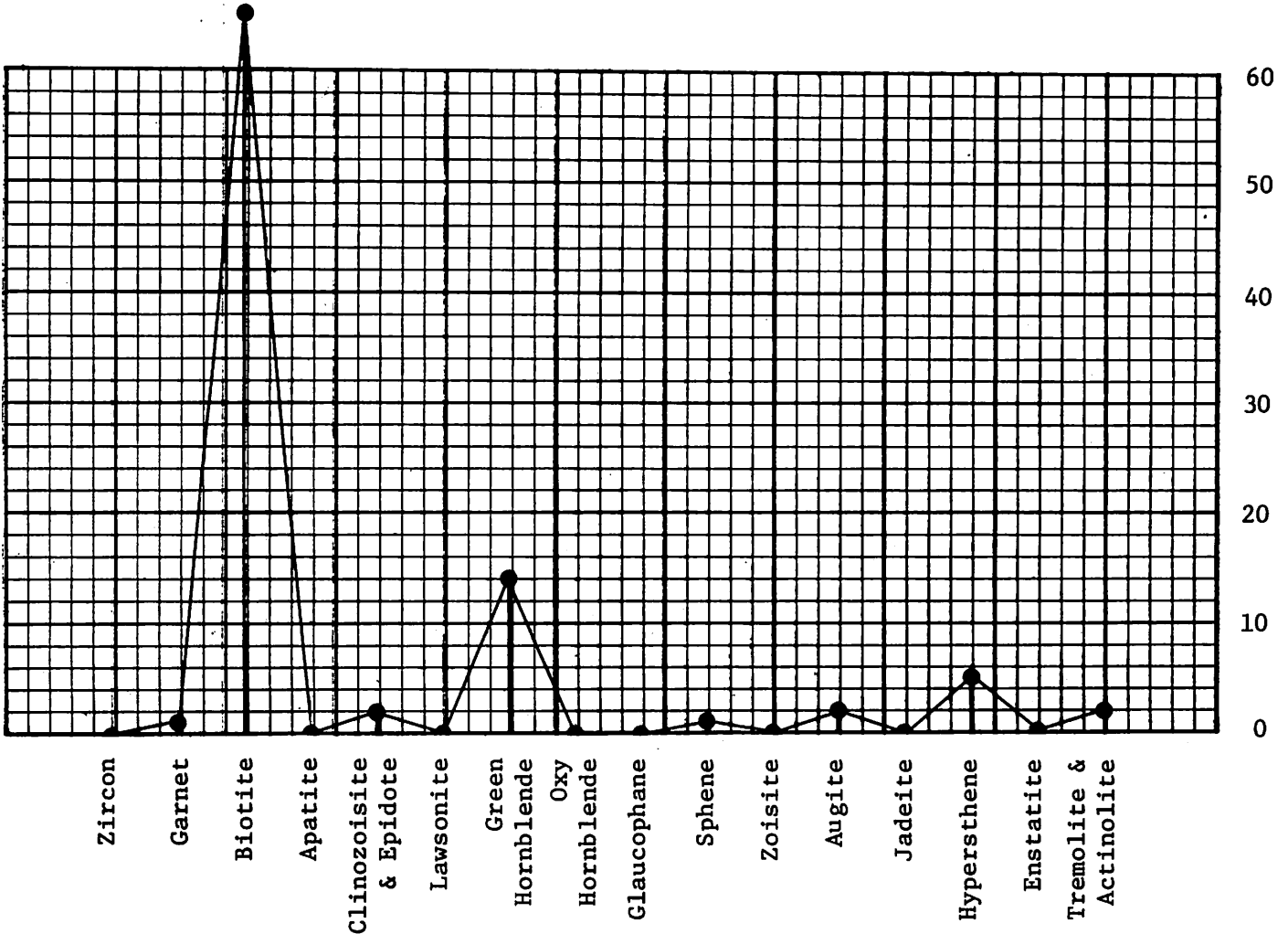
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	7
Rock Frag.	11

Analyst C. Isselhardt

SAMPLE 1985

Location 37°53'25"N 122°38'44"W Wt. % of SF/Total Sample 8.36  
 Depth 12.80 meters 7.00 fathoms Wt. % of HM/SF 0.51  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 203  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 62  
 % Opaques 9  
 % Alterites and Unknowns 29



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	7
Chlorite	2

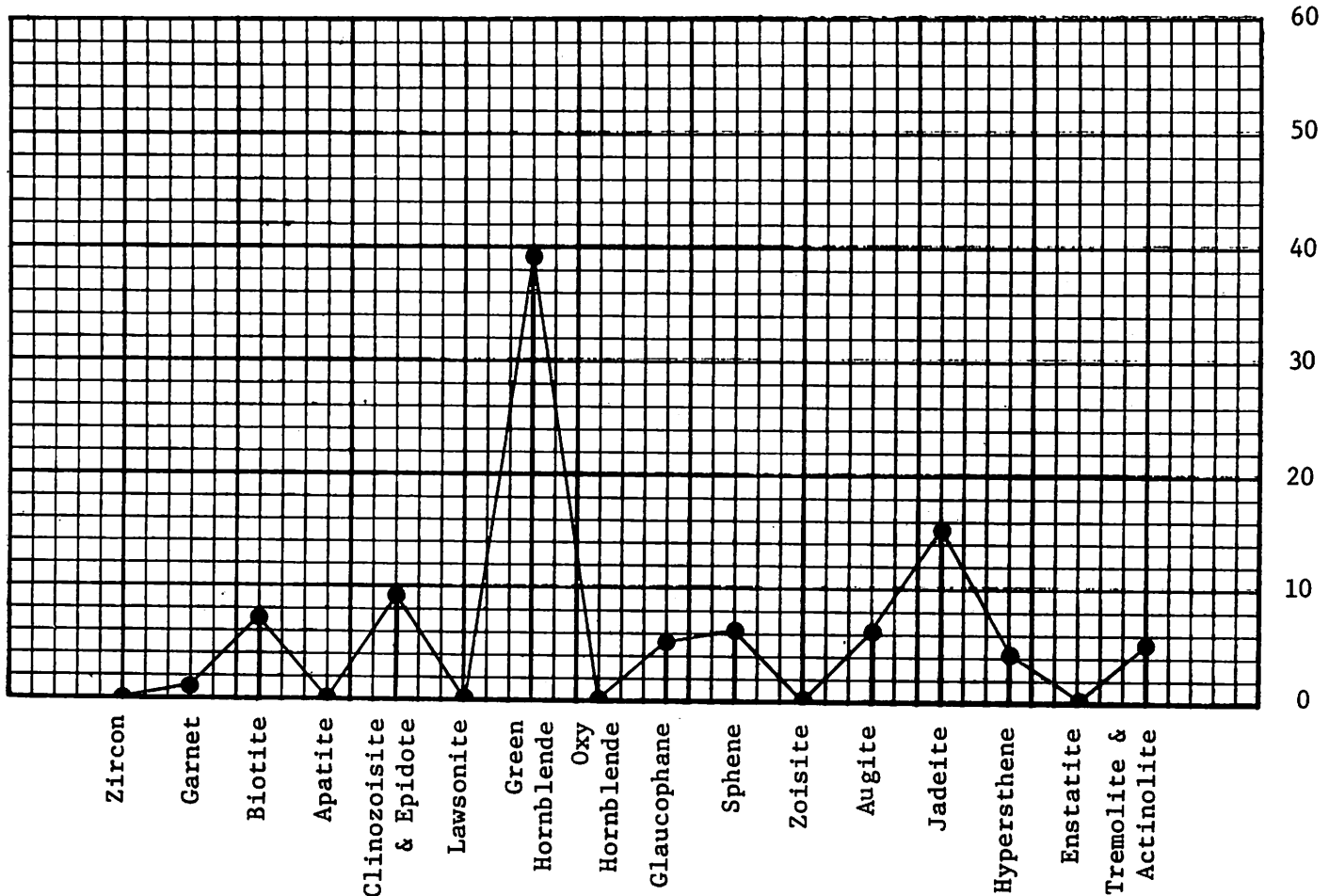
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	4
Rock Frag.	12

Analyst L. Osuch



Location 37°53'25"N 122°38'44"W Wt. % of SF/Total Sample 48.10  
 Depth 12.80 meters 7.00 fathoms Wt. % of HM/SF 0.38  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 170  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 64  
 % Opaques 13  
 % Alterites and Unknowns 24



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Carbonate</u>	<u>3</u>
<u>Chlorite</u>	<u>2</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

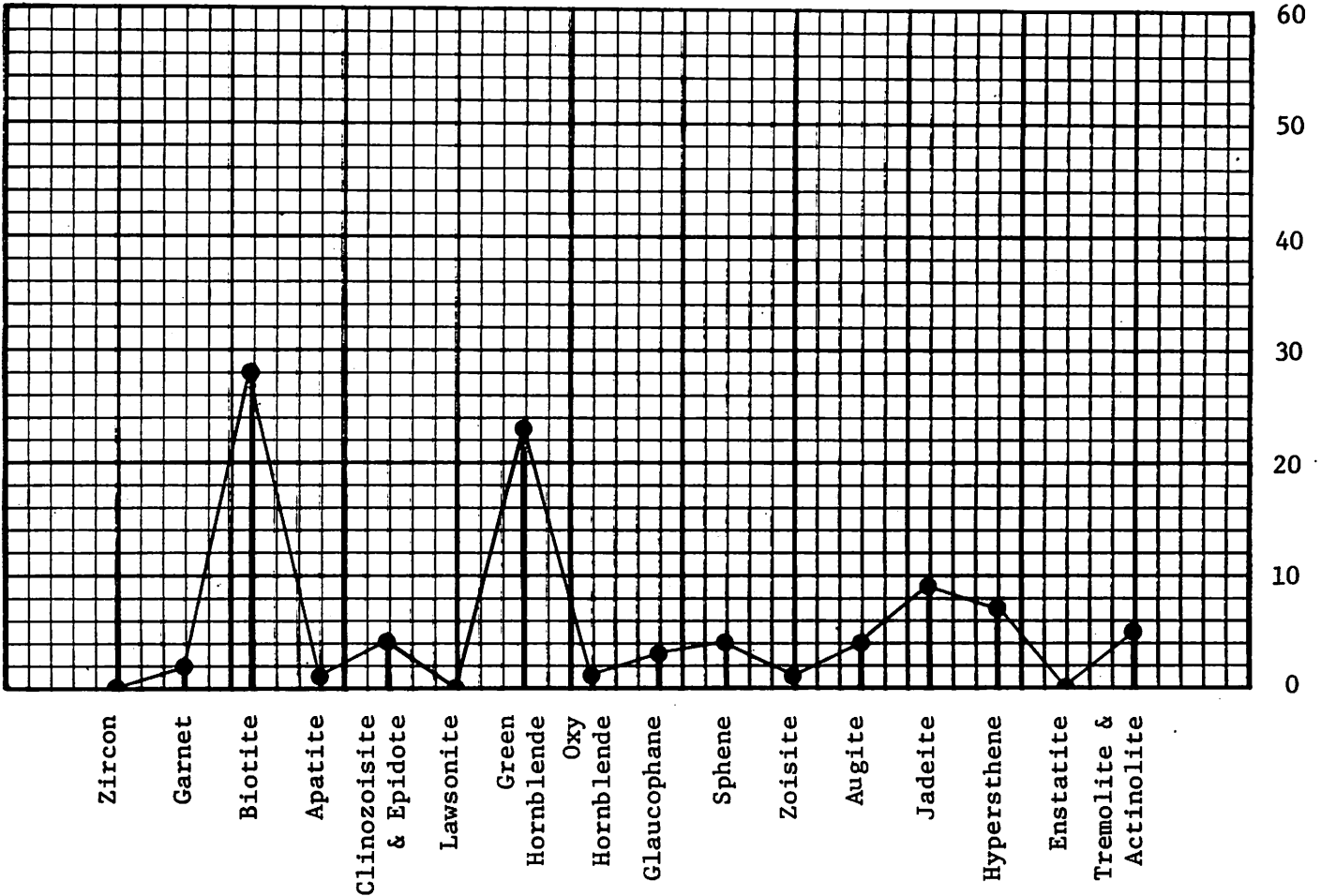
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>3</u>
<u>Magnetite</u>	<u>5</u>
<u>Picotite</u>	<u>1</u>
<u>Rock Frag.</u>	<u>13</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Analyst L. Osuch

SAMPLE 1985

Location 37°53'25"N 122°38'44"W Wt. % of SF/Total Sample 26.41  
 Depth 12.80 meters 7.00 fathoms Wt. % of HM/SF 4.77  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 351  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 39  
 % Opaques 8  
 % Alterites and Unknowns 53



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	5
Chlorite	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	6
Magnetite	13
Picotite	2
Rock Frag.	6

Analyst L. Osuch

Location 37°53'10"N 122°38'13"W

Wt. % of SF/Total Sample 16.08

Depth 12.80 meters 7.00 fathoms

Wt. % of HM/SF 0.23

Size Fraction (SF) 0.175 - 0.124 mm

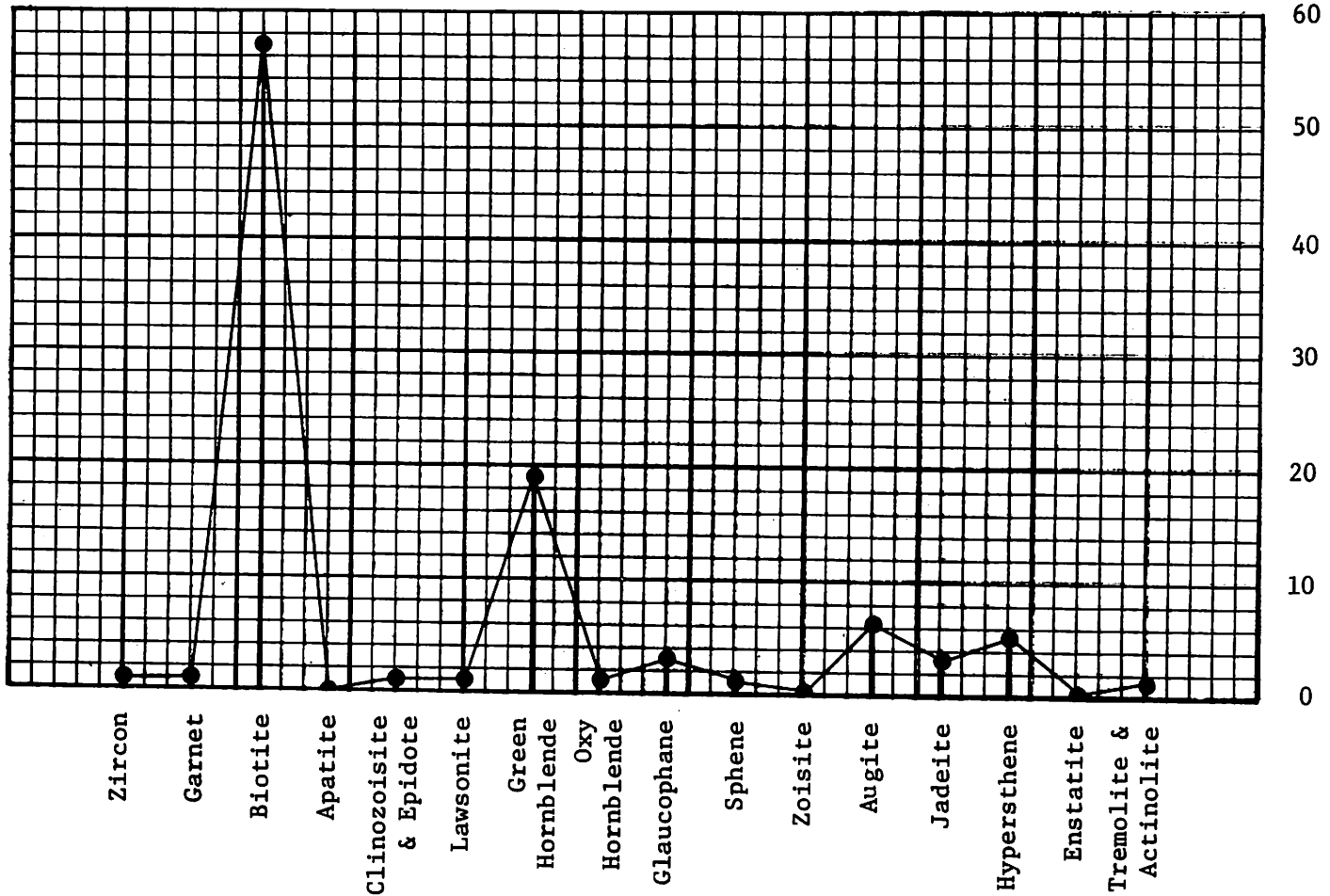
Total Grains Counted 508

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 46.3

% Opaques 7.3

% Alterites and Unknowns 46.4



Other Transparent Minerals

Other Opaque Minerals

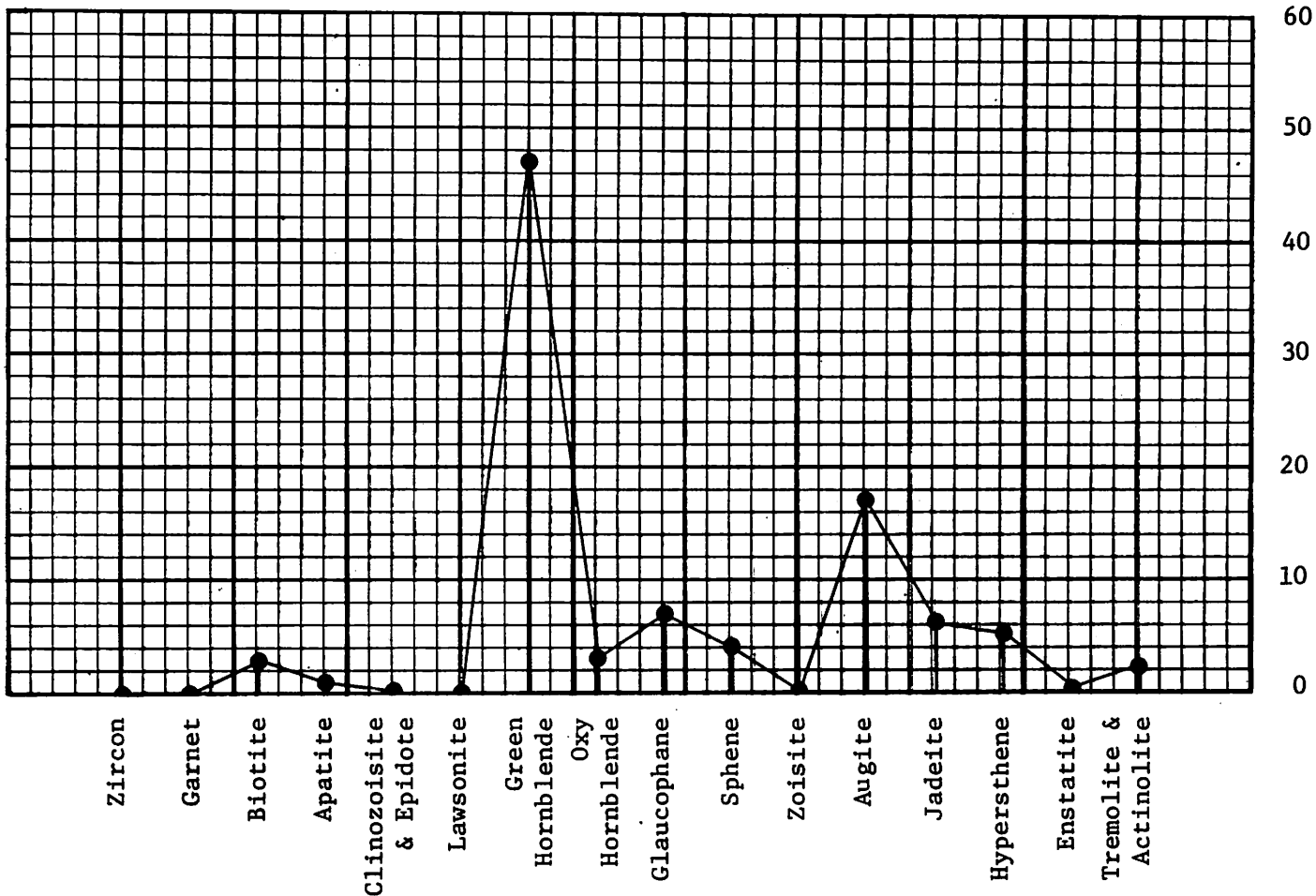
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	5

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	18
Magnetite	8
Pyrite	2
Rock Frag.	5

Analyst T. Yancey

SAMPLE 1986

Location 37°53'10"N 122°38'13"W Wt. % of SF/Total Sample 61.00  
 Depth 12.80 meters 7.00 fathoms Wt. % of HM/SF 0.62  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 331  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 30.2  
 % Opaques 9.4  
 % Alterites and Unknowns 60.4



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Carbonate</u>	<u>5</u>
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>10</u>
<u>Magnetite</u>	<u>12</u>
<u>Picotite</u>	<u>3</u>
<u>Pyrite</u>	<u>1</u>
<u>Rock Frag.</u>	<u>5</u>
_____	_____

Analyst T. Yancey

Location 37°53'10"N 122°38'13"W

Wt. % of SF/Total Sample 15.23

Depth 12.80 meters 7.00 fathoms

Wt. % of HM/SF 3.13

Size Fraction (SF) 0.088 - 0.061 mm

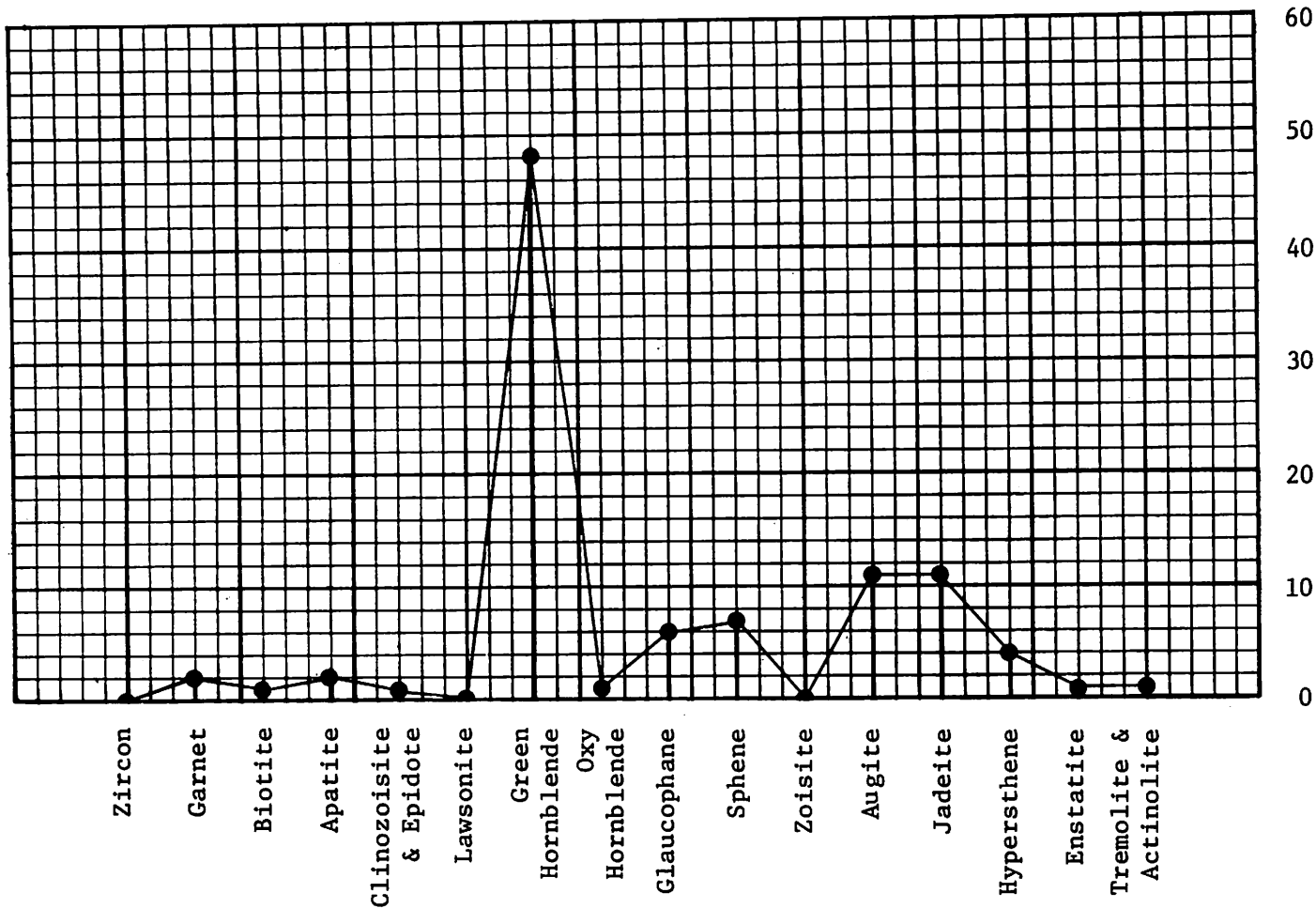
Total Grains Counted 199

% Transparent Grains 49.3

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Opaques 9.0

% Alterites and Unknowns 41.7



Other Transparent Minerals

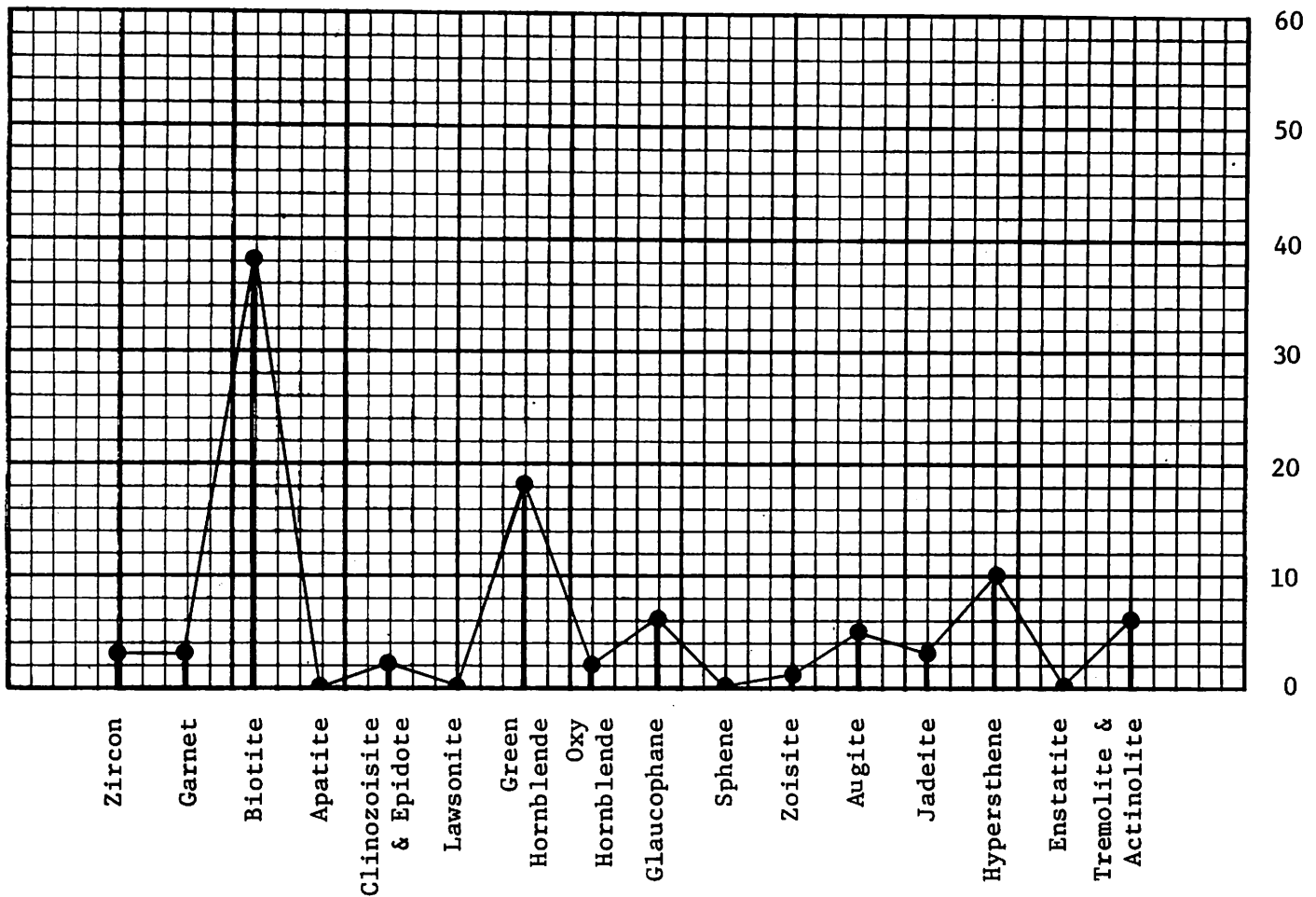
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	14
Picotite	3

Analyst T. Yancey

## SAMPLE 1987

Location 37°52'58"N 122°37'58"WWt. % of SF/Total Sample 34.76Depth 12.50 meters 6.83 fathomsWt. % of HM/SF 0.19Size Fraction (SF) 0.175 - 0.124 mmTotal Grains Counted 212Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 50.9% Opaques 9.9% Alterites and Unknowns 39.2Other Transparent Minerals

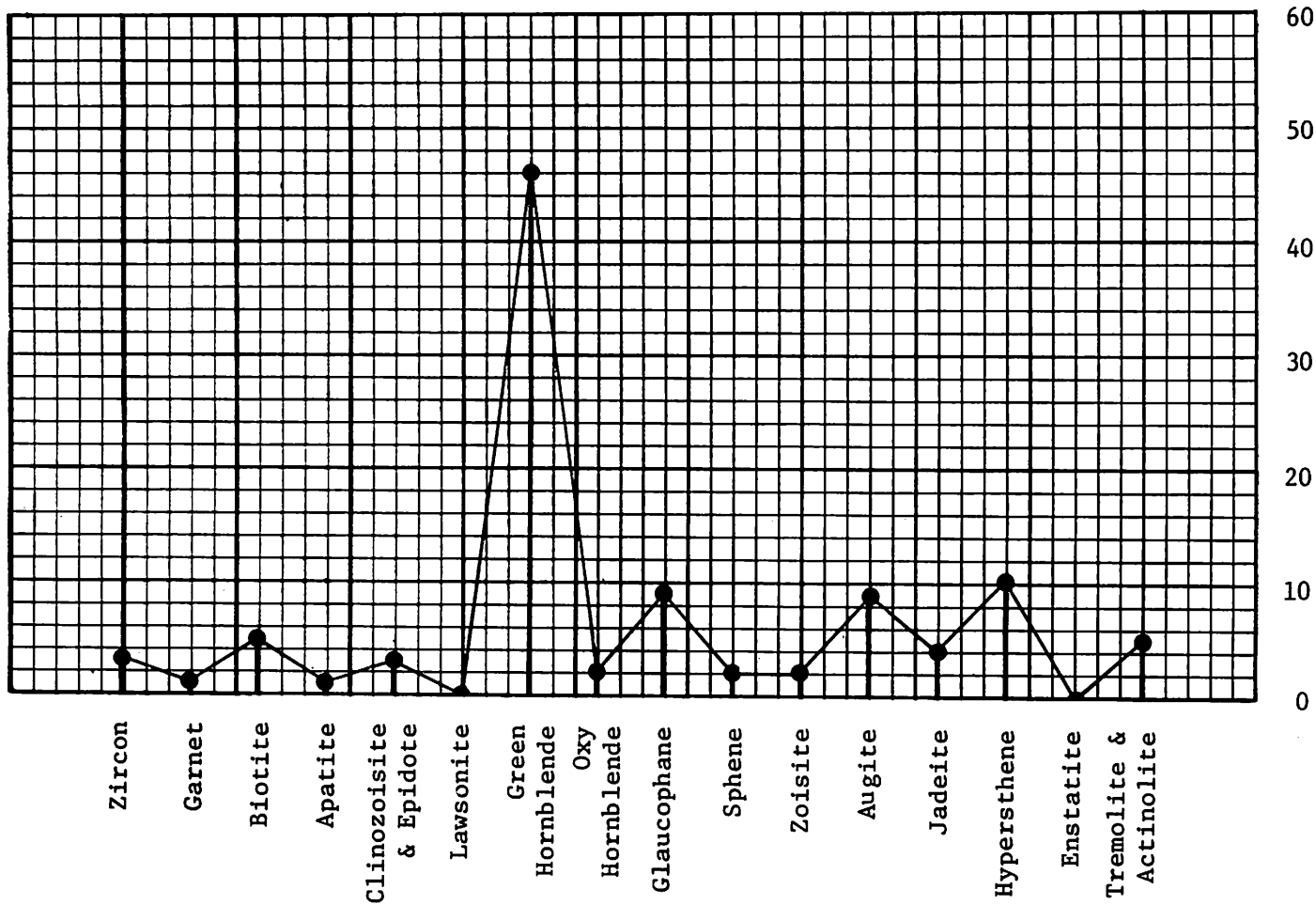
<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	6
Carbonate	2
Pumpellyite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	11
Magnetite	3
Rock Frag.	7

Analyst C. Isselhardt

Location 37°52'58"N 122°37'58"W Wt. % of SF/Total Sample 49.27  
 Depth 12.50meters 6.83 fathoms Wt. % of HM/SF 1.28  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 271  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 38.8  
 % Opaques 4.8  
 % Alterites and Unknowns 56.4



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	3
Picotite	1
Rock Frag.	7

Analyst C. Isselhardt

SAMPLE 1987

Location 37°52'58"N 122°37'58"W

Wt. % of SF/Total Sample 4.36

Depth 12.50 meters 6.83 fathoms

Wt. % of HM/SF 12.17

Size Fraction (SF) 0.088 - 0.061 mm

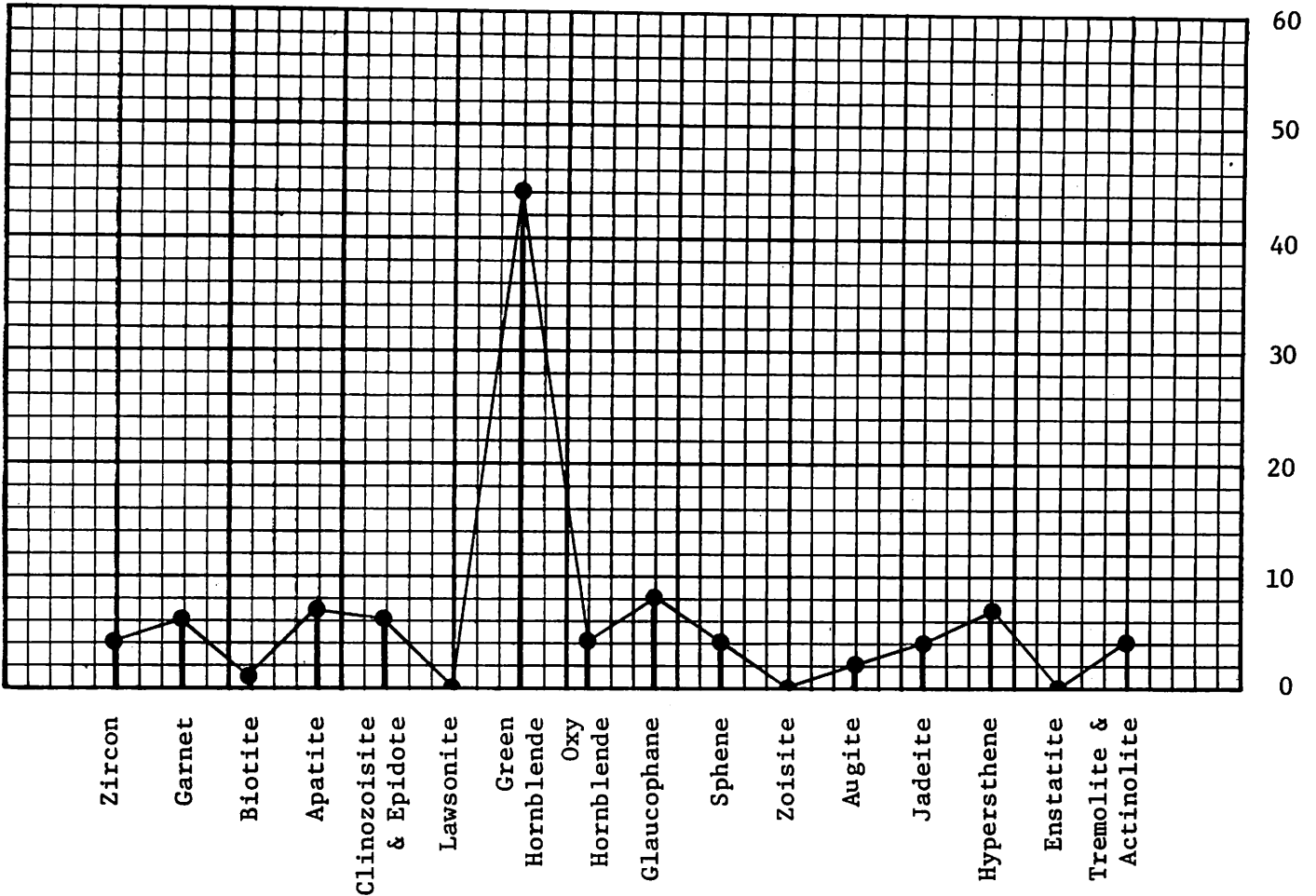
Total Grains Counted 228

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 49.6

% Opaques 11.4

% Alterites and Unknowns 39.0



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1

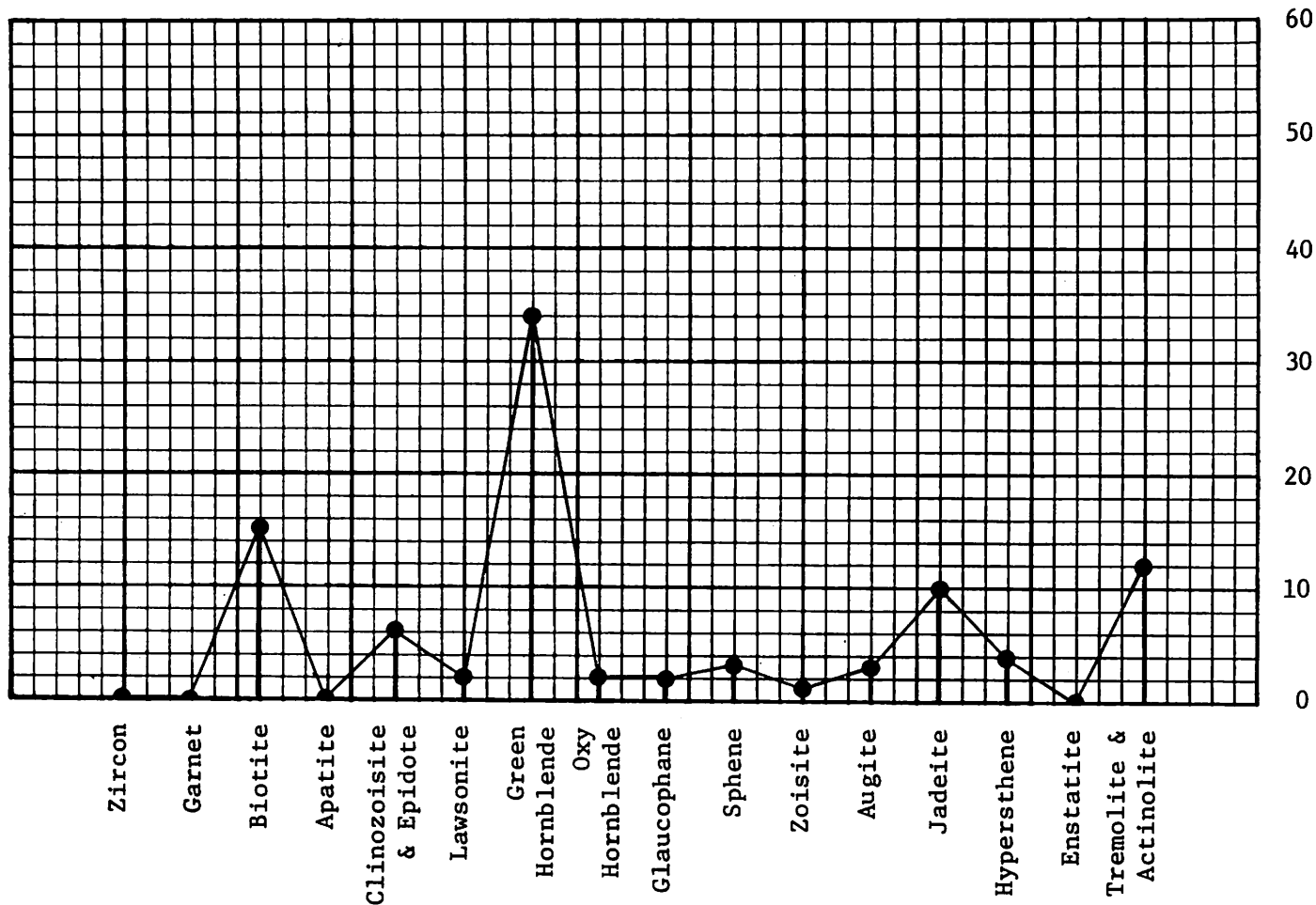
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	6
Magnetite	8
Picotite	5
Rock Frag.	7

Analyst C. Isselhardt



Location 37°52'33"N 122°37'44"W Wt. % of SF/Total Sample 46.00  
 Depth 15.53 meters 8.50 fathoms Wt. % of HM/SF 0.11  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 281  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 44  
 % Opaques 13  
 % Alterites and Unknowns 43



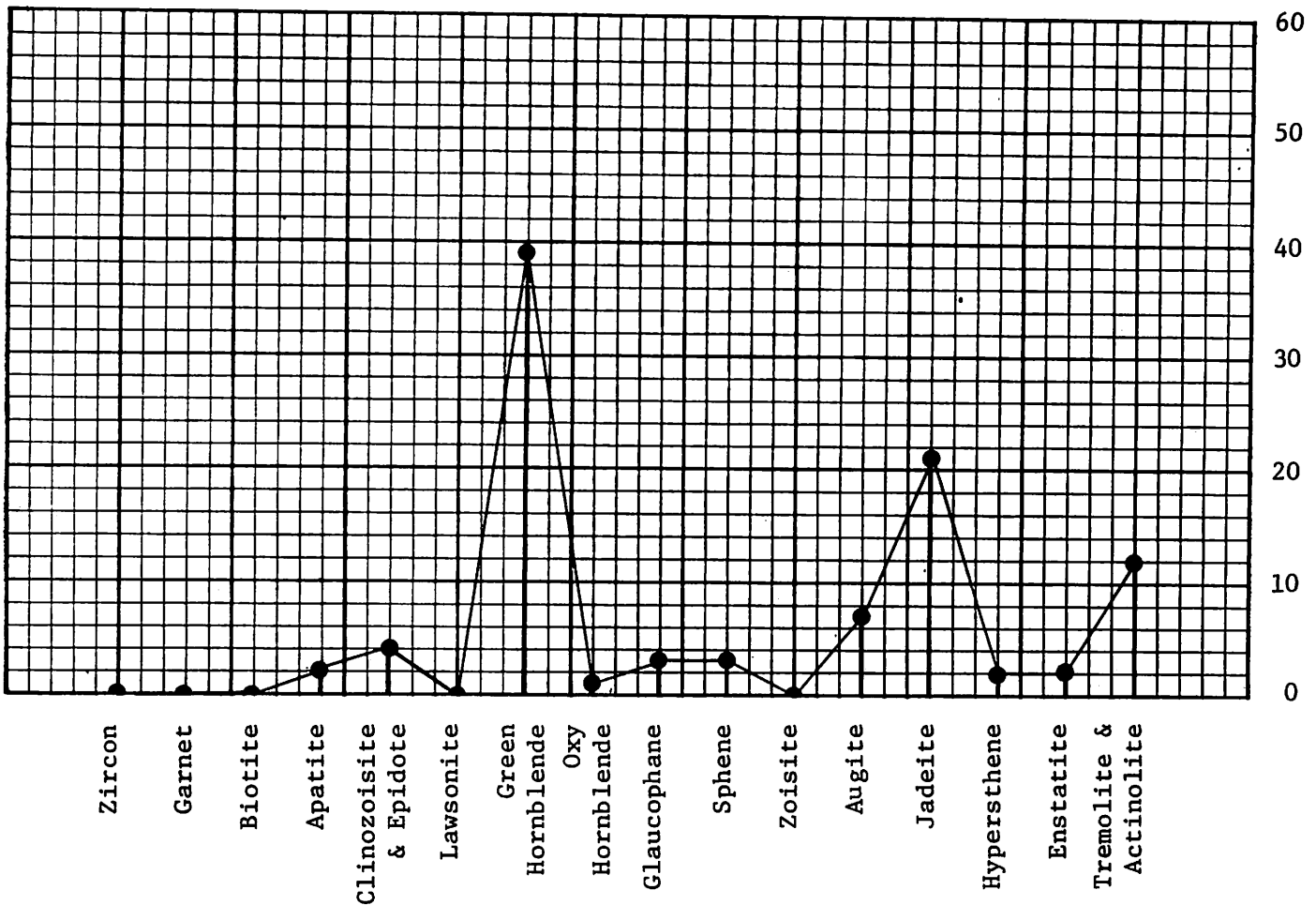
Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	6

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	18
Magnetite	1
Picotite	2
Rock Frag.	16

## SAMPLE 1989

Location 37°52'33"N 122°37'44"WWt. % of SF/Total Sample 38.26Depth 15.53 meters 8.50 fathomsWt. % of HM/SF 1.37Size Fraction (SF) 0.124 - 0.088 mmTotal Grains Counted 246Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 44% Opaques 18% Alterites and Unknowns 38Other Transparent Minerals

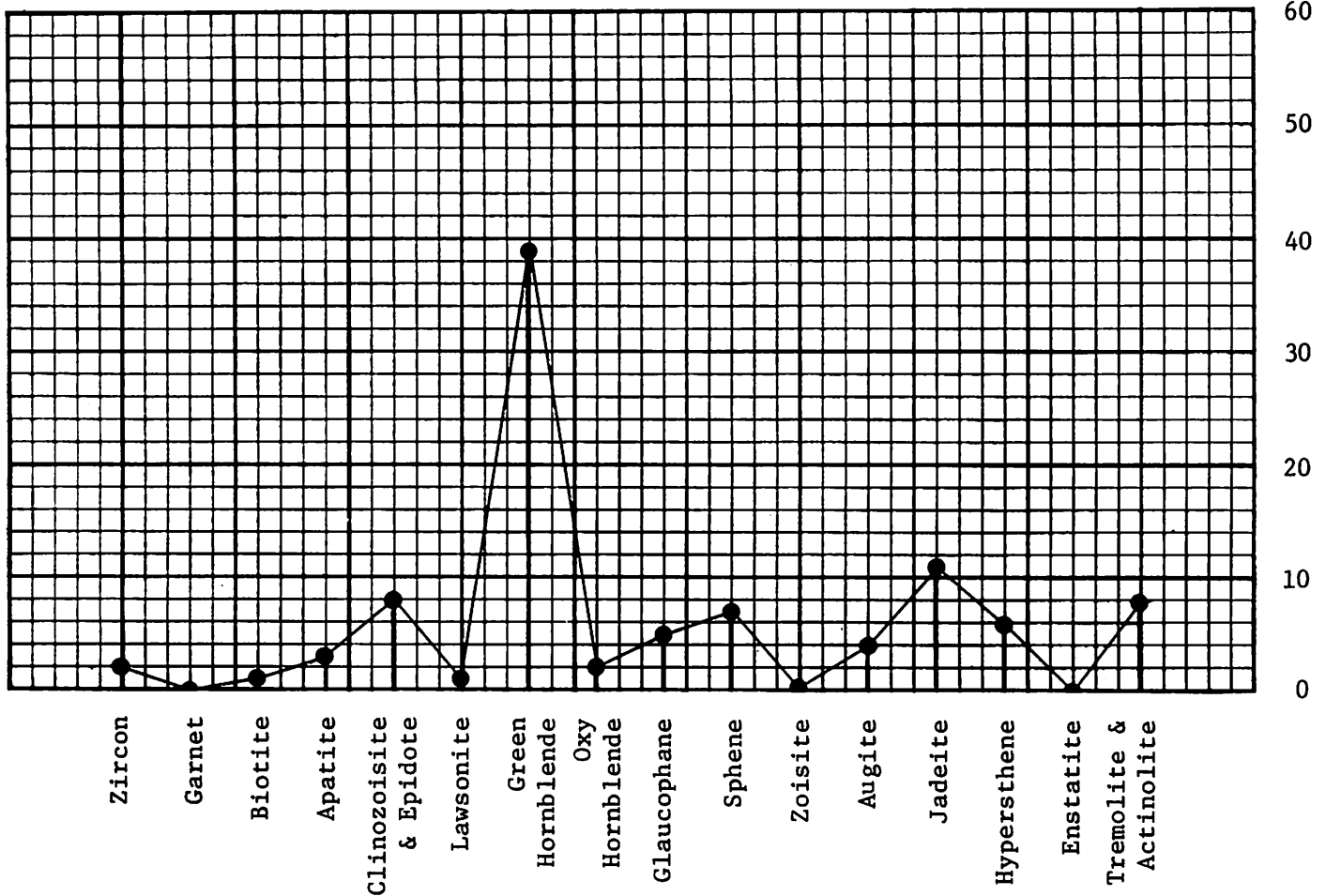
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	2
Chlorite	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	2
Rock Frag.	37

Analyst L. Osuch

Location 37°52'33"N 122°37'44"W Wt. % of SF/Total Sample 2.92  
 Depth 15.53 meters 8.50 fathoms Wt. % of HM/SF 11.70  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 146  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 68  
 % Opaques 22  
 % Alterites and Unknowns 10



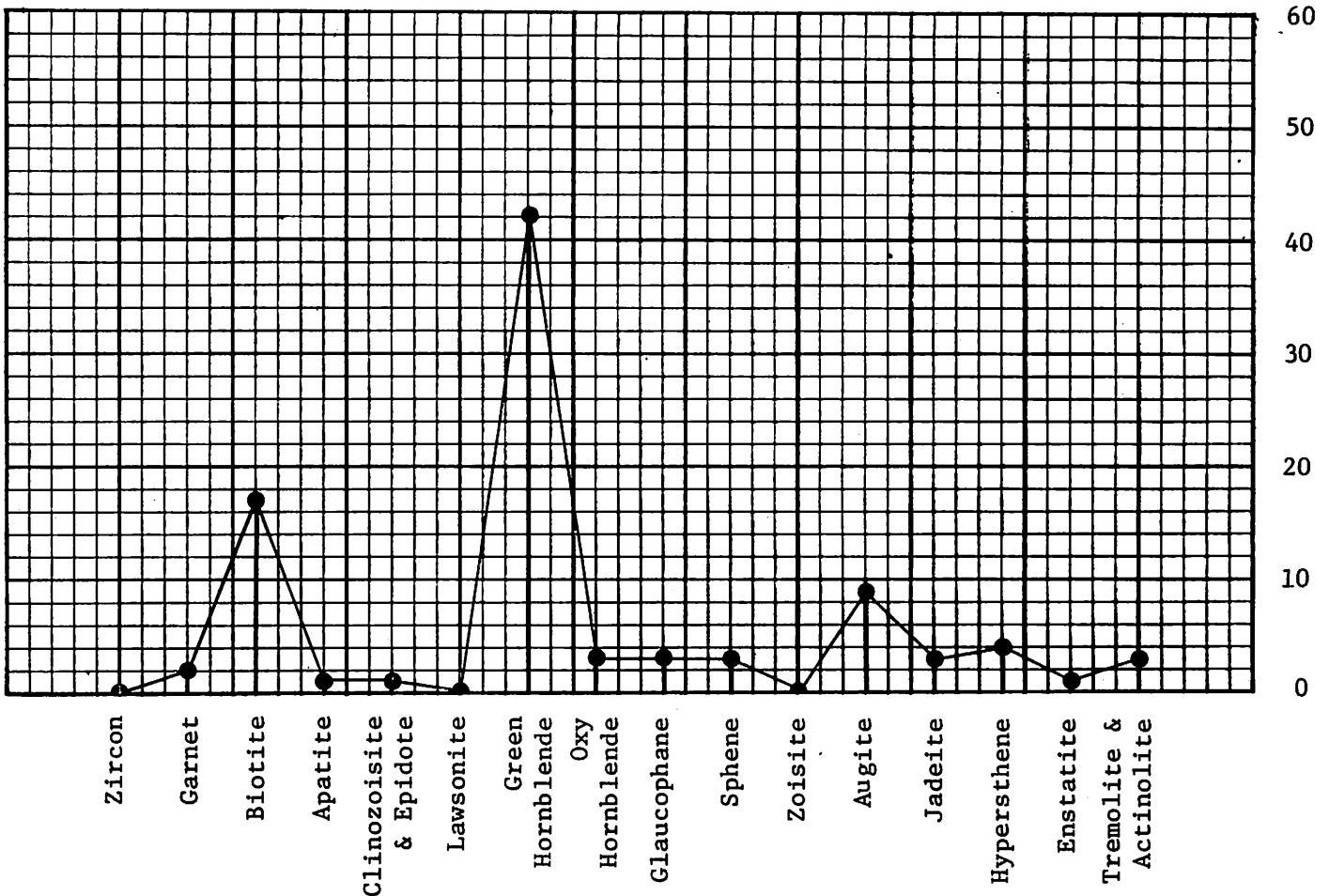
Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Carbonate</u>	<u>2</u>
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>3</u>
<u>Magnetite</u>	<u>9</u>
<u>Picotite</u>	<u>8</u>
<u>Rock Frag.</u>	<u>12</u>
_____	_____
_____	_____

## SAMPLE 1990

Location 37°52'45"N 122°37'57"WWt. % of SF/Total Sample 46.41Depth 15.22 meters 8.33 fathomsWt. % of HM/SF 0.14Size Fraction (SF) 0.175 - 0.124 mmTotal Grains Counted 289Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 40.5% Opaques 10.4% Alterites and Unknowns 49.1Other Transparent Minerals

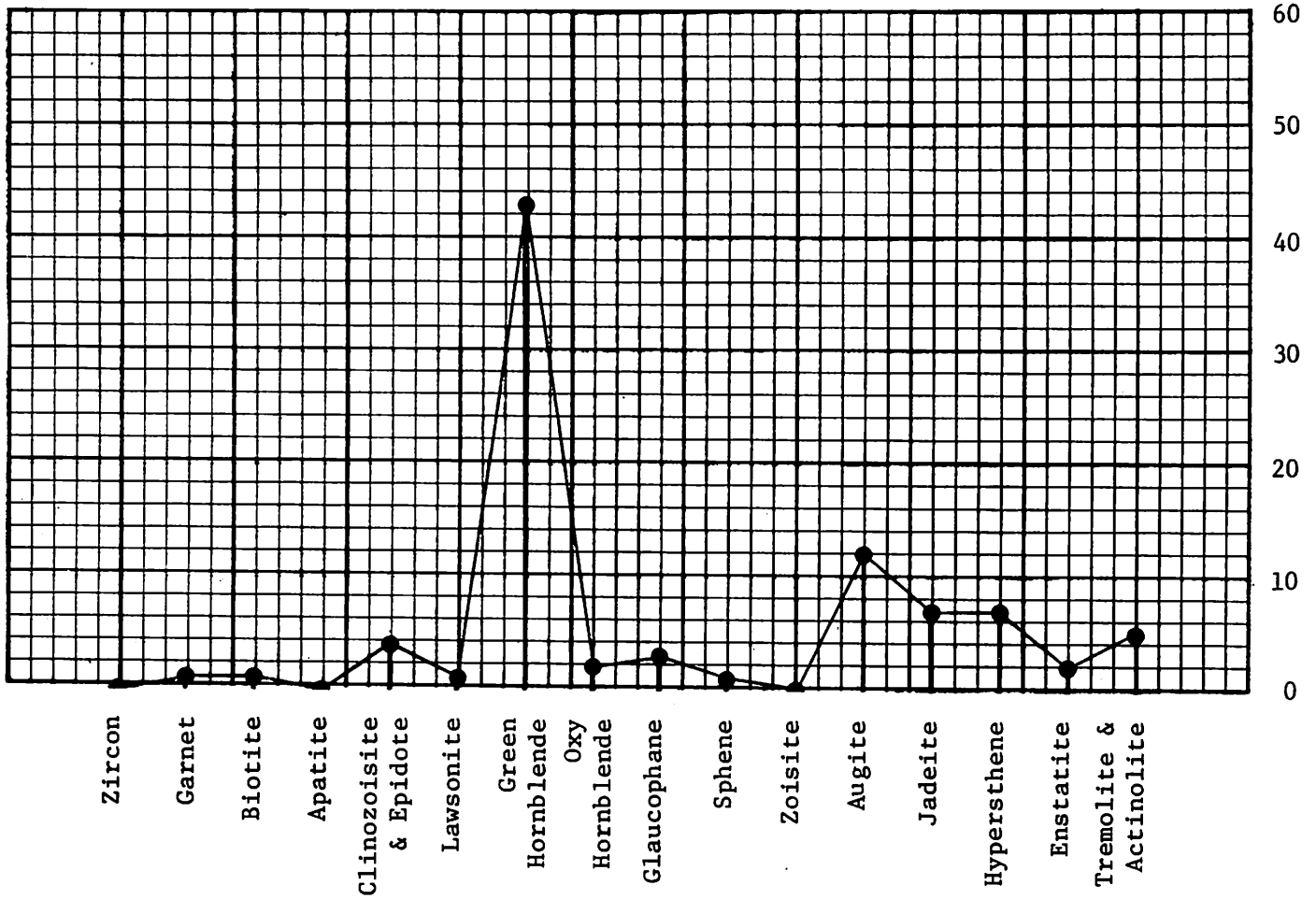
<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Chlorite</u>	<u>2</u>
<u>Carbonate</u>	<u>5</u>
<u>Tourmaline</u>	<u>1</u>

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>12</u>
<u>Magnetite</u>	<u>10</u>
<u>Picotite</u>	<u>3</u>
<u>Rock Frag.</u>	<u>5</u>

Analyst T. Yancey

Location 37°52'45"N 122°37'57"W Wt. % of SF/Total Sample 33.61  
 Depth 15.22 meters 8.33 fathoms Wt. % of HM/SF 1.2  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 299  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 33.5  
 % Opaques 9.0  
 % Alterites and Unknowns 57.5



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Chlorite</u>	<u>1</u>
<u>Carbonate</u>	<u>9</u>
<u>Tourmaline</u>	<u>1</u>

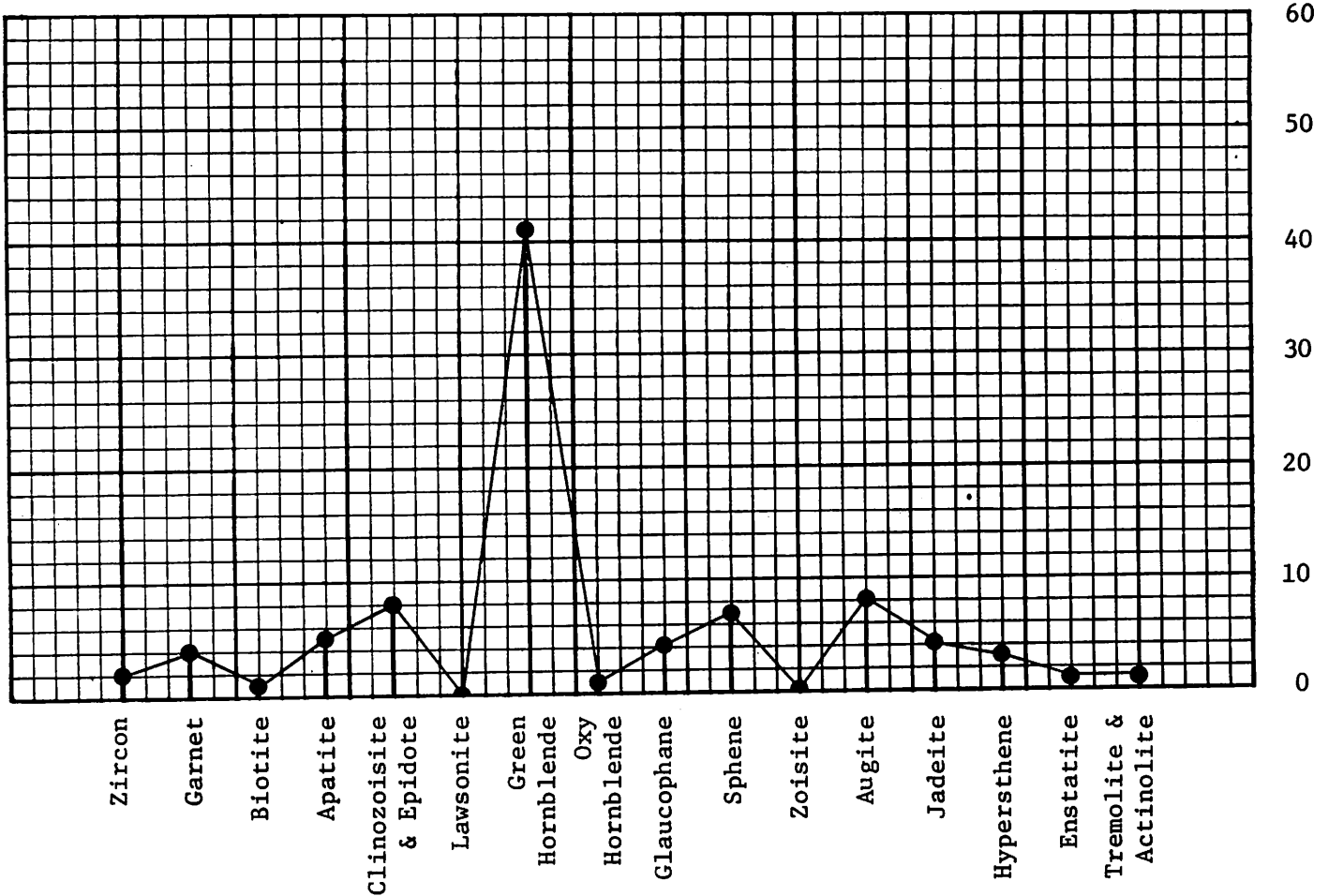
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>4</u>
<u>Magnetite</u>	<u>14</u>
<u>Picotite</u>	<u>1</u>
<u>Rock Frag.</u>	<u>8</u>

Analyst T. Yancey

## SAMPLE 1990

Location 37°52'45"N 122°37'57"W Wt. % of SF/Total Sample 3.24  
 Depth 15.22 meters 8.33 fathoms Wt. % of HM/SF 7.00  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 185  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 51.4  
 % Opaques 11.9  
 % Alterites and Unknowns 36.7

Other Transparent Minerals

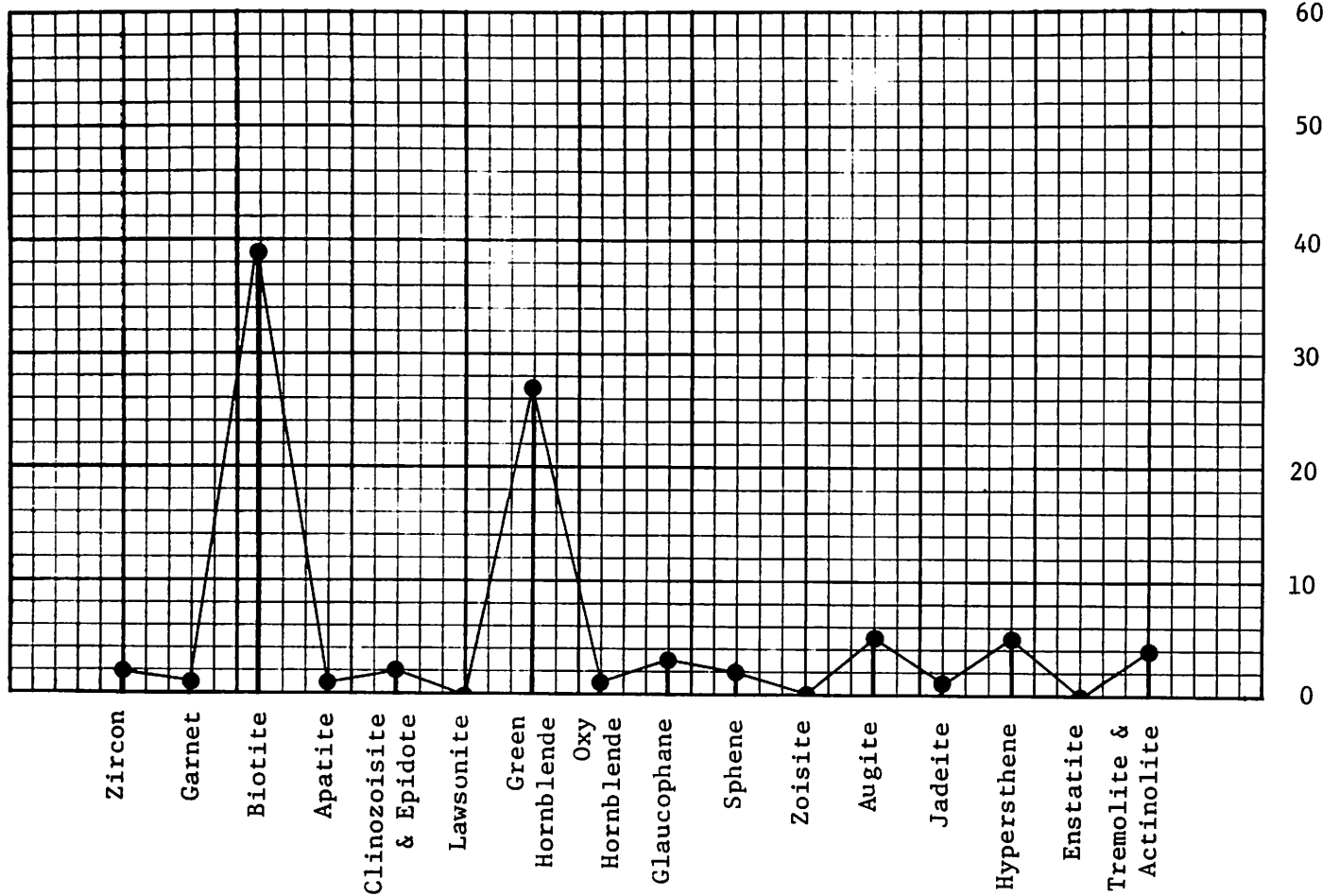
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	6

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	11
Picotite	6
Rock Frag.	3

Analyst T. Yancey

Location 37°53'N 122°38'12"W Wt. % of SF/Total Sample 22.76  
 Depth 15.22 meters 8.33 fathoms Wt. % of HM/SF 0.12  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 196  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 51.0  
 % Opaques 6.15  
 % Alterites and Unknowns 42.85



Other Transparent Minerals

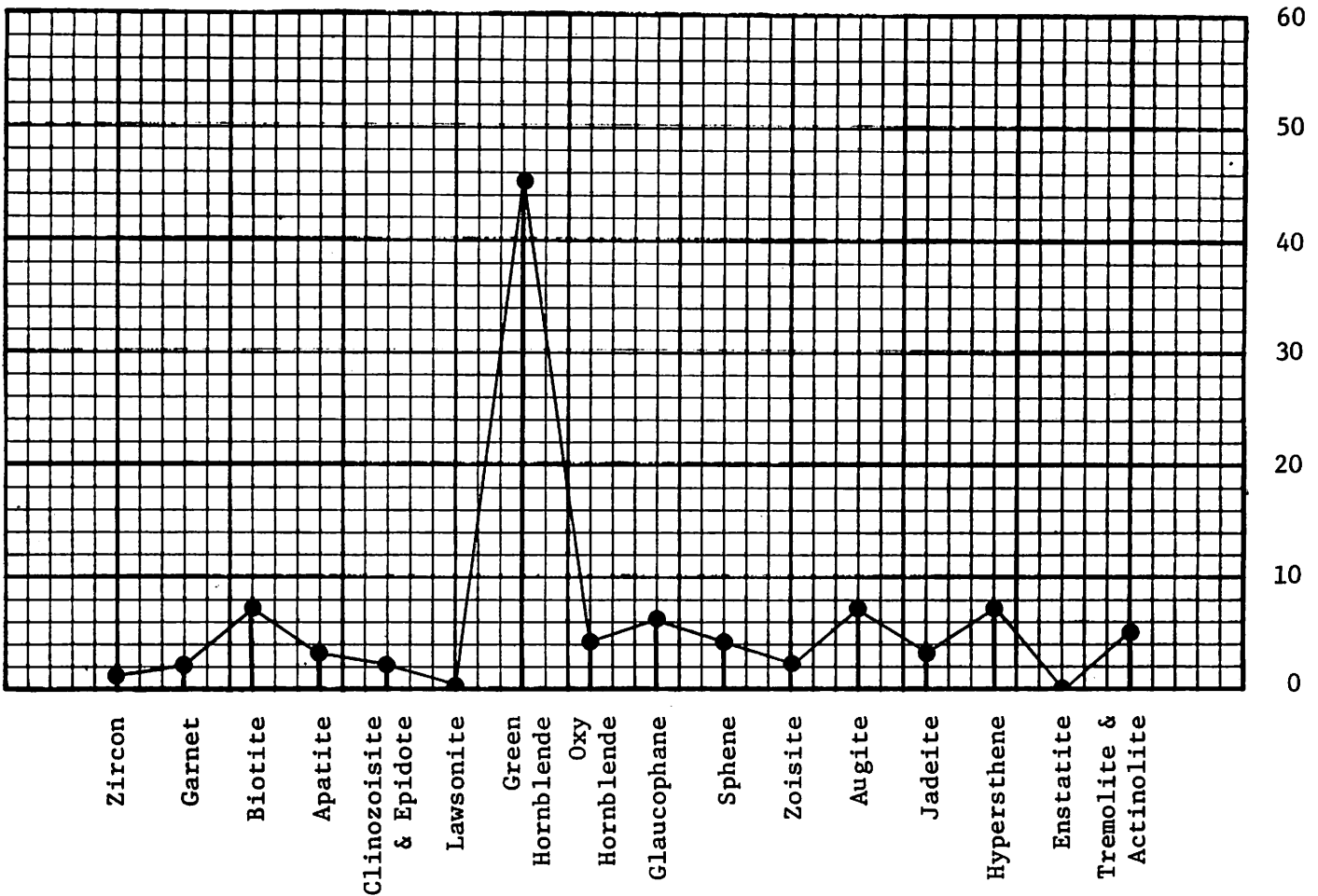
<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	5
Carbonate	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	6
Magnetite	2
Rock Frag.	4

Analyst C. Isselhardt

## SAMPLE 1991

Location 37°53'N 122°38'12"W Wt. % of SF/Total Sample 60.92Depth 15.22 meters 8.33 fathoms Wt. % of HM/SF 0.66Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 218Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 45.8% Opaques 6.4% Alterites and Unknowns 47.8Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	3
Picotite	1
Rock Frag.	6

Analyst C. Isselhardt



Location 37°53'N 122°38'12"W

Wt. % of SF/Total Sample 8.18

Depth 15.22 meters 8.33 fathoms

Wt. % of HM/SF 4.51

Size Fraction (SF) 0.088 - 0.061 mm

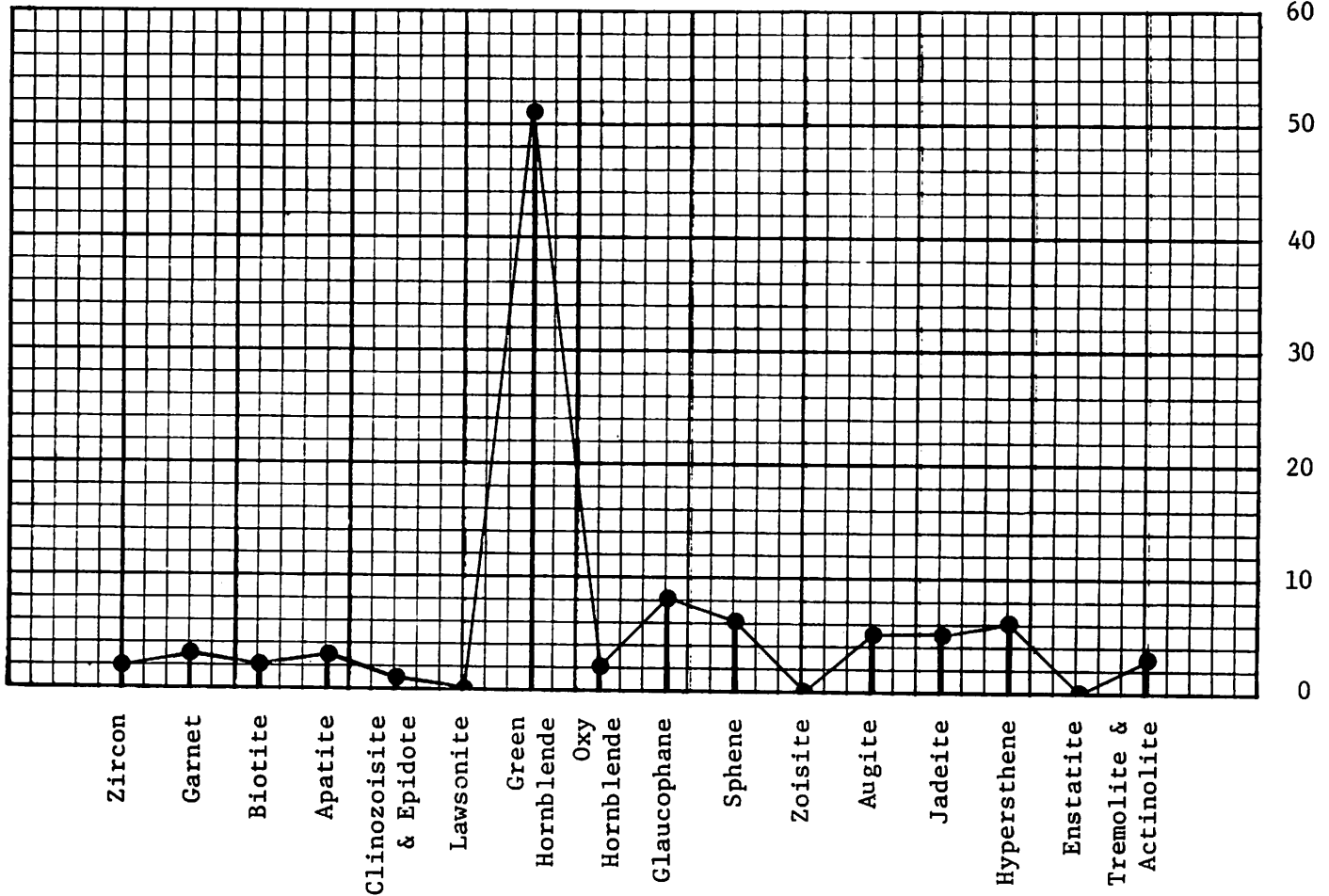
Total Grains Counted 181

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 55.25

% Opaques 10.50

% Alterites and Unknowns 34.25



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3

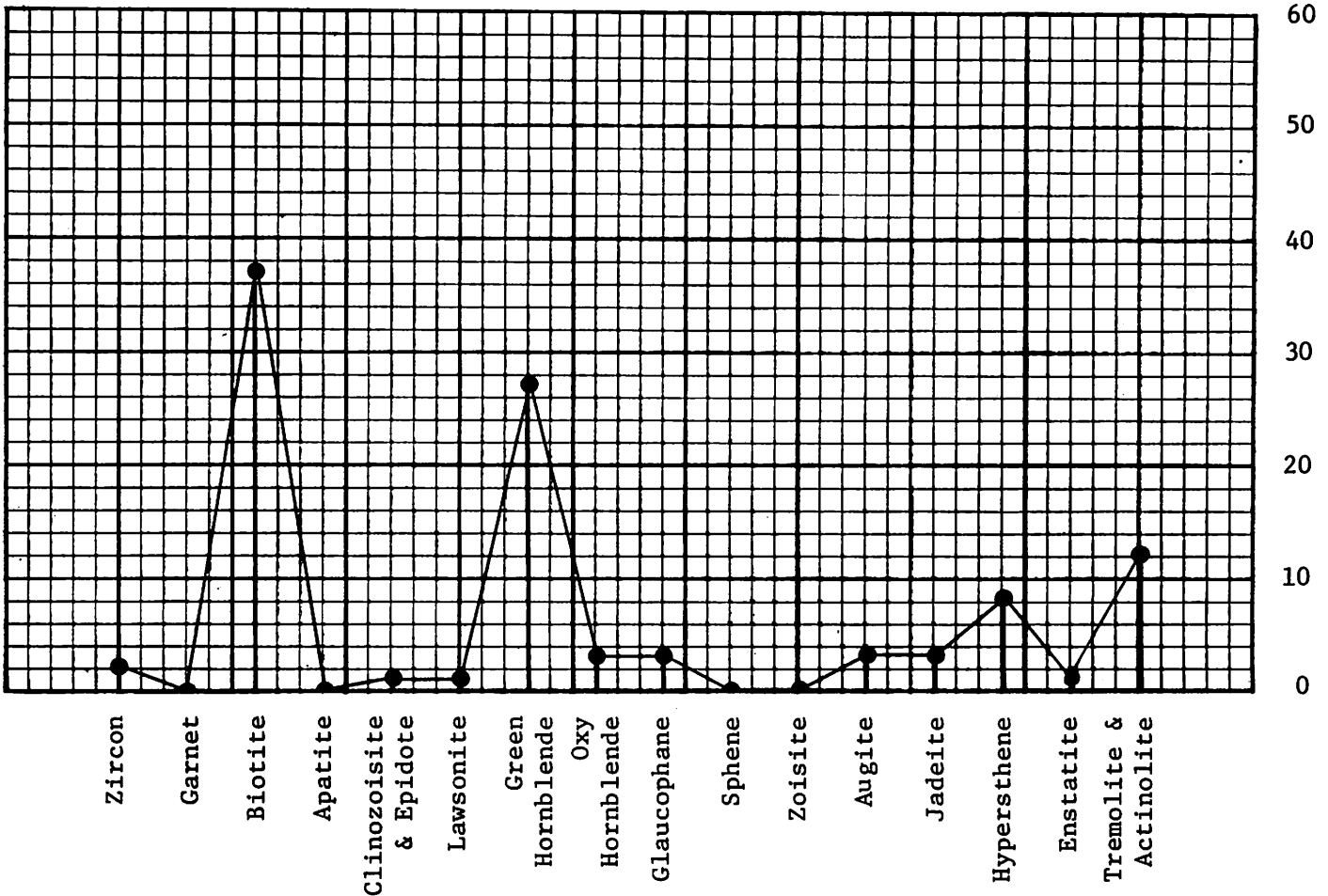
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	9
Picotite	2
Rock Frag.	4

Analyst C. Isselhardt

SAMPLE 1992

Location 37°53'12"N 122°38'31"W Wt. % of SF/Total Sample 19.18  
 Depth 14.93 meters 8.17 fathoms Wt. % of HM/SF 0.20  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 225  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 71  
 % Opaques 6  
 % Alterites and Unknowns 23



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	2
Picotite	1
Rock Frag.	7

Analyst L. Osuch

Location 37°53'12"N 122°38'31"W

Wt. % of SF/Total Sample 45.71

Depth 14.93 meters 8.17 fathoms

Wt. % of HM/SF 0.57

Size Fraction (SF) 0.124 - 0.088 mm

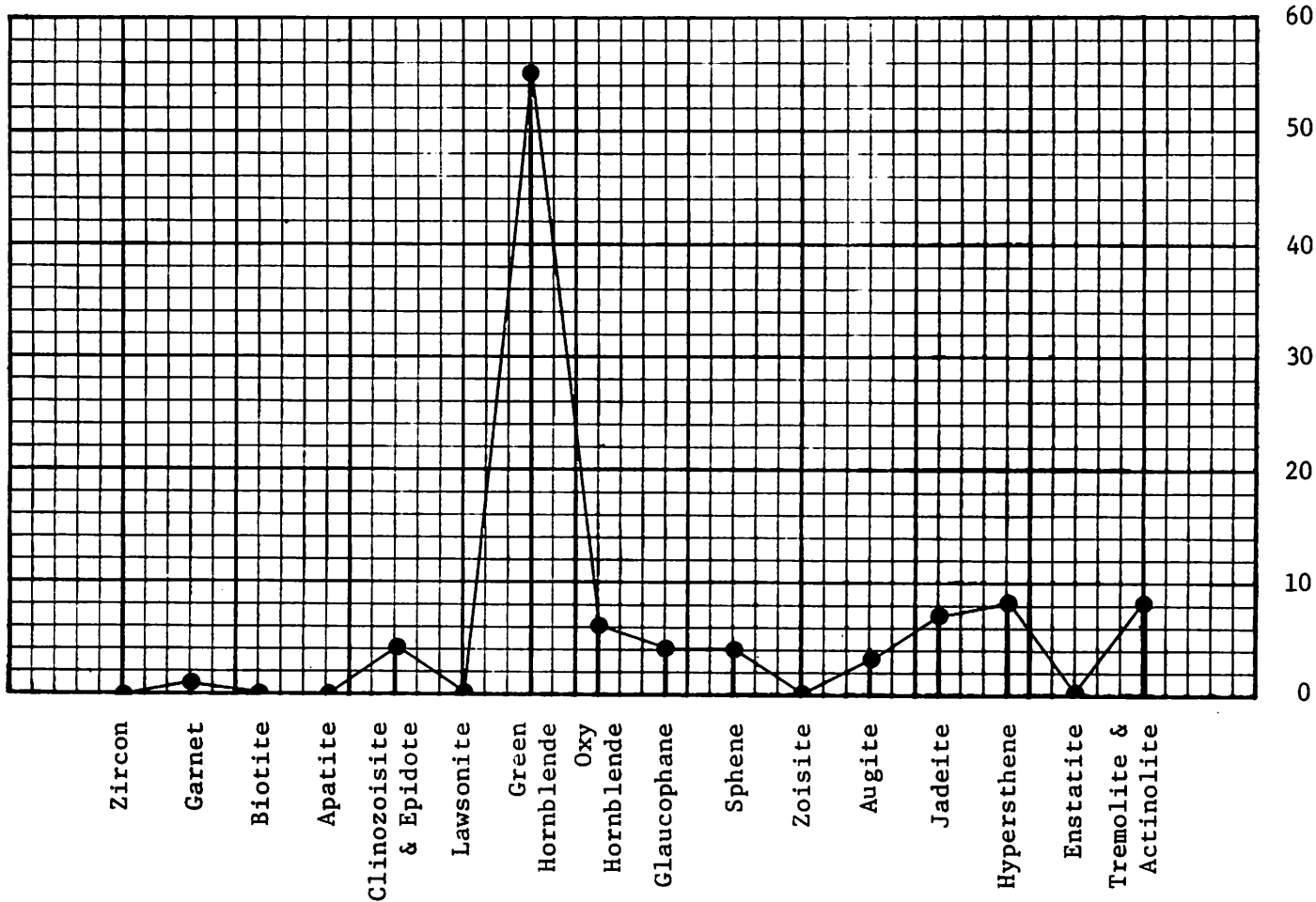
Total Grains Counted 159

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 64

% Opaques 7

% Alterites and Unknowns 29



Other Transparent Minerals

Other Opaque Minerals

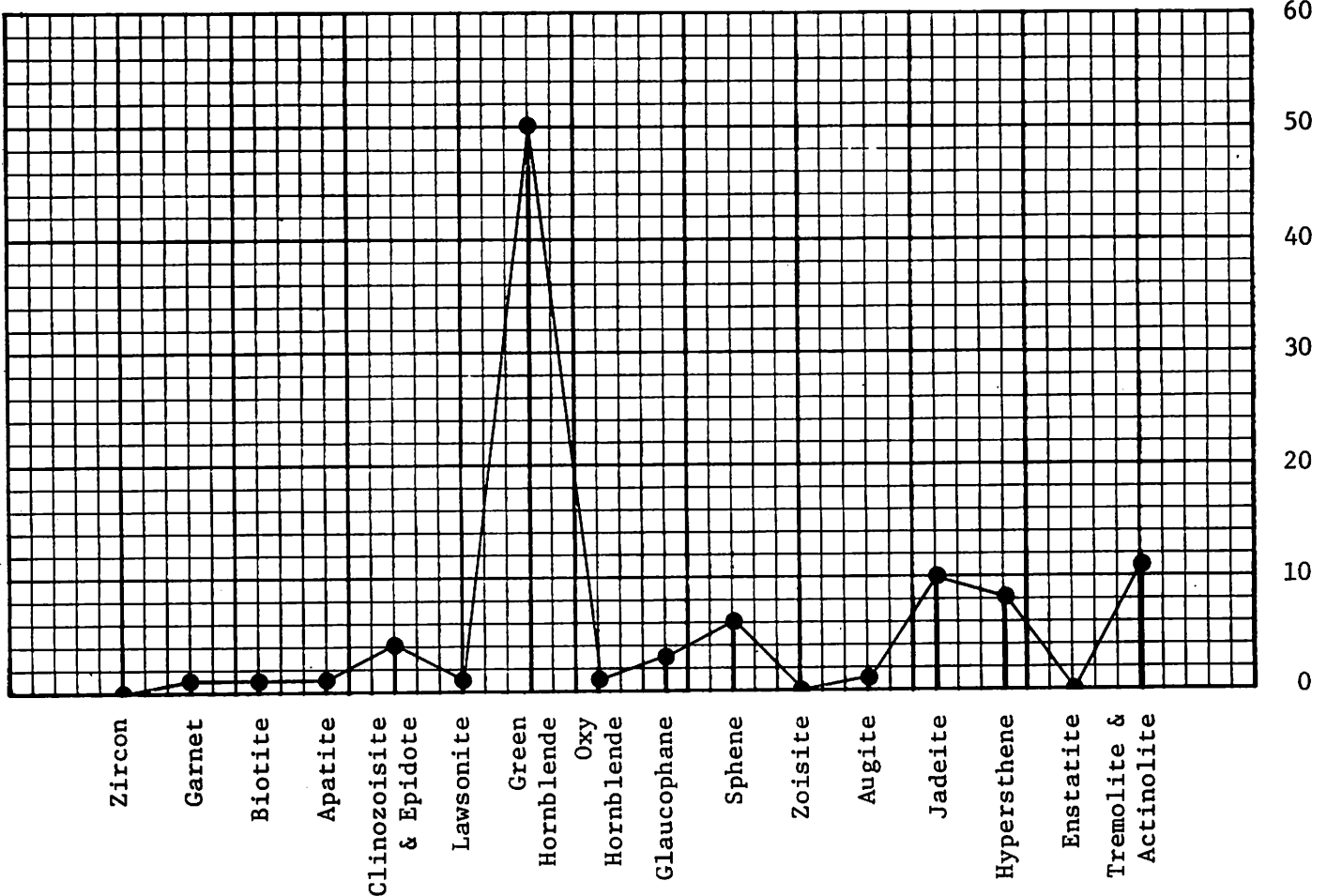
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

<u>Mineral</u>	<u>No. Grains Counted</u>
Magnetite	2
Rock Frag.	10

Analyst L. Osuch

SAMPLE 1992

Location 37°53'12"N 122°38'31"W Wt. % of SF/Total Sample 14.83  
 Depth 14.93 meters 8.17 fathoms Wt. % of HM/SF 1.65  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 171  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 59  
 % Opaques 12  
 % Alterites and Unknowns 29



Other Transparent Minerals

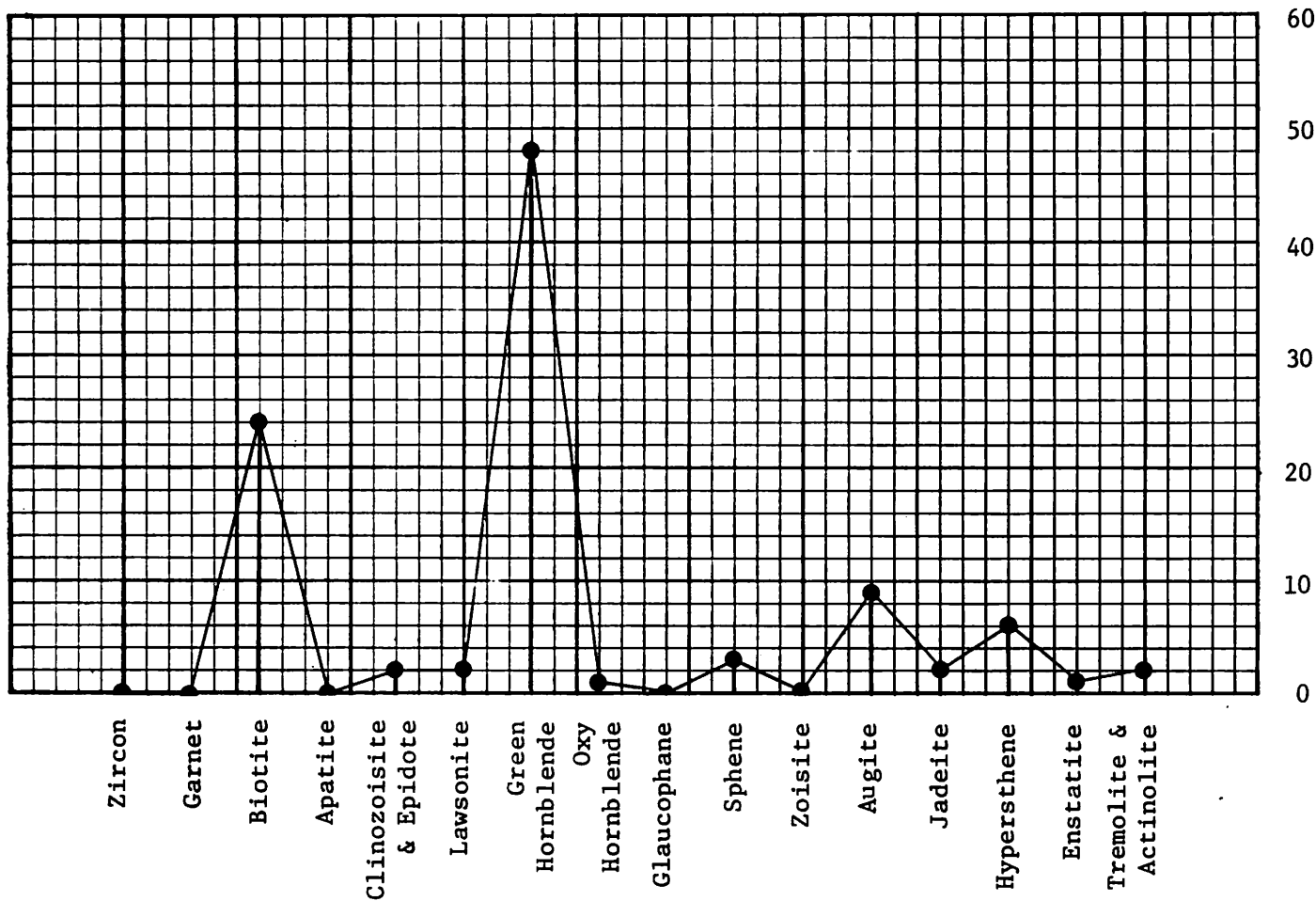
<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Carbonate</u>	<u>2</u>
<u>Chlorite</u>	<u>1</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>3</u>
<u>Magnetite</u>	<u>7</u>
<u>Picotite</u>	<u>2</u>
<u>Rock Frag.</u>	<u>8</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Analyst L. Osuch

Location 37°53'29"N 122°39'00"W Wt. % of SF/Total Sample 12.62  
 Depth 13.41 meters 7.33 fathoms Wt. % of HM/SF 0.21  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 244  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 53.3  
 % Opaques 3.3  
 % Alterites and Unknowns 43.4



Other Transparent Minerals

Other Opaque Minerals

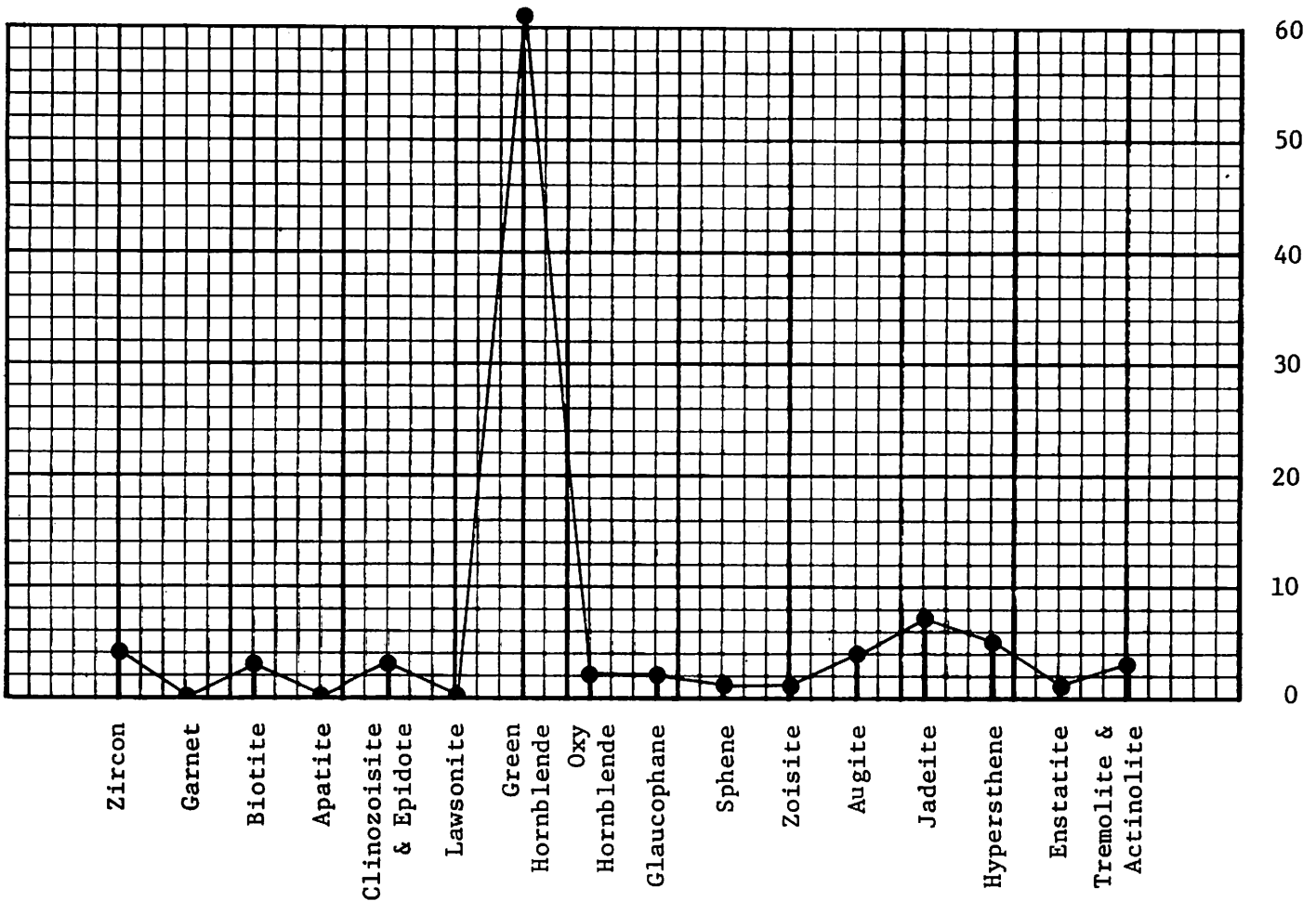
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	3
Picotite	1
Pyrite	1
Rock Frag.	1

Analyst T. Yancey

SAMPLE 1993

Location 37°53'29"N 122°39'00"W Wt. % of SF/Total Sample 57.81  
 Depth 13.41 meters 7.33 fathoms Wt. % of HM/SF 0.75  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 211  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 48.8  
 % Opaques 5.7  
 % Alterites and Unknowns 45.5



Other Transparent Minerals

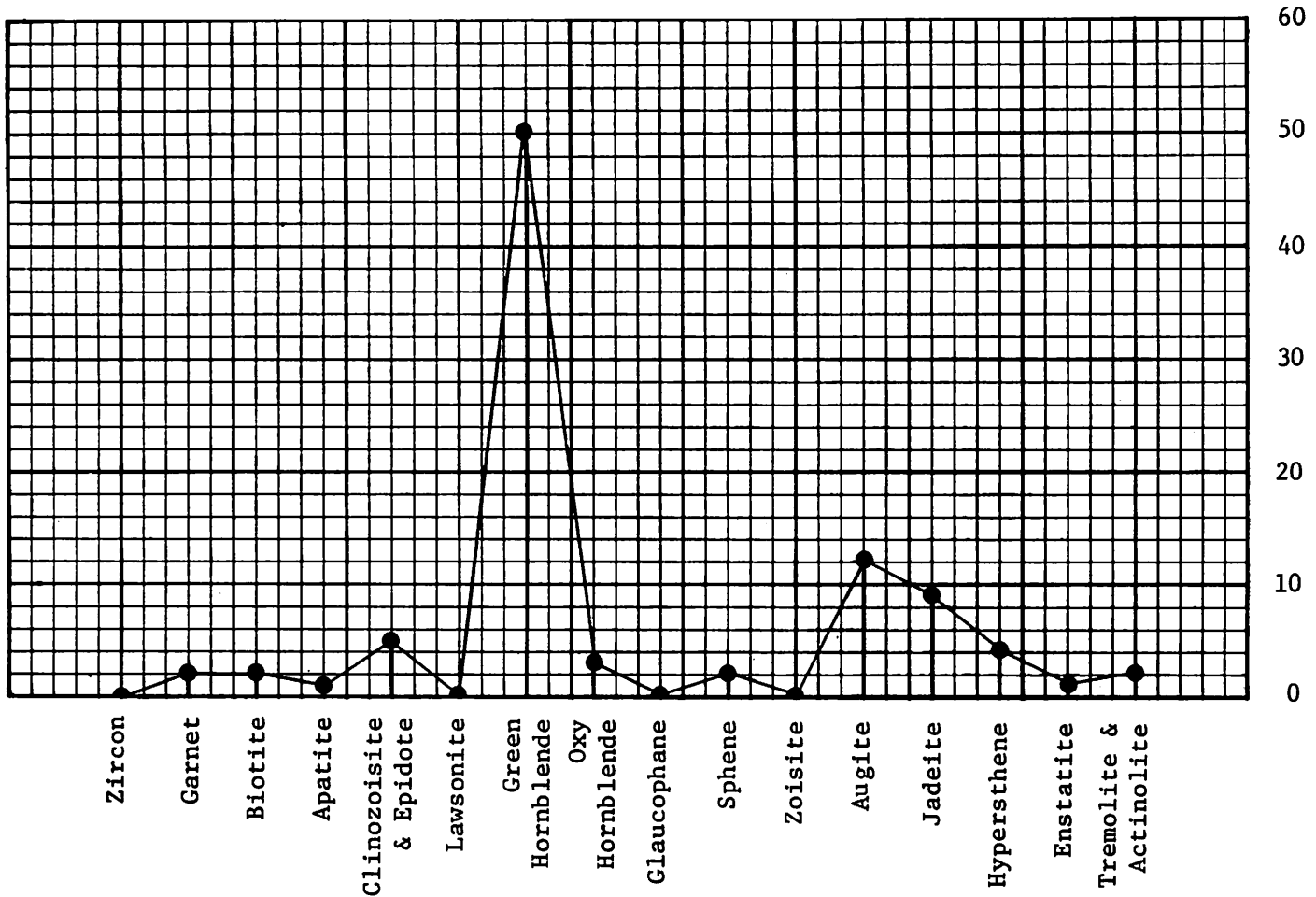
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	3

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	5
Rock Frag.	3

Analyst T. Yancey

Location 37°53'29"N 122°39'00"W Wt. % of SF/Total Sample 17.50  
 Depth 13.41 meters 7.33 fathoms Wt. % of HM/SF 2.46  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 210  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 46.7  
 % Opaques 11.4  
 % Alterites and Unknowns 41.9



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Carbonate</u>	<u>5</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>5</u>
<u>Magnetite</u>	<u>11</u>
<u>Picotite</u>	<u>4</u>
<u>Rock Frag.</u>	<u>4</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Analyst T. Yancey

SAMPLE 1994

Location 37°53'41"N 122°39'21"W

Wt. % of SF/Total Sample 17.18

Depth 11.88 meters 6.5 fathoms

Wt. % of HM/SF 0.78

Size Fraction (SF) 0.175 - 0.124 mm

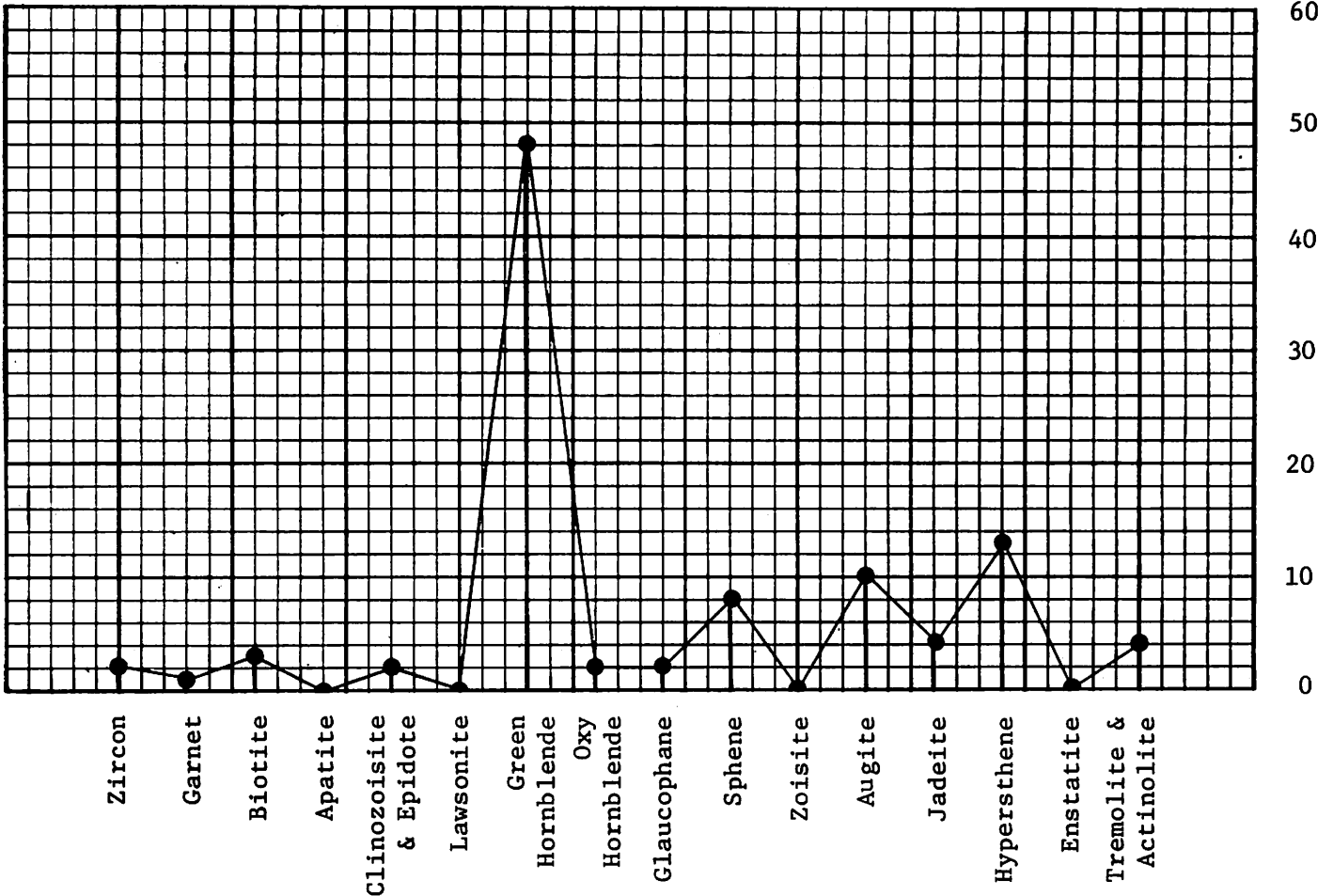
Total Grains Counted 155

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 64.6

% Opaques 5.8

% Alterites and Unknowns 29.6



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1

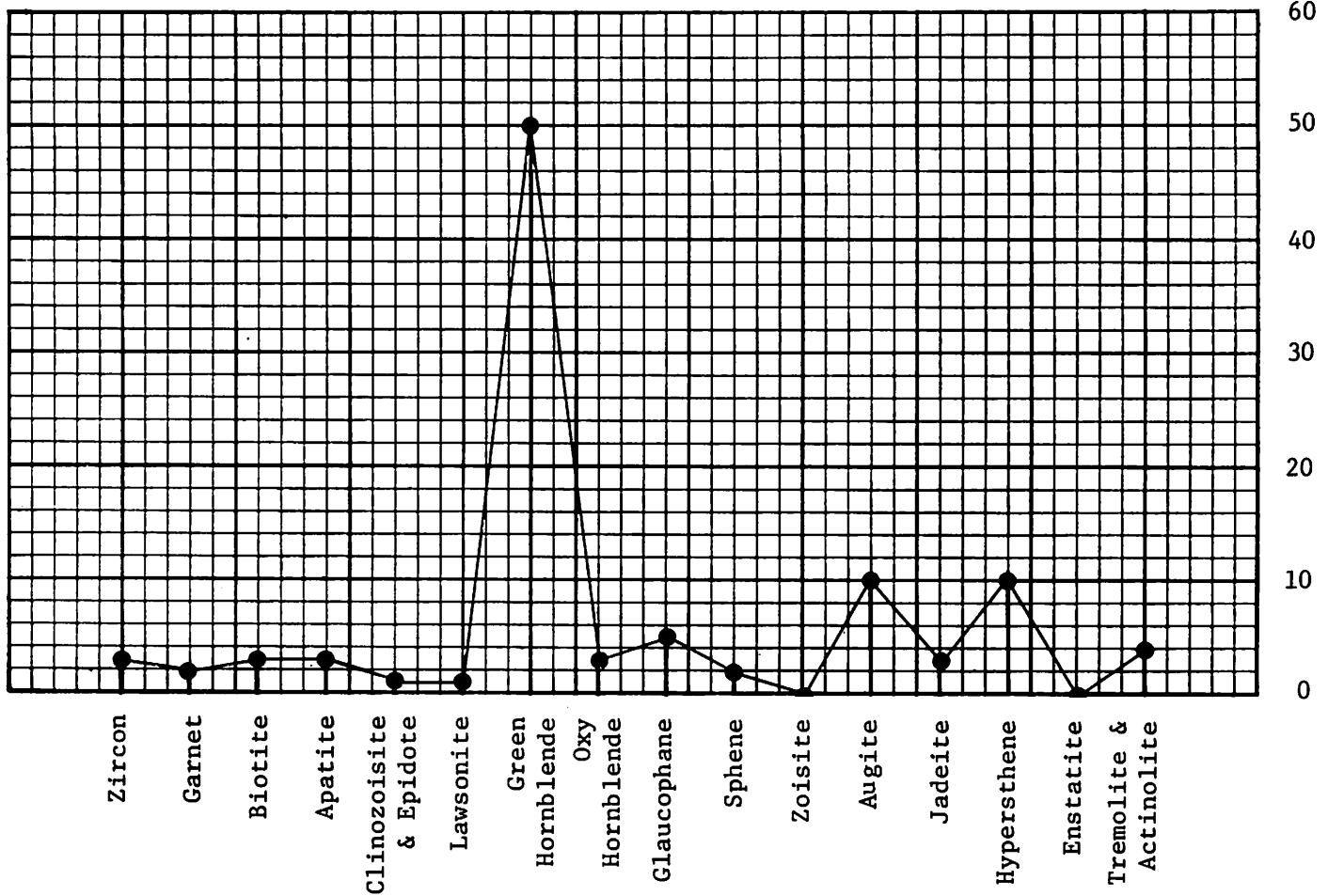
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	4
Picotite	1
Rock Frag.	2

Analyst C. Isselhardt



Location 37°53'41"N 122°39'21"W Wt. % of SF/Total Sample 59.88  
 Depth 11.88 meters 6.5 fathoms Wt. % of HM/SF 1.44  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 191  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 52.3  
 % Opaques 10.5  
 % Alterites and Unknowns 37.2



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

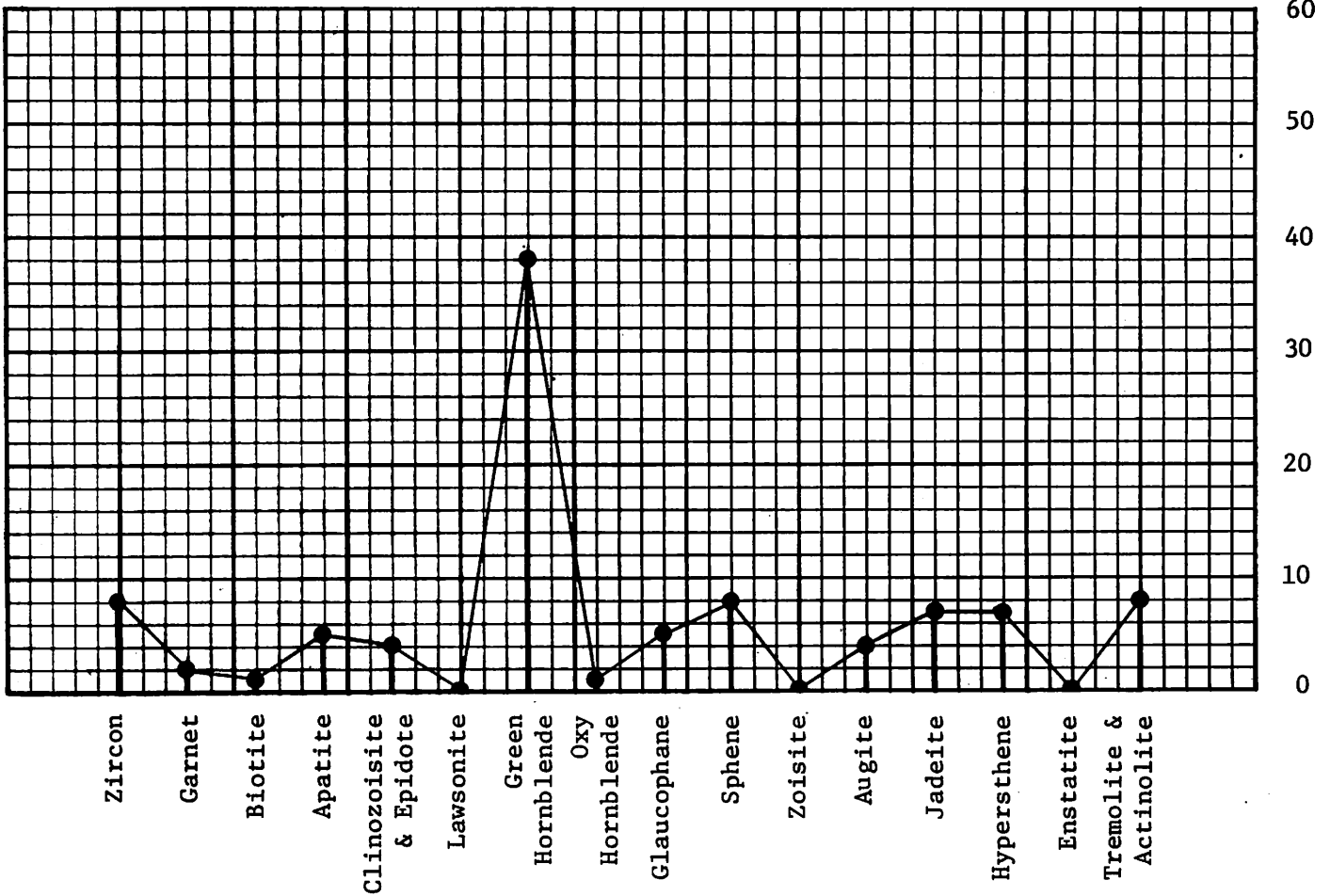
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	5
Picotite	5
Rock Frag.	9
_____	_____
_____	_____

Analyst C. Isselhardt

SAMPLE 1994

Location 37°53'41"N 122°39'21"W Wt. % of SF/Total Sample 12.87  
 Depth 11.88 meters 6.5 fathoms Wt. % of HM/SF 3.92  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 176  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 56.8  
 % Opaques 14.8  
 % Alterites and Unknowns 28.4



Other Transparent Minerals

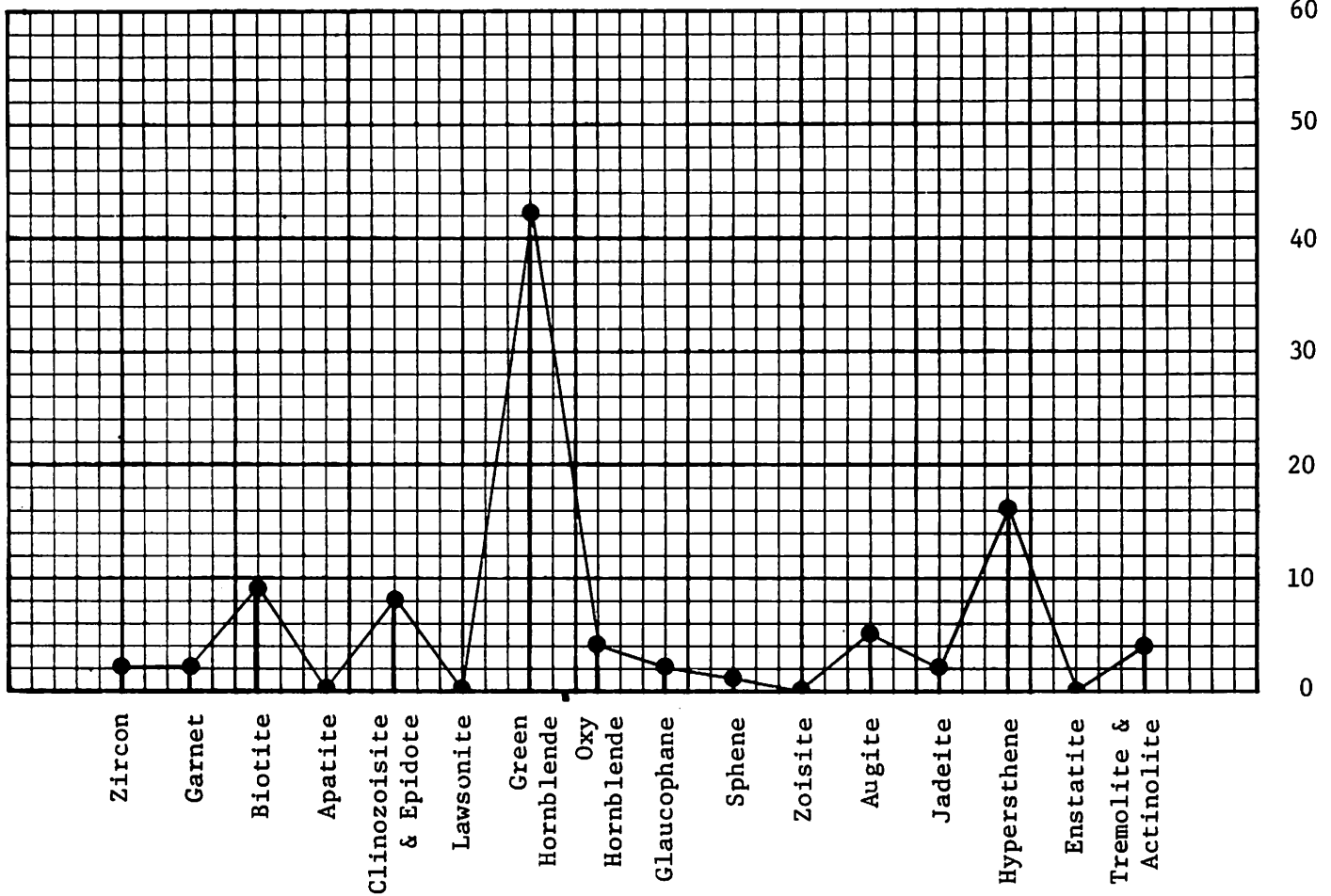
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	11
Picotite	4
Rock Frag.	6

Analyst C. Isselhardt

Location 37°53'47"N 122°39'41"W Wt. % of SF/Total Sample 14.36  
 Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 0.72  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 145  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 76  
 % Opaques 8  
 % Alterites and Unknowns 16



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	2
Chlorite	2

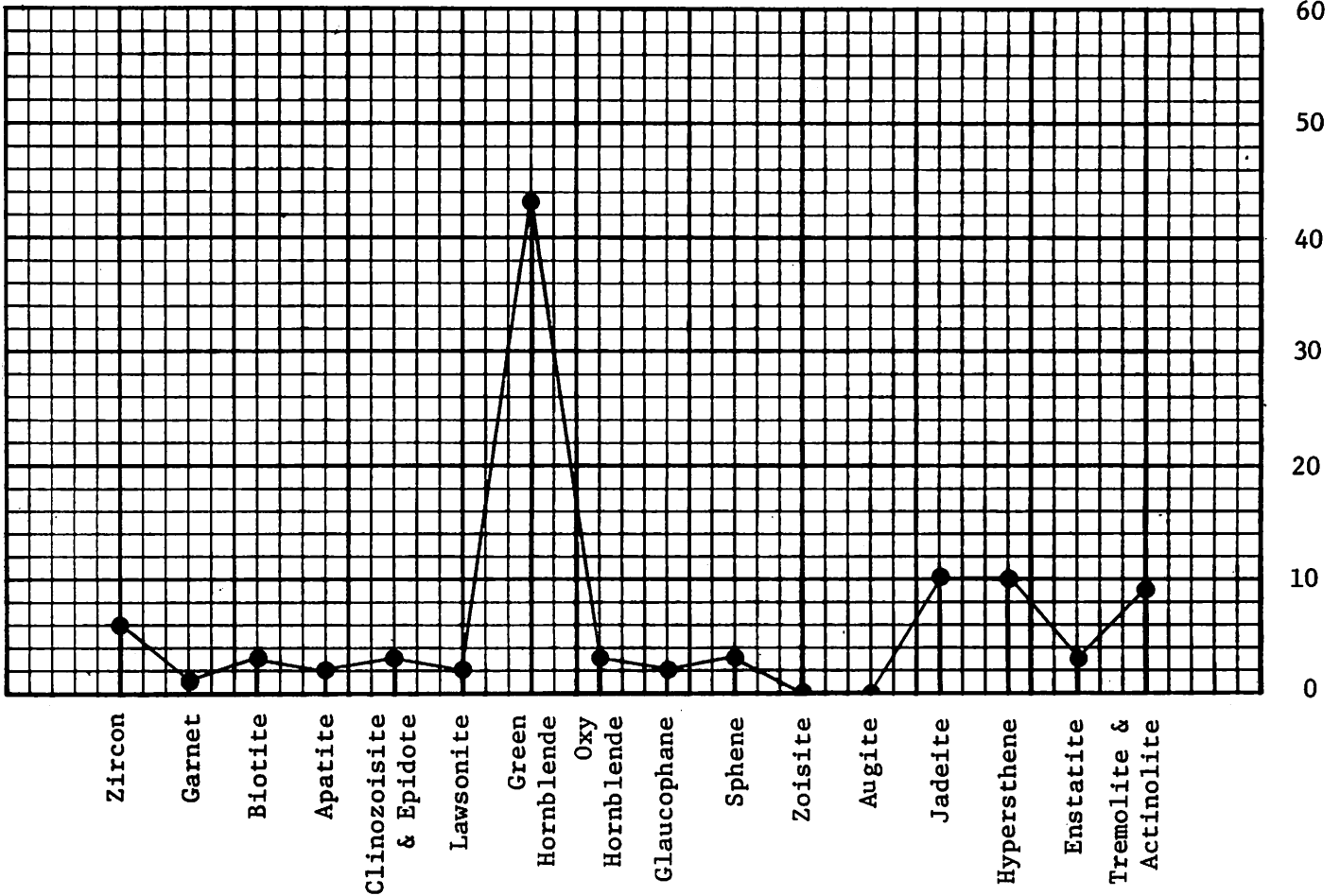
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	3
Rock Frag.	8

Analyst L. Osuch

SAMPLE 1995

Location 37°53'47"N 122°39'41"W Wt. % of SF/Total Sample 46.59  
 Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 1.51  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 192  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 54  
 % Opaques 12  
 % Alterites and Unknowns 34



Other Transparent Minerals

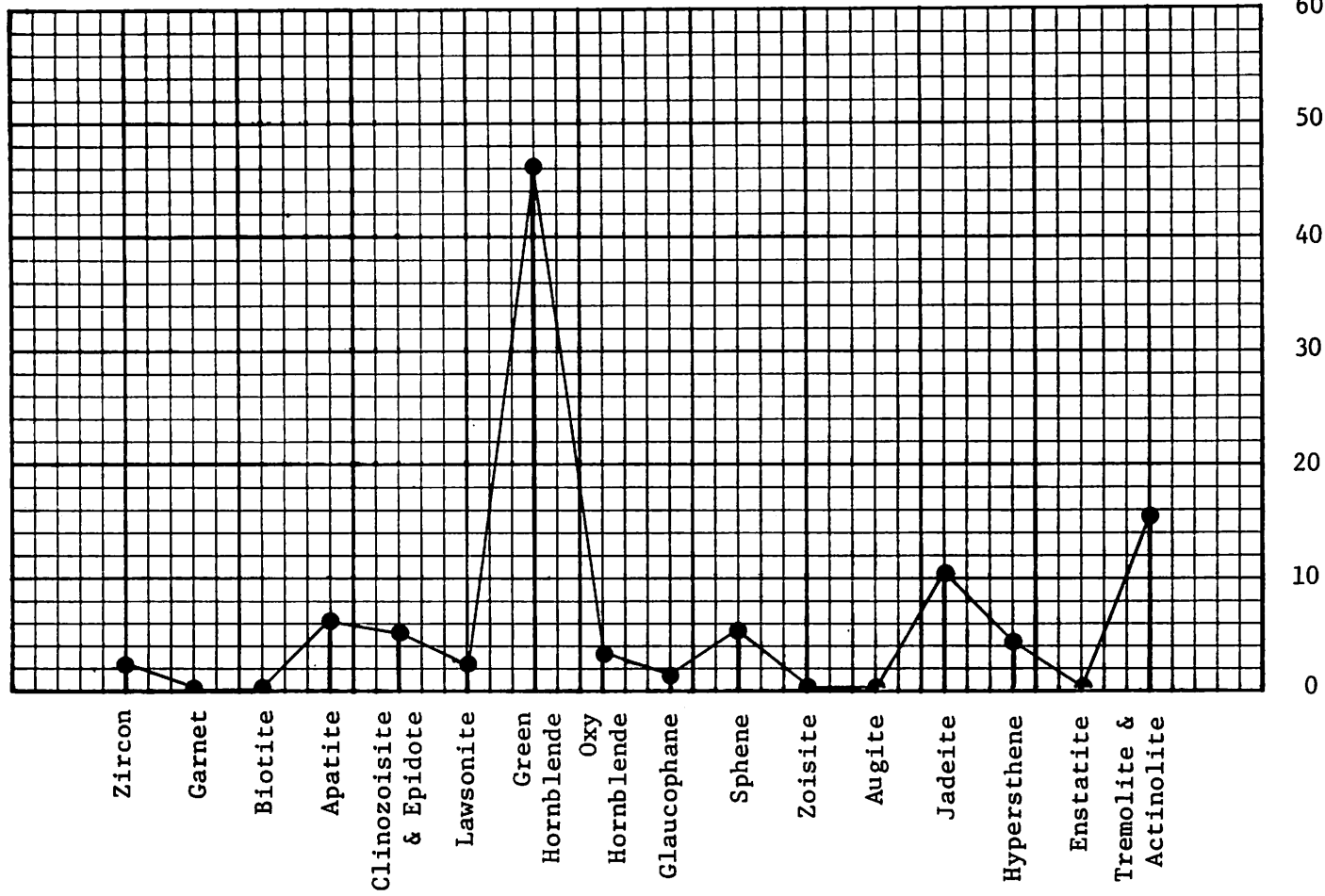
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1
Chlorite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	3
Rock Frag.	15

Analyst L. Osuch

Location 37°53'47"N 122°39'41"W Wt. % of SF/Total Sample 20.20  
 Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 2.60  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 157  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 64  
 % Opaques 18  
 % Alterites and Unknowns 18



Other Transparent Minerals

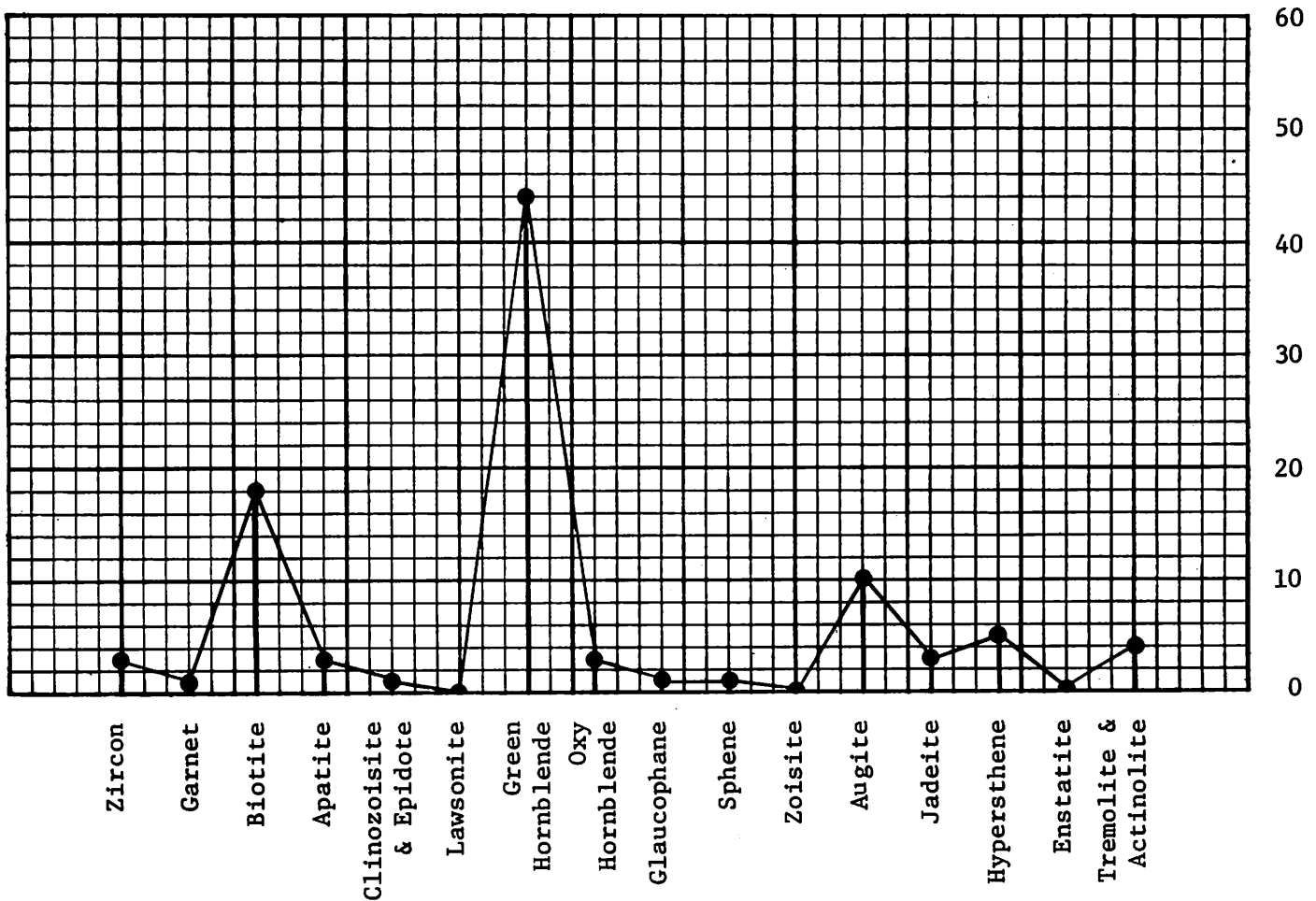
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	14
Picotite	1
Rock Frag.	10

Analyst L. Osuch

## SAMPLE 1996

Location 37°53'44"N 122°39'53"W Wt. % of SF/Total Sample 23.73Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 0.81Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 341Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 34.3% Opaques 12.6% Alterites and Unknowns 53.1Other Transparent Minerals

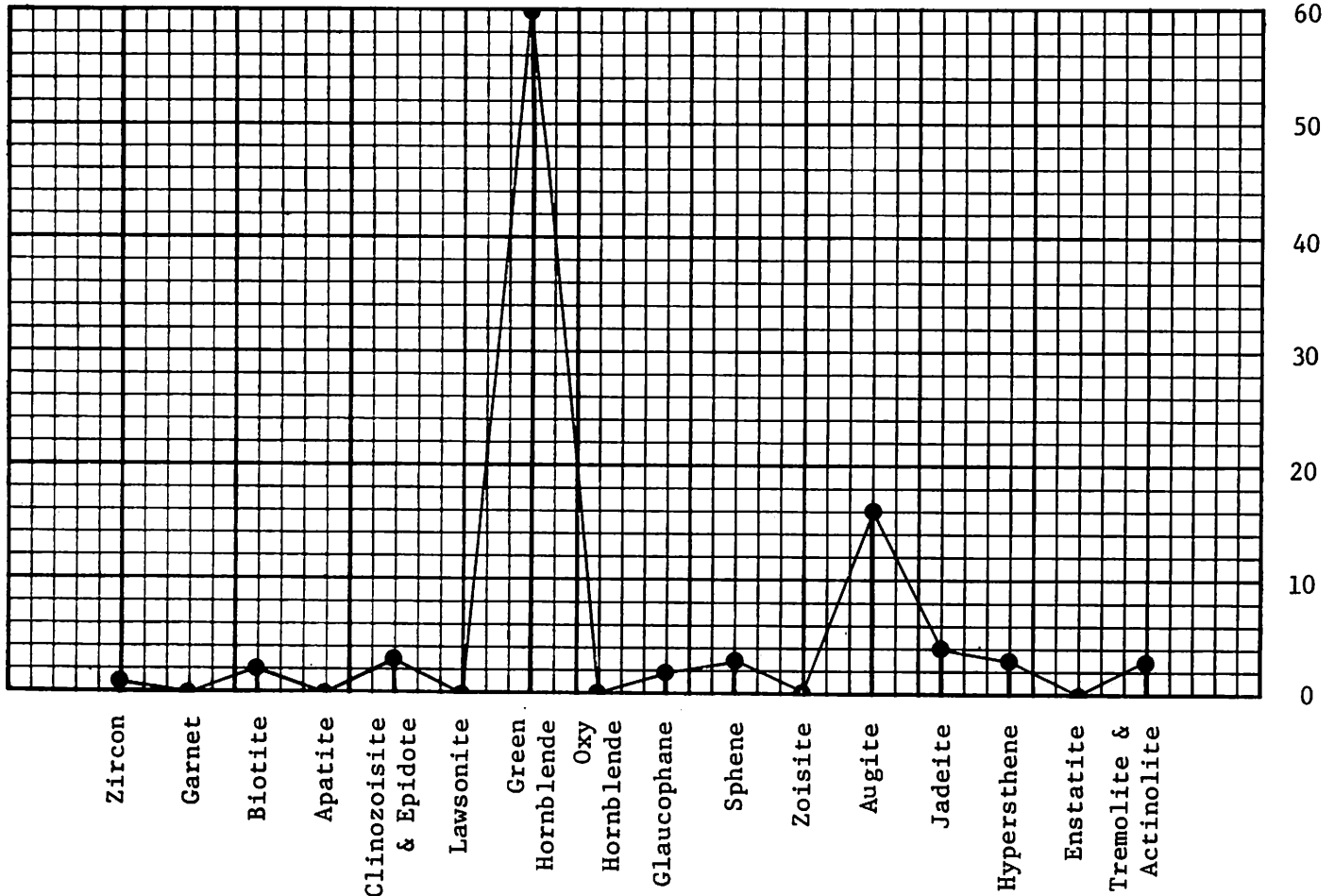
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	4

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	8
Magnetite	14
Picotite	4
Rock Frag.	4

Analyst T. Yancey

Location 37°53'44"N 122°39'53"W Wt. % of SF/Total Sample 55.86  
 Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 1.14  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 235  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 42.6  
 % Opaques 7.7  
 % Alterites and Unknowns 49.7



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3

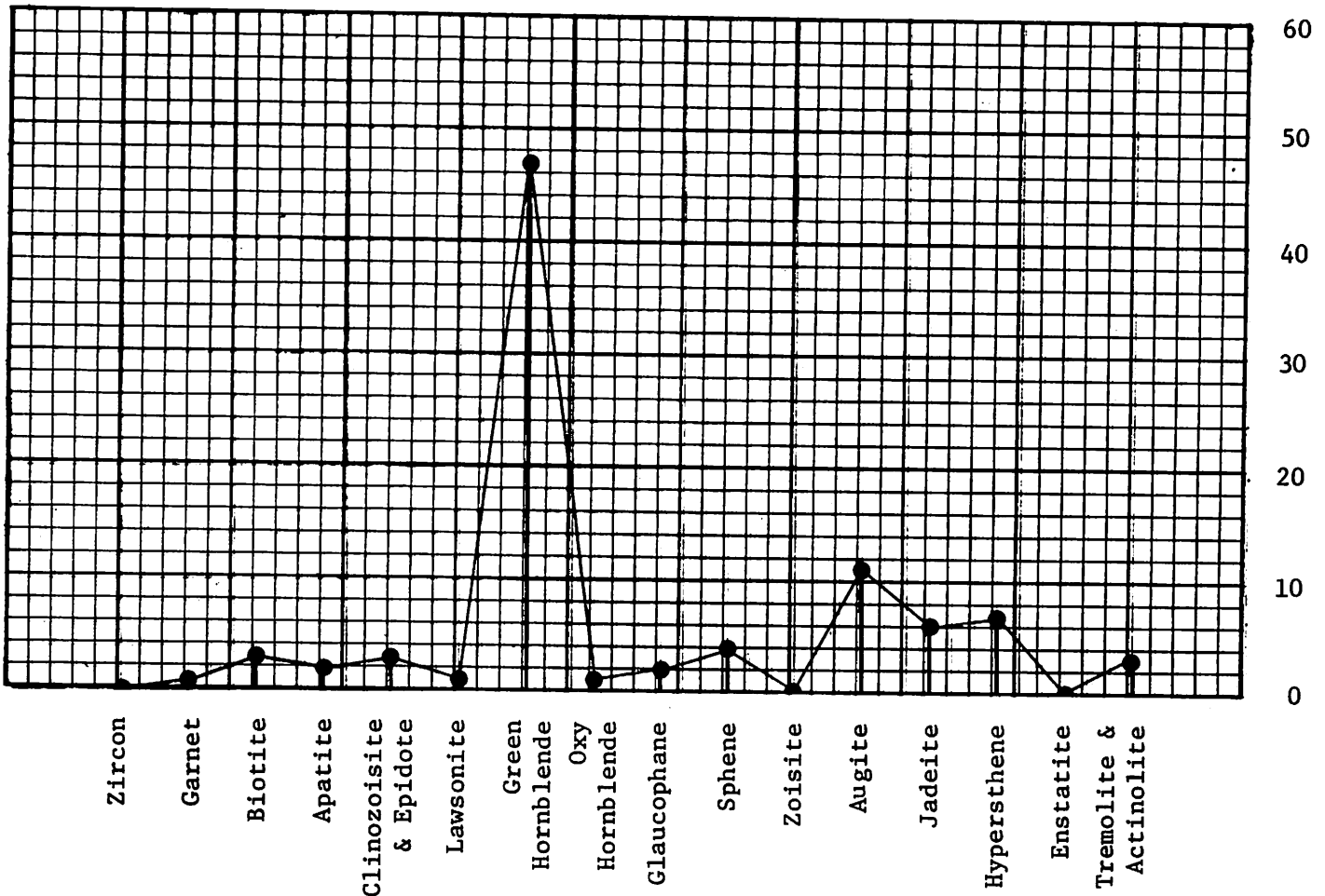
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	7
Magnetite	8
Pyrite	1
Rock Frag.	2

Analyst T. Yancey

SAMPLE 1996

Location 37°53'44"N 122°39'53"W Wt. % of SF/Total Sample 12.21  
 Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 5.49  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 271  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 36.1  
 % Opaques 8.9  
 % Alterites and Unknowns 55.0



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	8

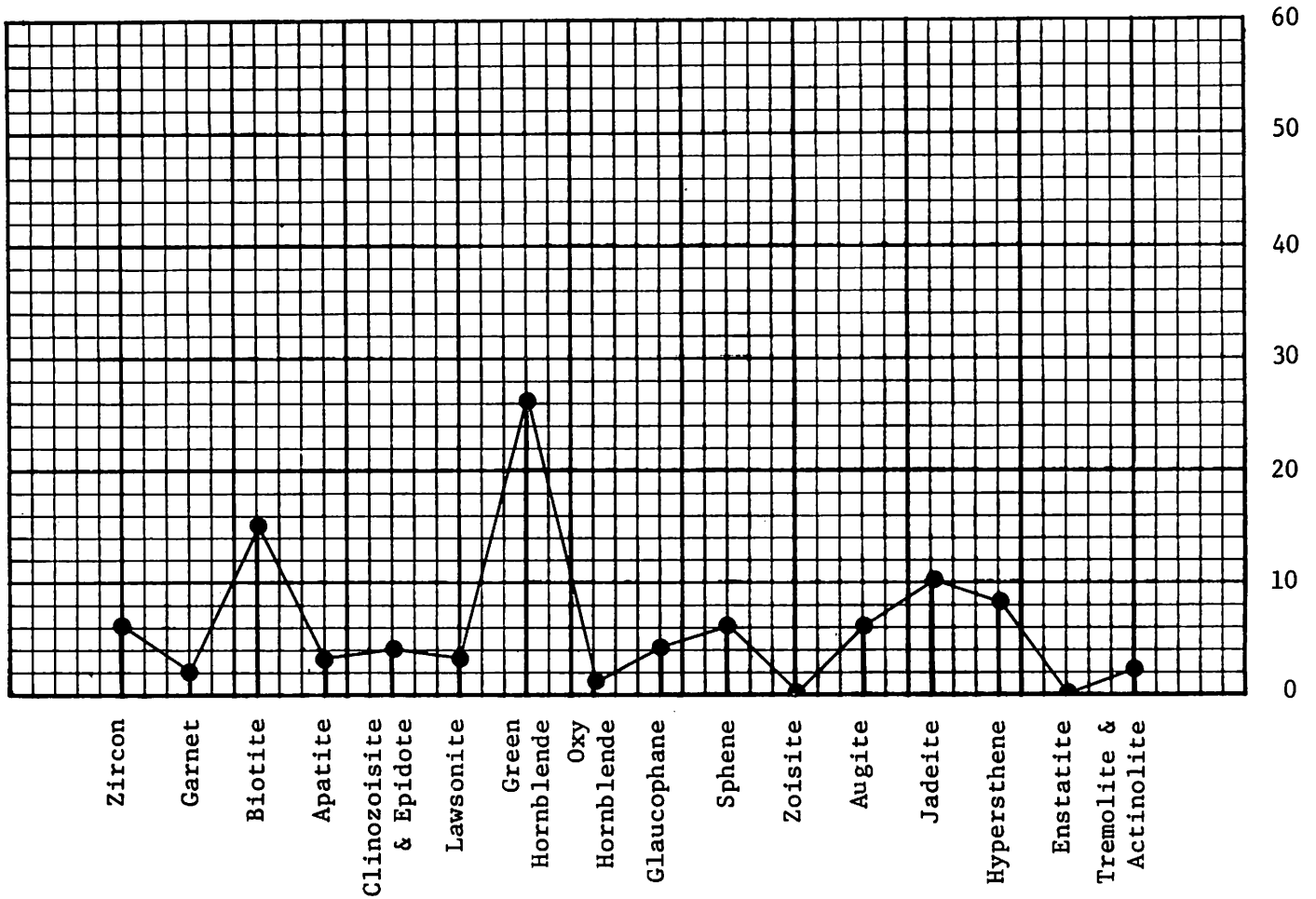
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	18
Picotite	5

Analyst T. Yancey



Location 37°53'45"N 122°40'20"W Wt. % of SF/Total Sample 35.4  
 Depth 7.93 meters 4.33 fathoms Wt. % of HM/SF 0.82  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 212  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 51.9  
 % Opaques 15.6  
 % Alterites and Unknowns 32.5



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Chlorite</u>	<u>3</u>
<u>Carbonate</u>	<u>4</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

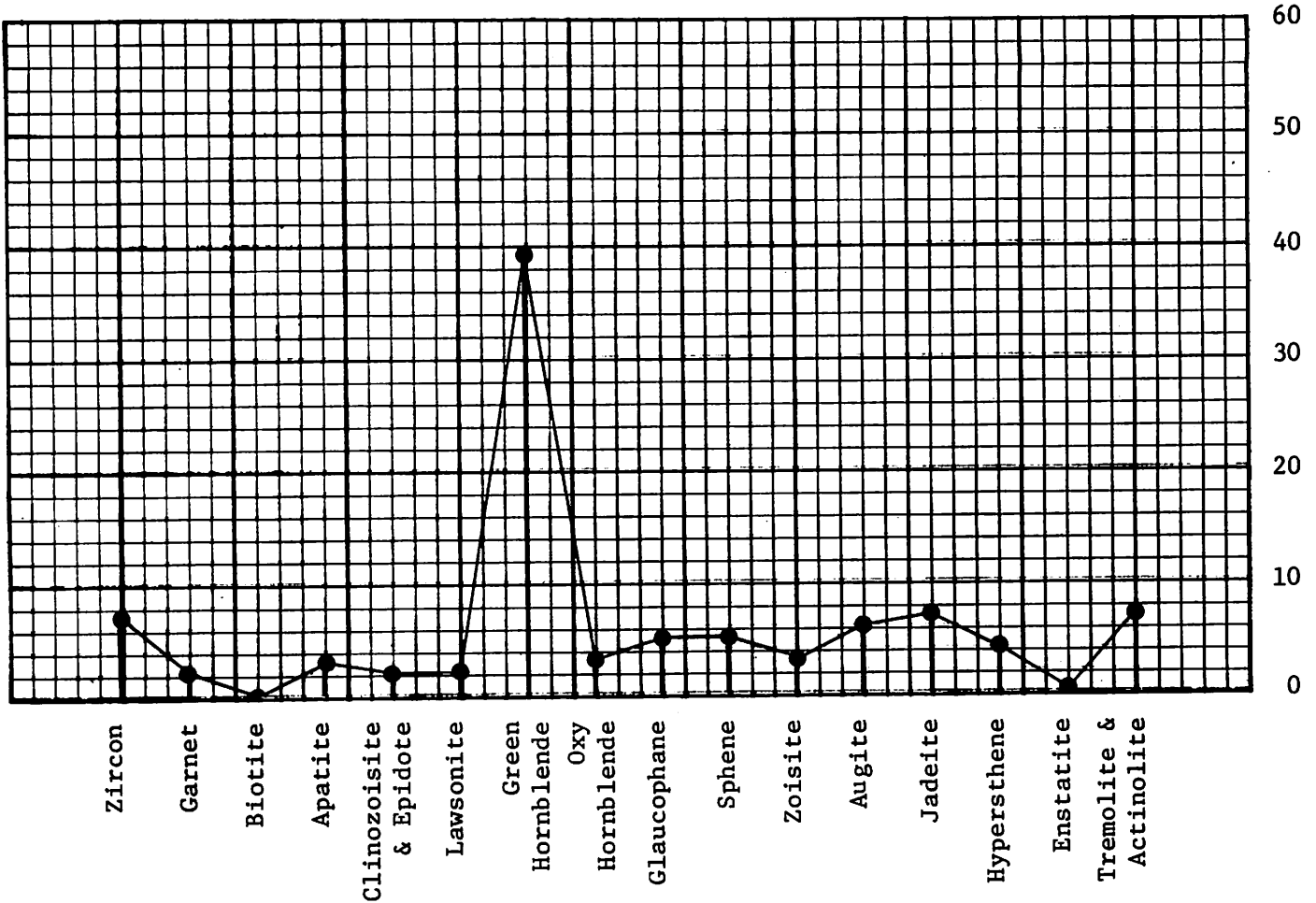
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>14</u>
<u>Magnetite</u>	<u>10</u>
<u>Picotite</u>	<u>3</u>
<u>Rock Frag.</u>	<u>6</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Analyst C. Isselhardt

SAMPLE 1997

Location 37°53'45"N 122°40'20"W Wt. % of SF/Total Sample 40.8  
 Depth 7.93 meters 4.33 fathoms Wt. % of HM/SF 3.24  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 198  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 50.4  
 % Opaques 11.2  
 % Alterites and Unknowns 38.4



Other Transparent Minerals

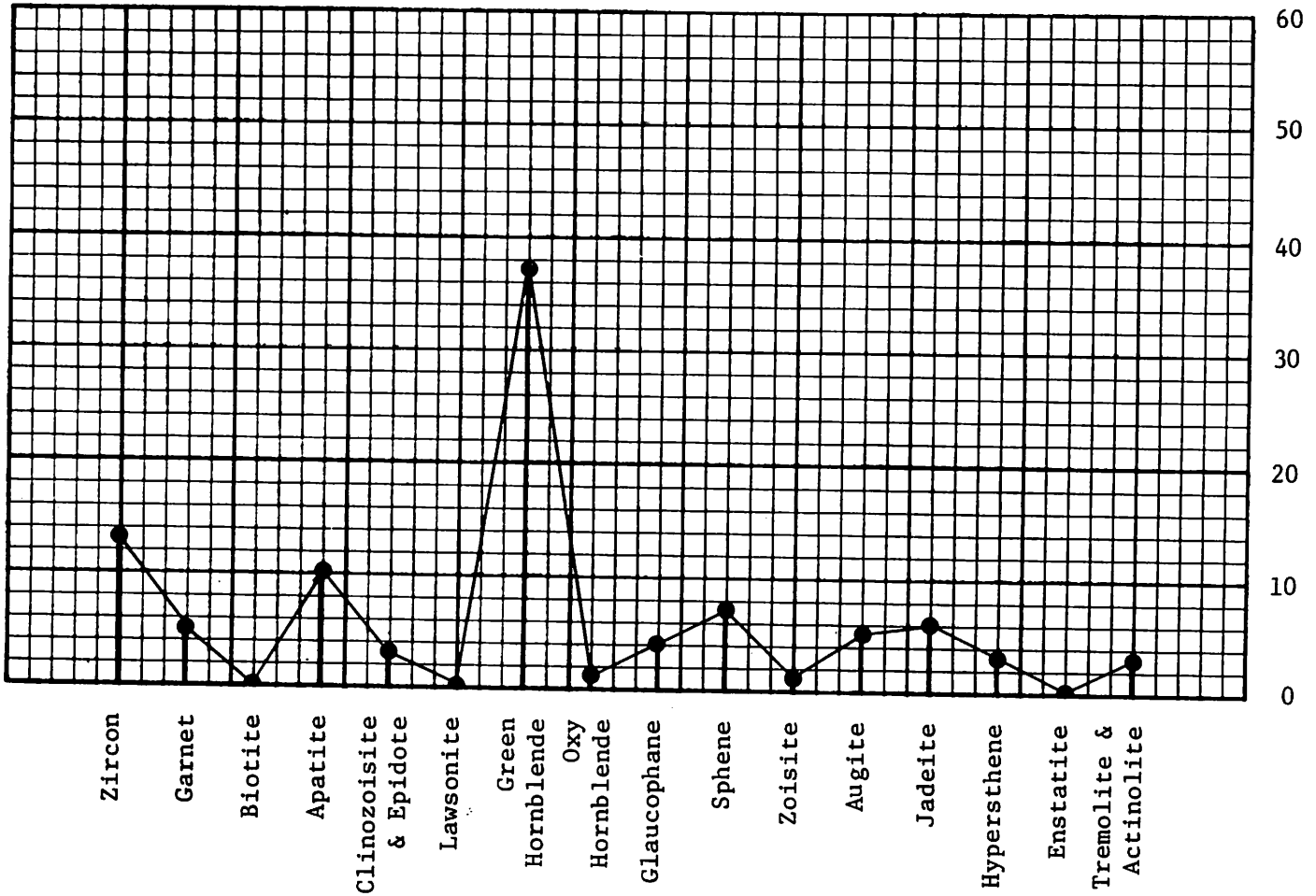
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	5
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	7
Magnetite	6
Pyrite	1
Rock Frag.	8
_____	_____
_____	_____

Analyst C. Isselhardt

Location 37°53'45"N 122°40'20"W Wt. % of SF/Total Sample 10.3  
 Depth 7.93 meters 4.33 fathoms Wt. % of HM/SF 13.54  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 175  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 57.1  
 % Opaques 18.3  
 % Alterites and Unknowns 24.6



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

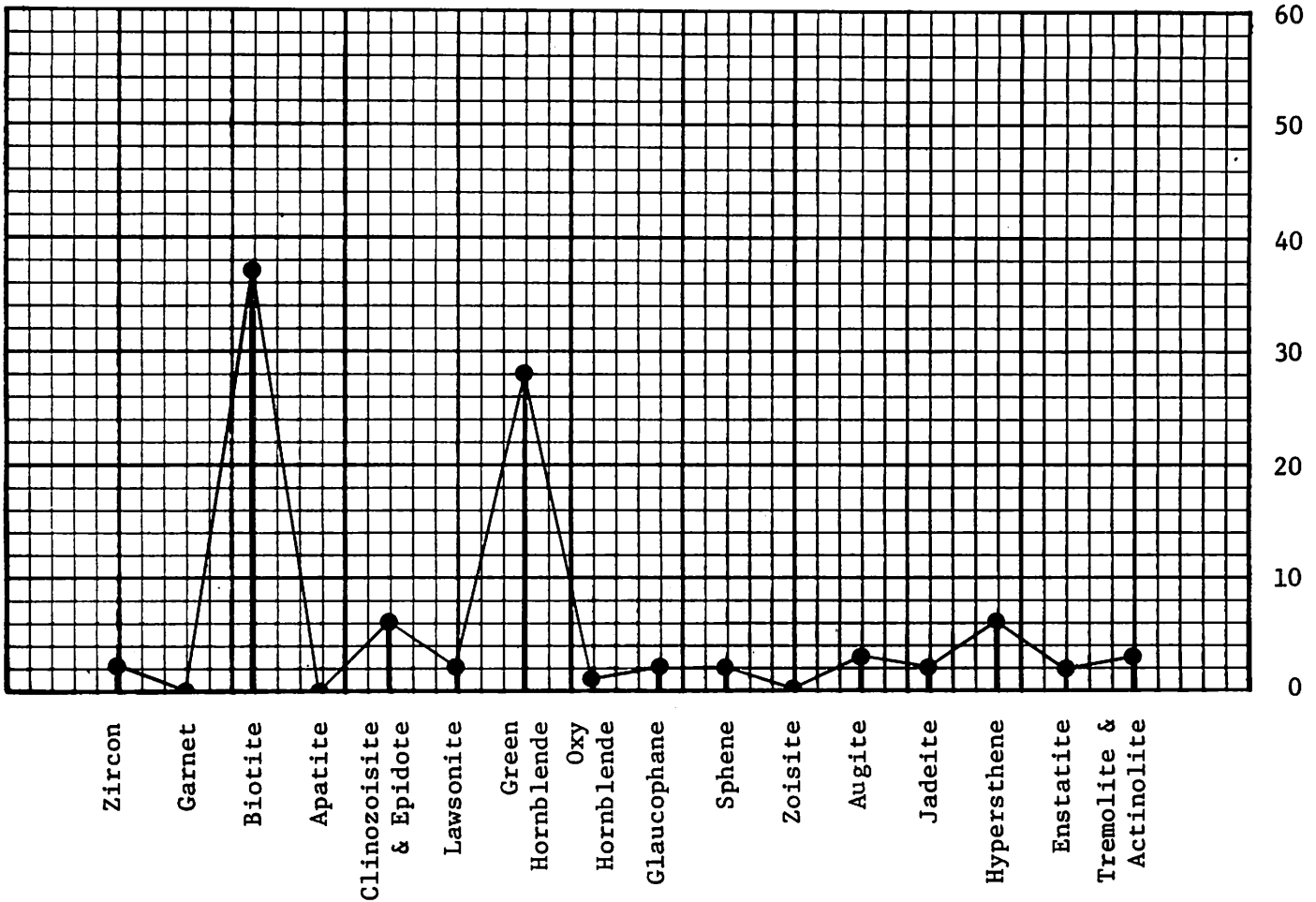
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	7
Magnetite	14
Picotite	5
Rock Frag.	6

Analyst C. Isselhardt

## SAMPLE 1999

Location 37°53'19"N 122°40'32"W Wt. % of SF/Total Sample 17.42  
 Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 0.31  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 169  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 59  
 % Opaques 10  
 % Alterites and Unknowns 31

Other Transparent Minerals

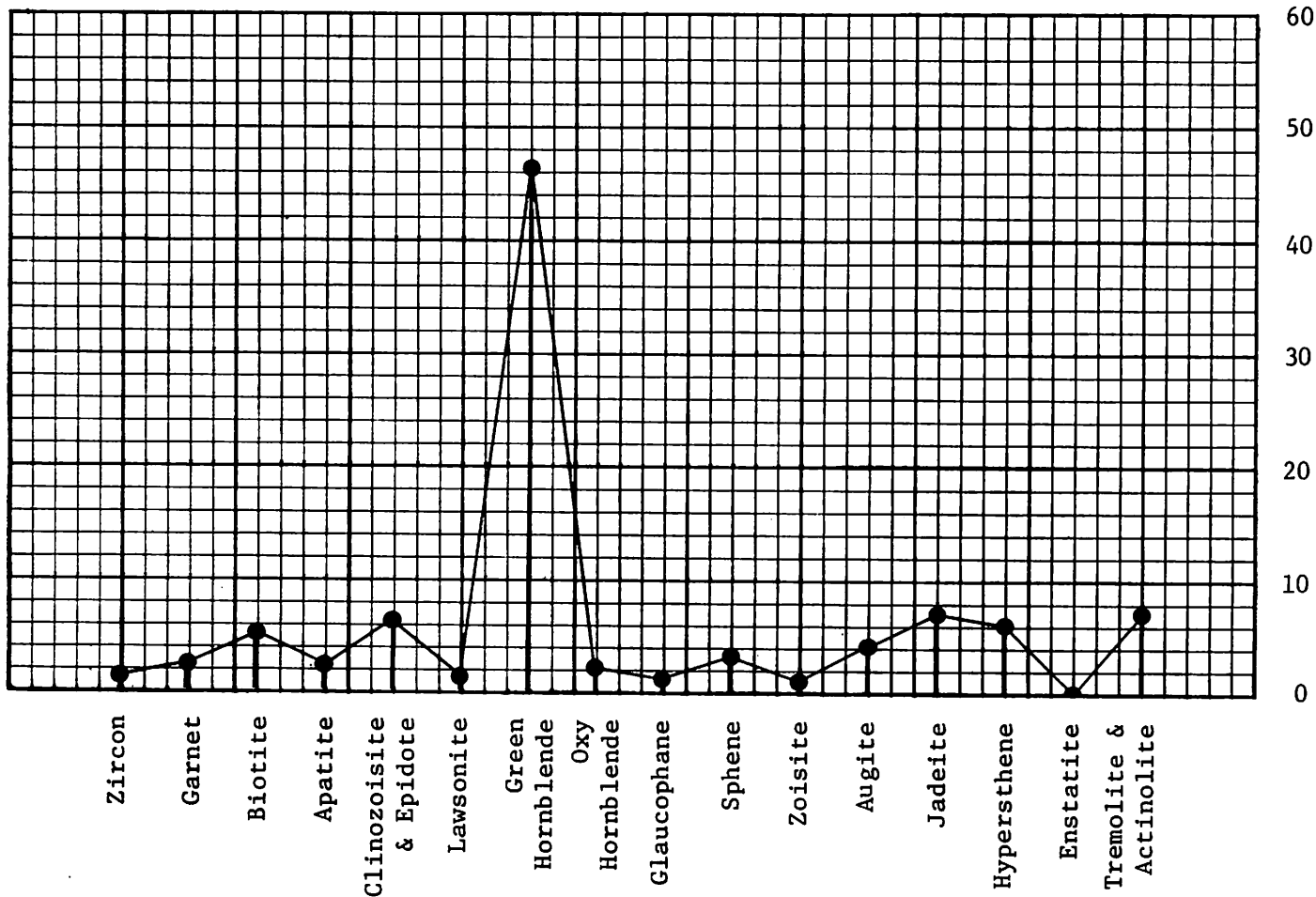
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	2
Chlorite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	8
Magnetite	3
Picotite	1
Pyrite	1
Rock Frag.	4

Analyst L. Osuch

Location 37°53'19"N 122°40'32"W Wt. % of SF/Total Sample 28.63  
 Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 0.85  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 154  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 65  
 % Opaques 15  
 % Alterites and Unknowns 20



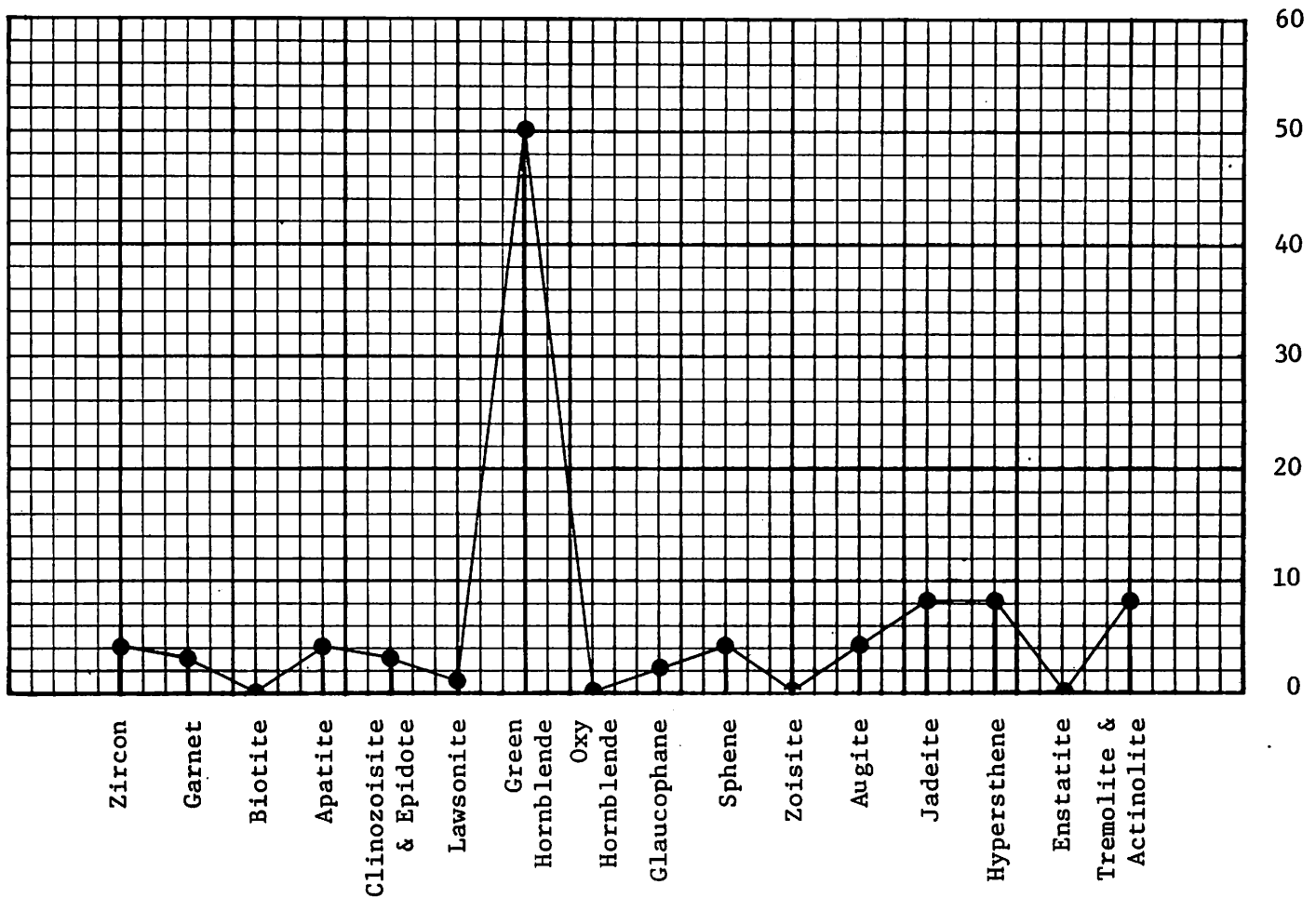
Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	5

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	7
Magnetite	5
Picotite	2
Pyrite	1
Rock Frag.	8

Analyst L. Osuch

Location 37°53'19"N 122°40'32"W Wt. % of SF/Total Sample 30.12Depth 10.98 meters 6.00 fathoms Wt. % of HM/SF 2.00Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 151Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$ % Transparent Grains 67% Opaques 15% Alterites and Unknowns 18Other Transparent Minerals

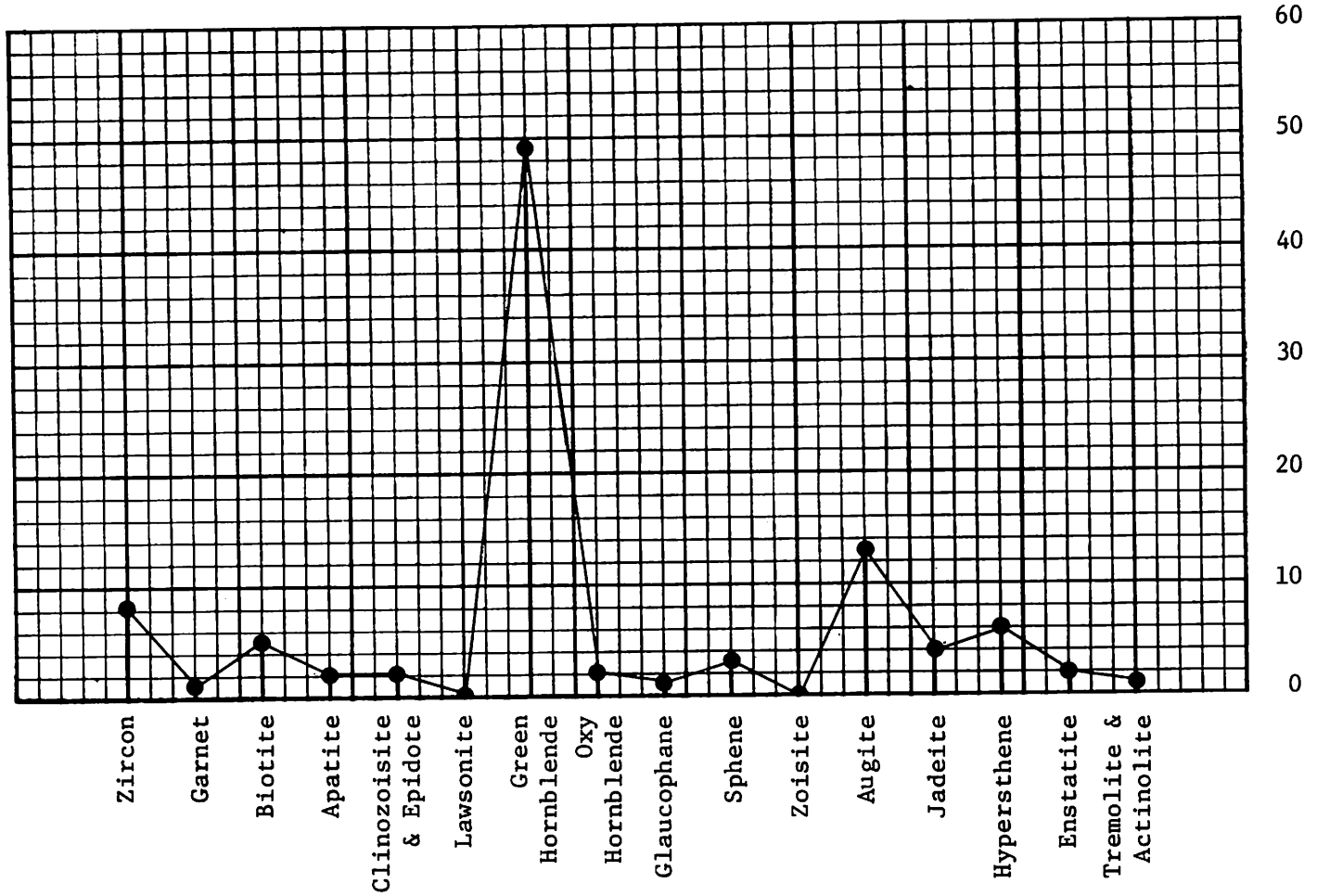
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	15
Picotite	1
Pyrite	1
Gold	1
Rock Frag.	2

Analyst L. Osuch

Location 37°53'13"N 122°40'08"W Wt. % of SF/Total Sample 21.61  
 Depth 13.41 meters 7.33 fathoms Wt. % of HM/SF 0.70  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 201  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 51.3  
 % Opaques 15.9  
 % Alterites and Unknowns 32.8



Other Transparent Minerals

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>	<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3	Hematite	5
		Magnetite	22
		Picotite	2
		Rock Frag.	3

Analyst T. Yancey

SAMPLE 2001

Location 37°53'13"N 122°40'08"W

Wt. % of SF/Total Sample 40.41

Depth 13.41 meters 7.33 fathoms

Wt. % of HM/SF 2.34

Size Fraction (SF) 0.124 - 0.088 mm

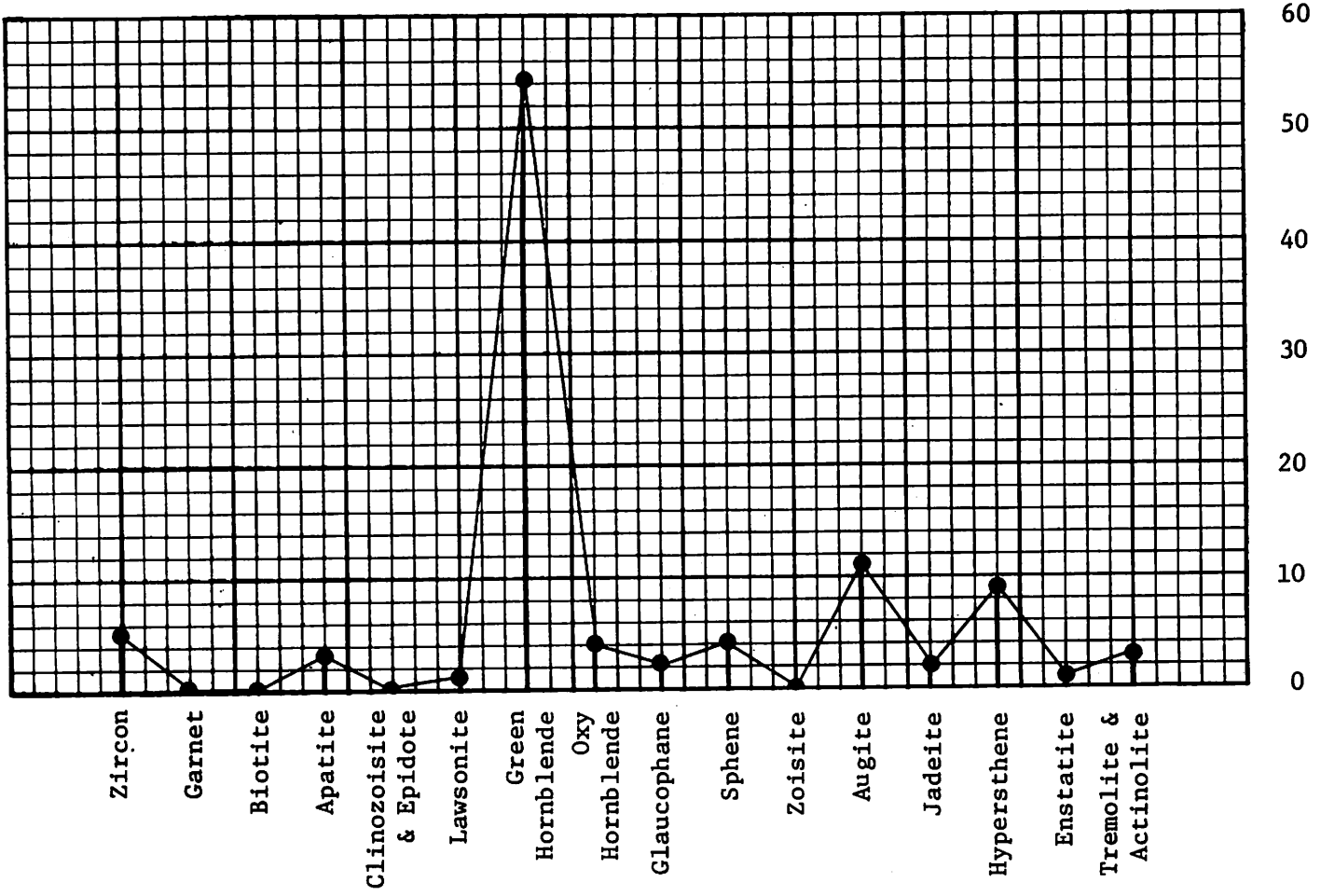
Total Grains Counted 211

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 48.8

% Opaques 8.1

% Alterites and Unknowns 43.1



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Carbonate</u>	<u>1</u>
<u>Tourmaline</u>	<u>1</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Other Opaque Minerals

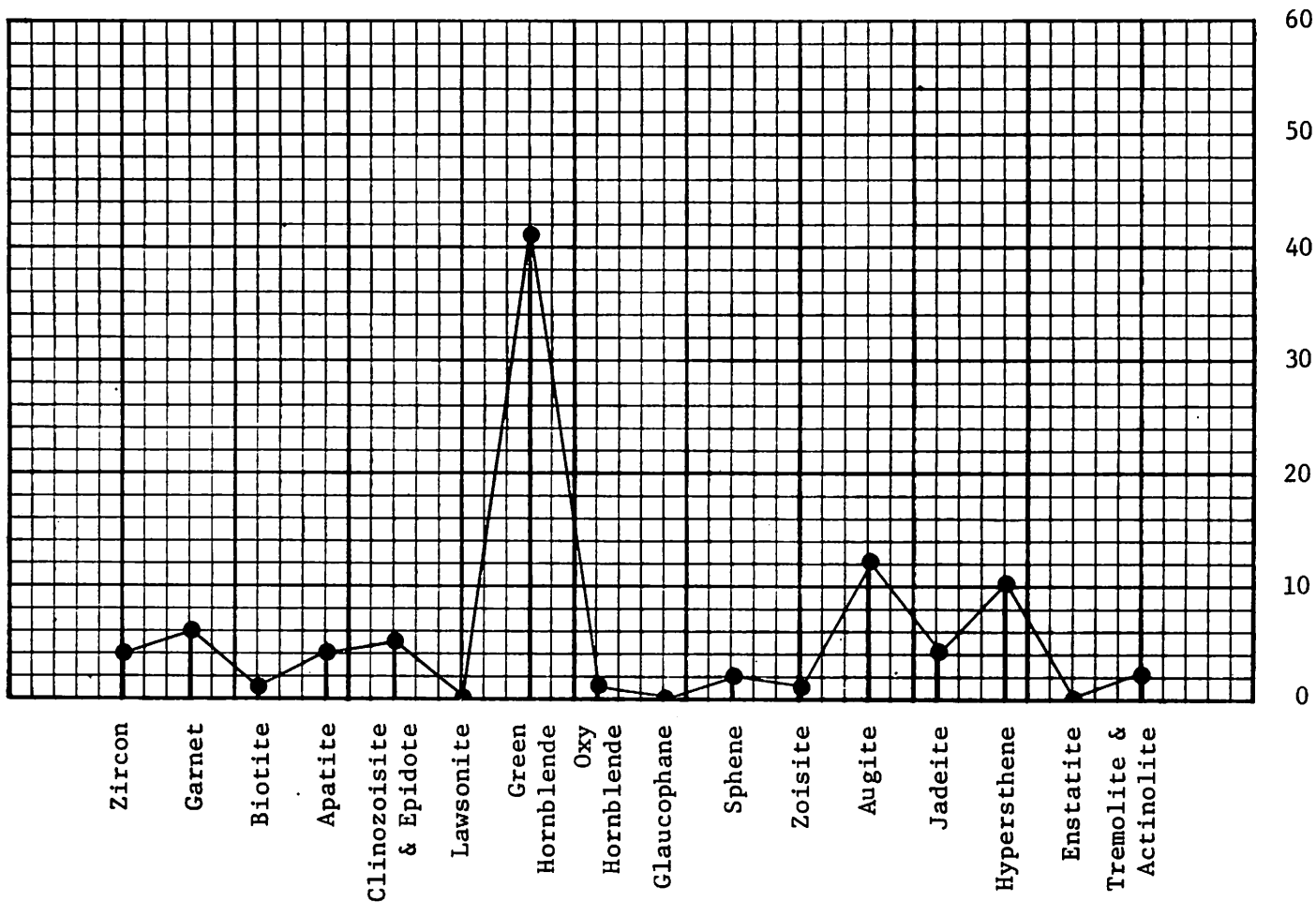
<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>3</u>
<u>Magnetite</u>	<u>9</u>
<u>Rock Frag.</u>	<u>5</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Analyst T. Yancey



SAMPLE 2001

Location 37°53'13"N 122°40'08"W Wt. % of SF/Total Sample 19.06  
 Depth 13.41 meters 7.33 fathoms Wt. % of HM/SF 4.43  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 187  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 52.4  
 % Opaques 15  
 % Alterites and Unknowns 32.6



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>2</u>
<u>Chlorite</u>	<u>1</u>
<u>Carbonate</u>	<u>2</u>
<u>Pumpellyite</u>	<u>1</u>
_____	_____
_____	_____

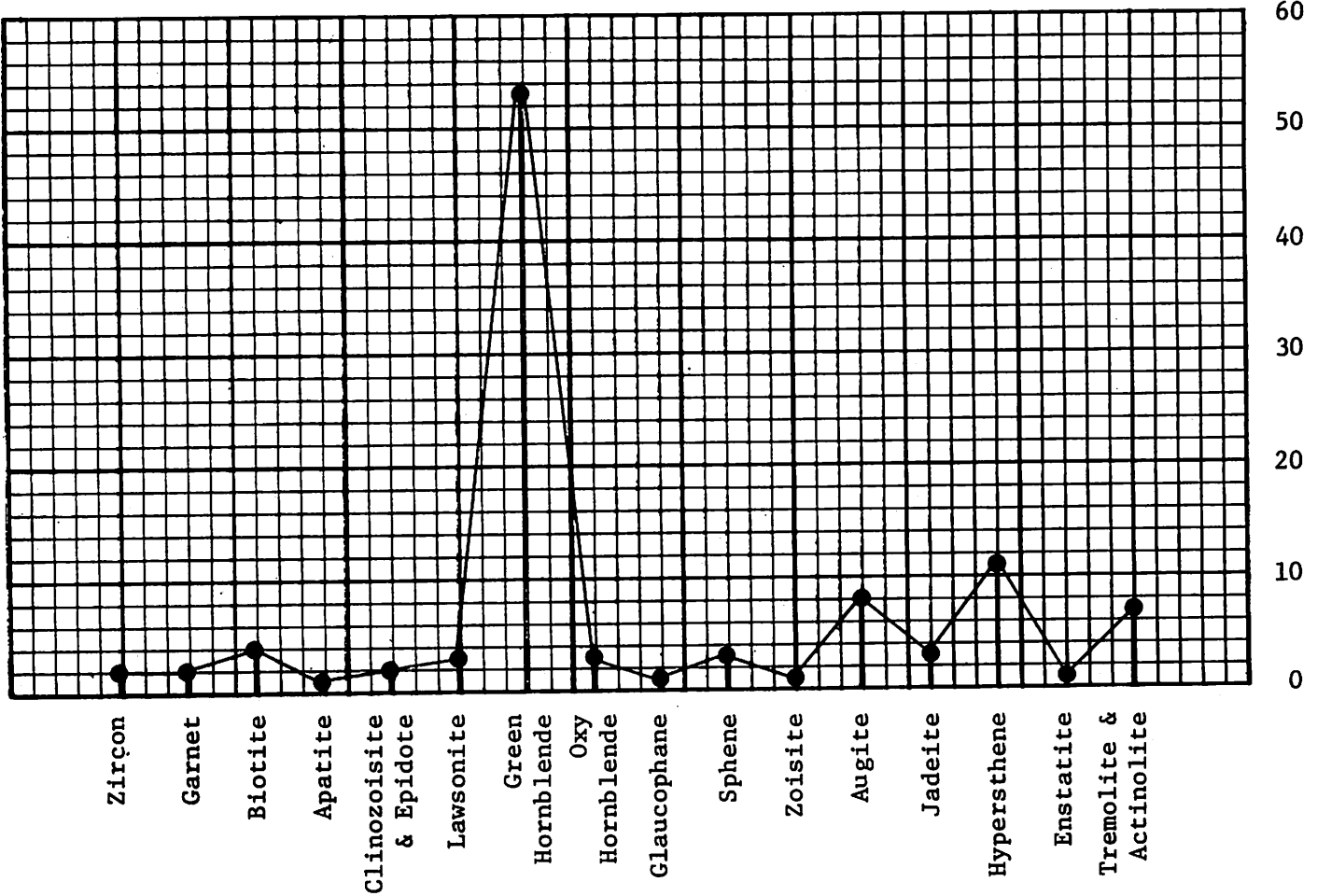
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>1</u>
<u>Magnetite</u>	<u>20</u>
<u>Picotite</u>	<u>7</u>
<u>Rock Frag.</u>	<u>3</u>
_____	_____
_____	_____

Analyst T. Yancey

SAMPLE 2002

Location 37°53'35"N 122°39'39"W Wt. % of SF/Total Sample 23.88  
 Depth 12.20 meters 6.67 fathoms Wt. % of HM/SF 0.72  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 157  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 74.5  
 % Opaques 10.2  
 % Alterites and Unknowns 15.3



Other Transparent Minerals

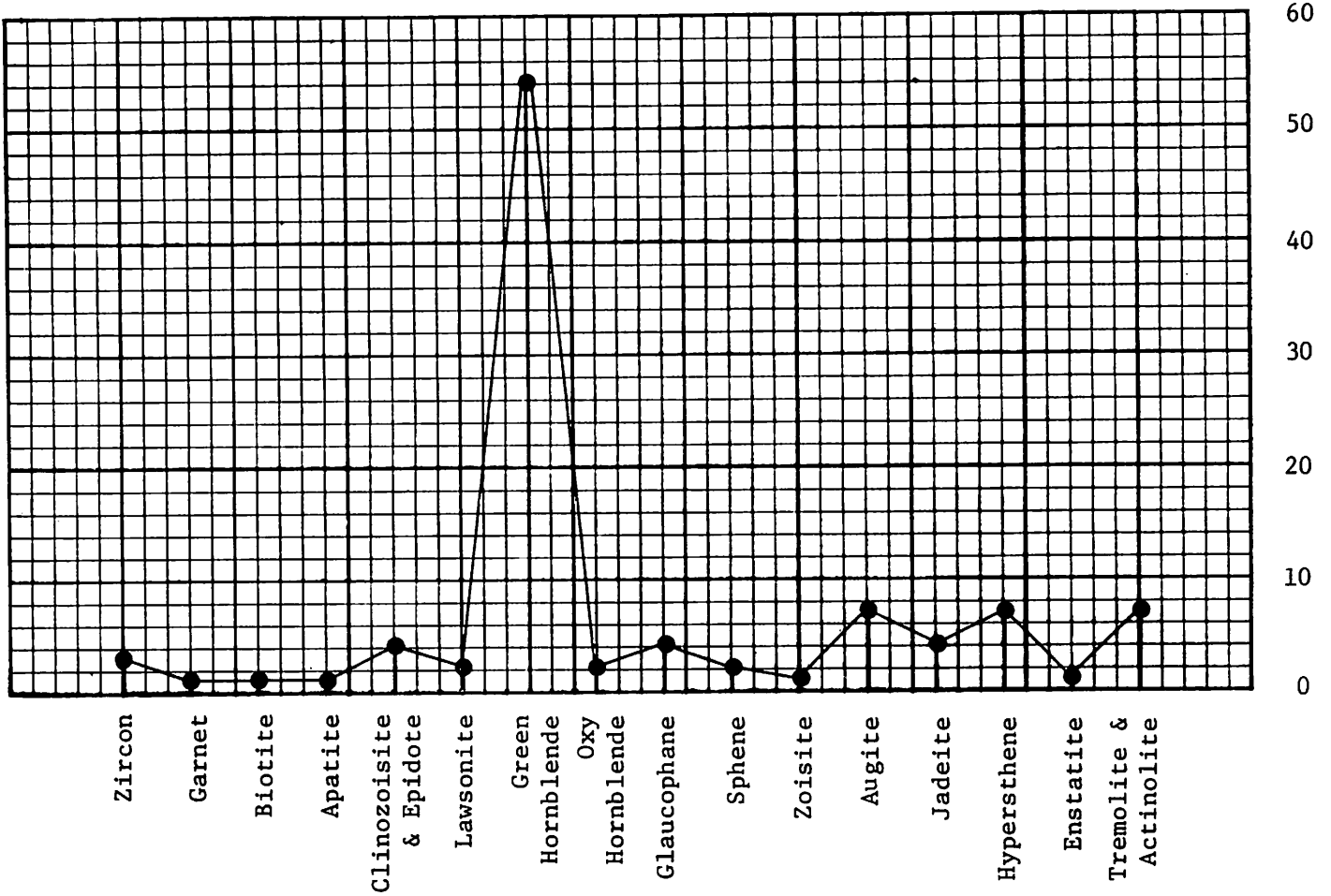
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1
Pumpellyite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	5
Picotite	1
Rock Frag.	6

Analyst C. Isselhardt

Location 37°53'35"N 122°39'39"W Wt. % of SF/Total Sample 49.35  
 Depth 12.20meters 6.67 fathoms Wt. % of HM/SF 1.87  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 166  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 69.5  
 % Opaques 10.2  
 % Alterites and Unknowns 20.3



Other Transparent Minerals

Other Opaque Minerals

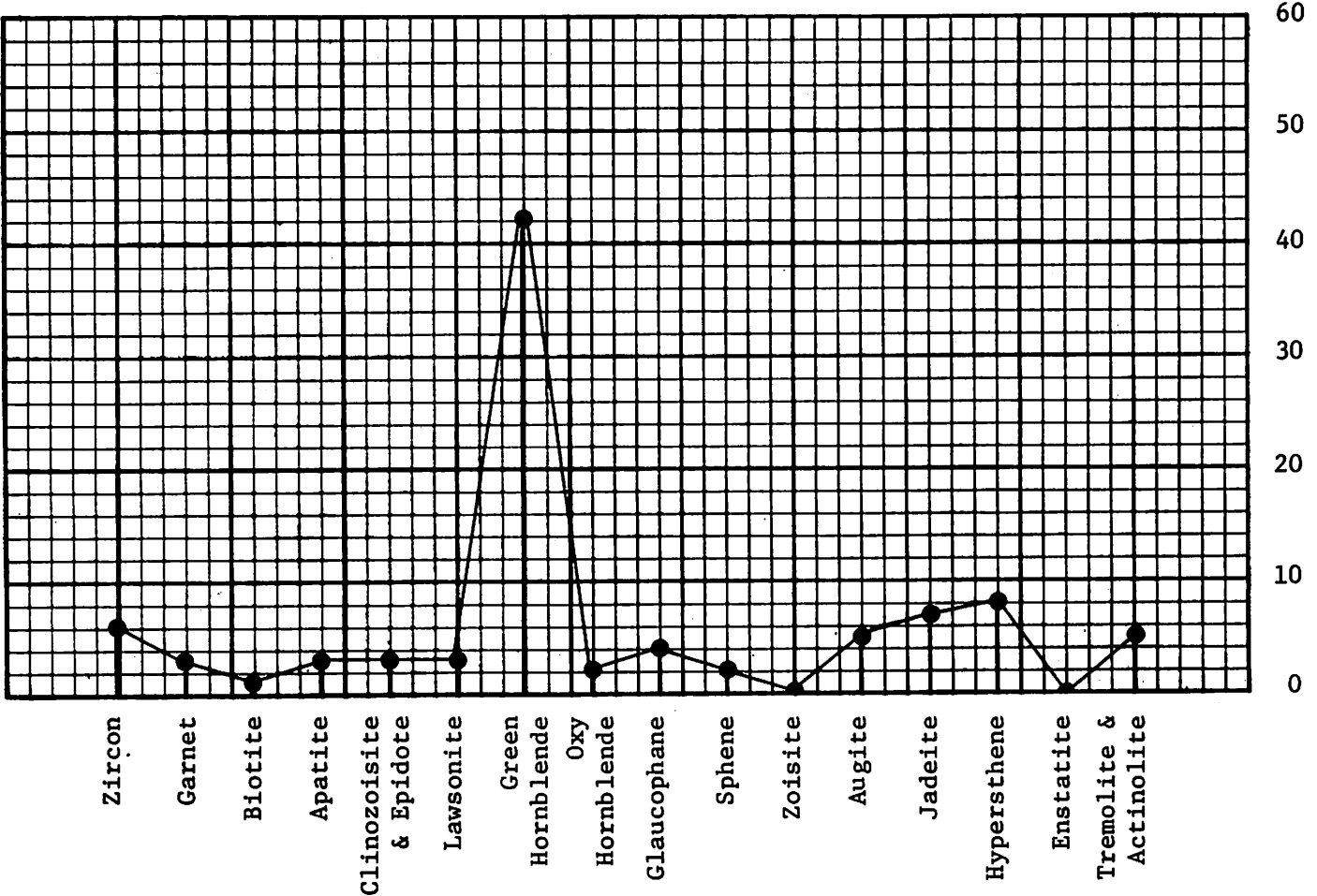
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	4
Picotite	1
Rock Frag.	8

Analyst C. Isselhardt

SAMPLE 2002

Location 37°53'35"N 122°39'39"W Wt. % of SF/Total Sample 12.66  
 Depth 12.20 meters 6.67 fathoms Wt. % of HM/SF 3.93  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 223  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 56.9  
 % Opaques 21.2  
 % Alterites and Unknowns 21.9



Other Transparent Minerals

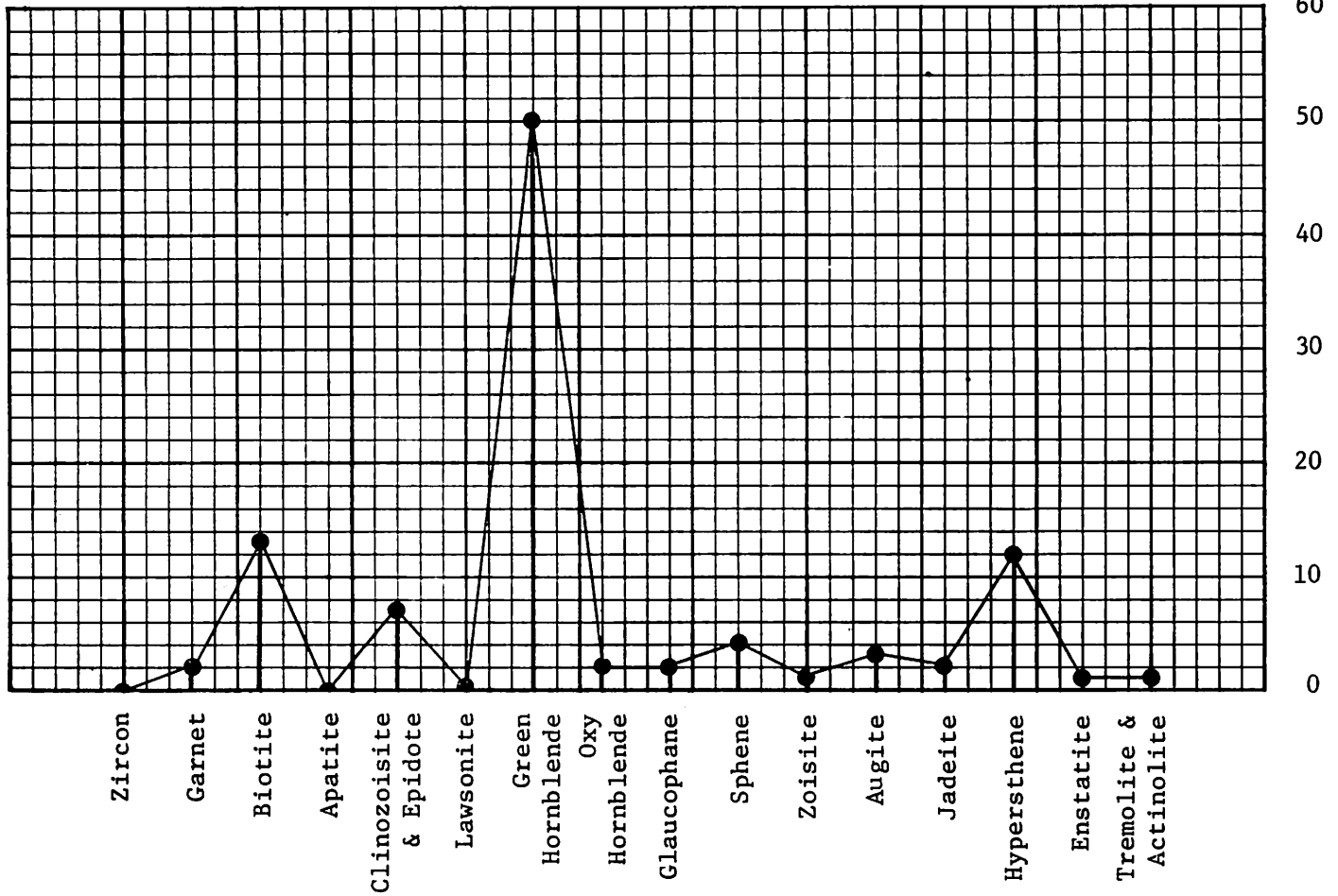
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	23
Picotite	5
Rock Frag.	14

Analyst C. Isselhardt

Location 37°53'25"N 122°39'18"W Wt. % of SF/Total Sample 18.83  
 Depth 13.72 meters 7.50 fathoms Wt. % of HM/SF 0.56  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 160  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 65  
 % Opaques 5  
 % Alterites and Unknowns 30



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Magnetite	5
Rock Frag.	3

Analyst L. Osuch

SAMPLE 2003

Location 37°53'25"N 122°39'18"W Wt. % of SF/Total Sample 42.91

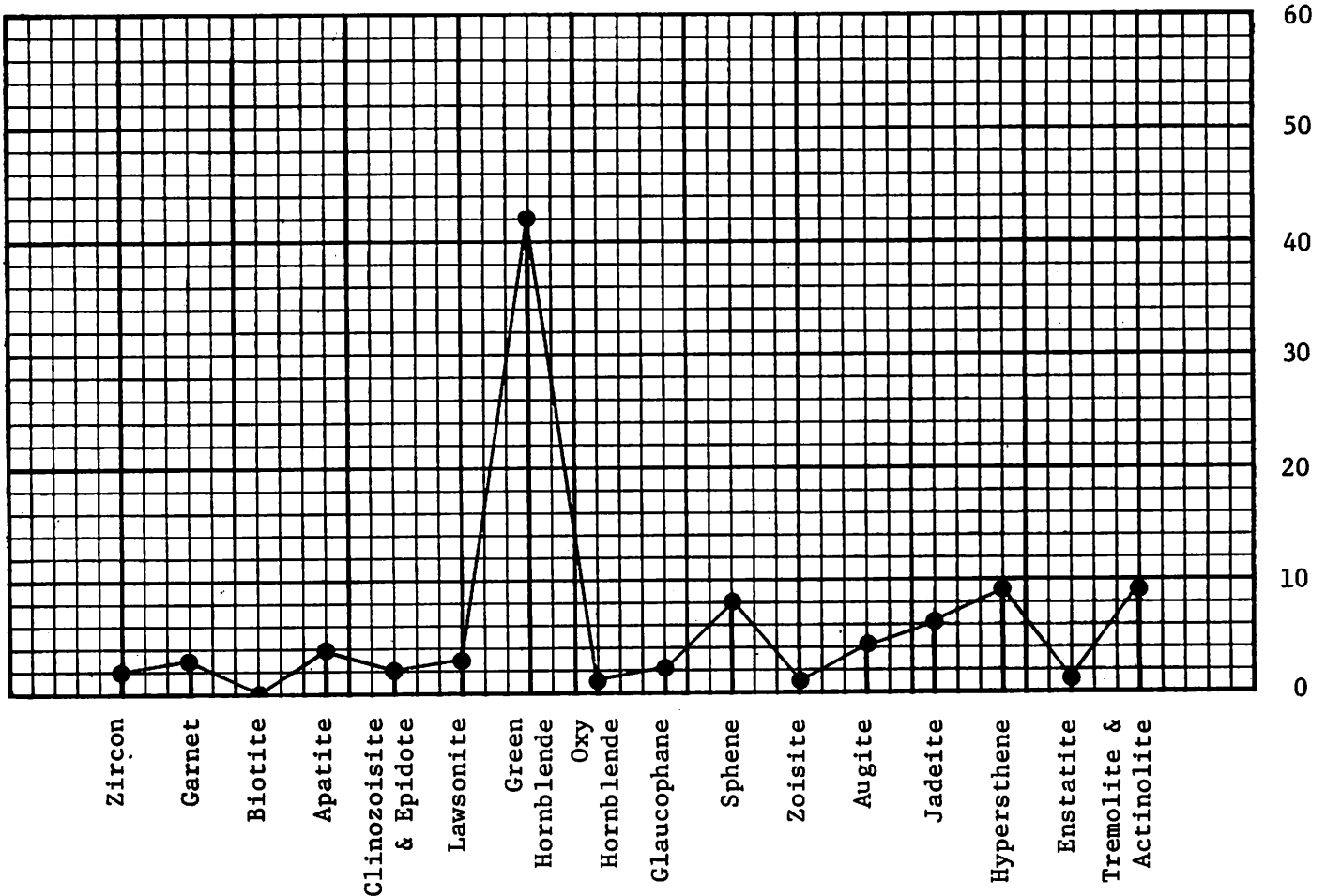
Depth 13.72 meters 7.50 fathoms Wt. % of HM/SF 1.03

Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 153

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 69

% Opaques 9

% Alterites and Unknowns 22



Other Transparent Minerals

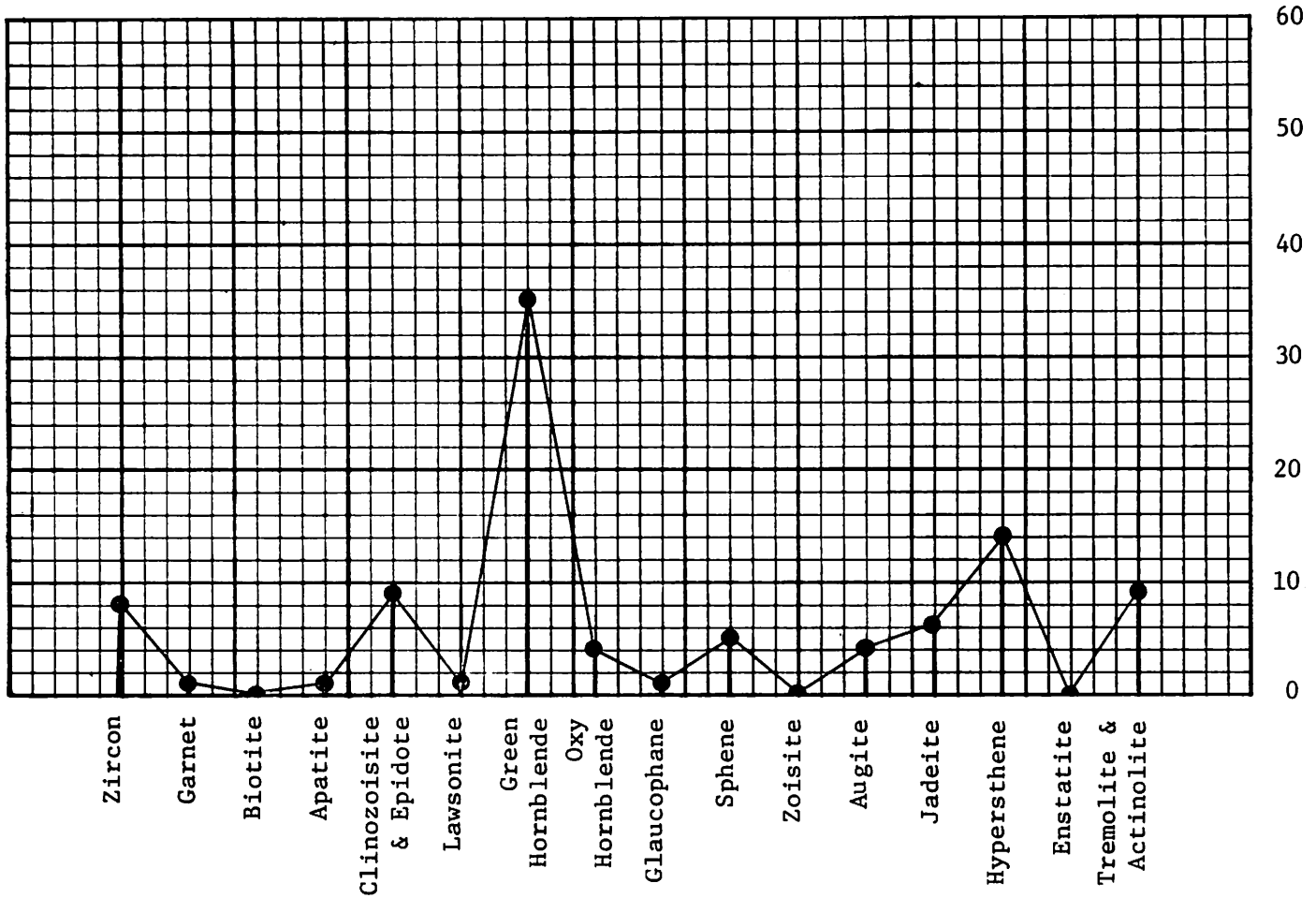
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Chlorite	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	5
Picotite	3
Rock Frag.	5

Analyst L. Osuch

Location 37°53'25"N 122°39'18"W Wt. % of SF/Total Sample 16.63  
 Depth 13.72 meters 7.50 fathoms Wt. % of HM/SF 2.00  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 165  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 59  
 % Opaques 18  
 % Alterites and Unknowns 23



Other Transparent Minerals

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>	<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1	Hematite	2
		Magnetite	13
		Rock Frag.	15

SAMPLE 2004

Location 37°53'13"N 122°38'55"W Wt. % of SF/Total Sample 13.27

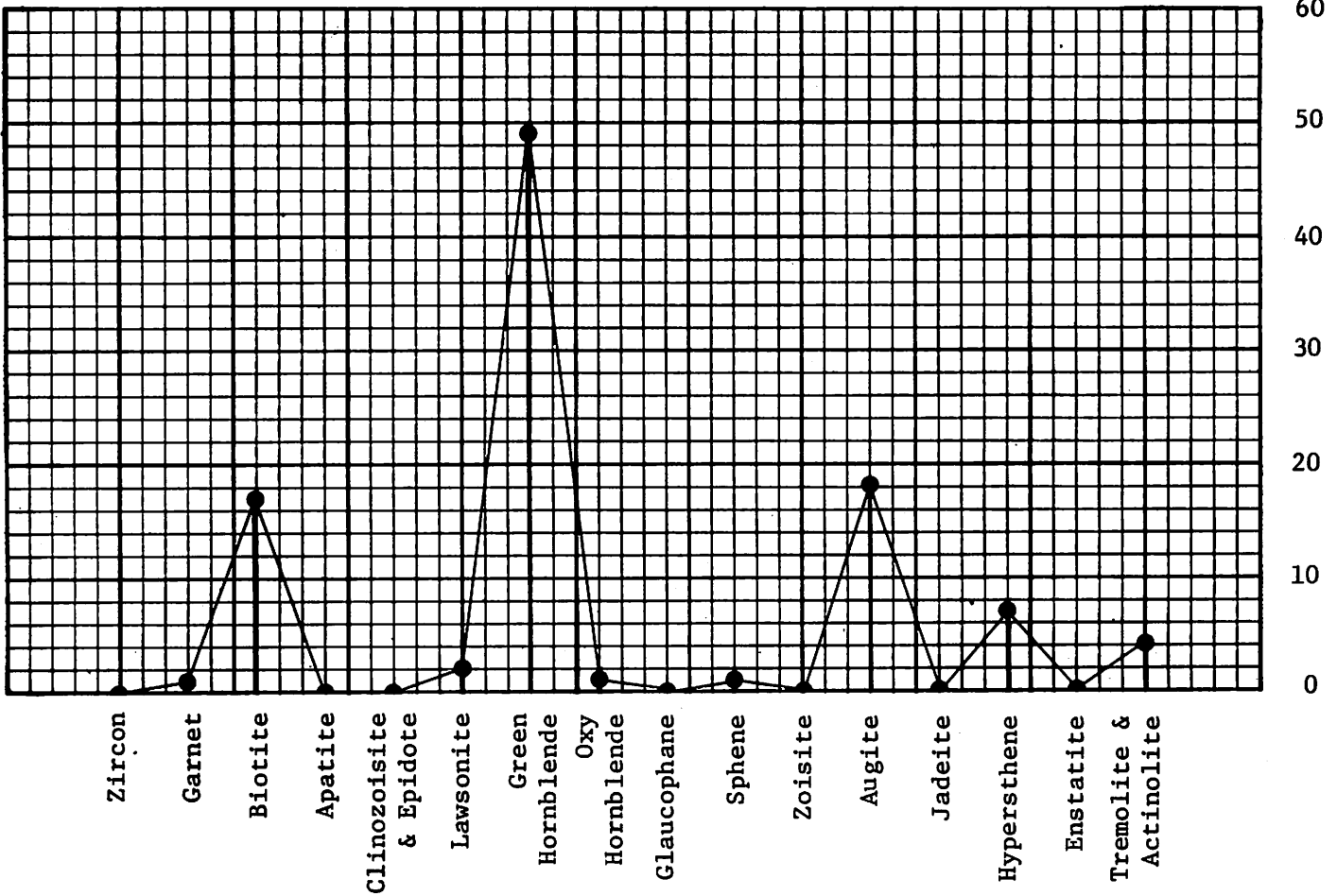
Depth 14.64 meters 8.00 fathoms Wt. % of HM/SF 0.24

Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 196

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 61.7

% Opaques 7.2

% Alterites and Unknowns 31.1



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

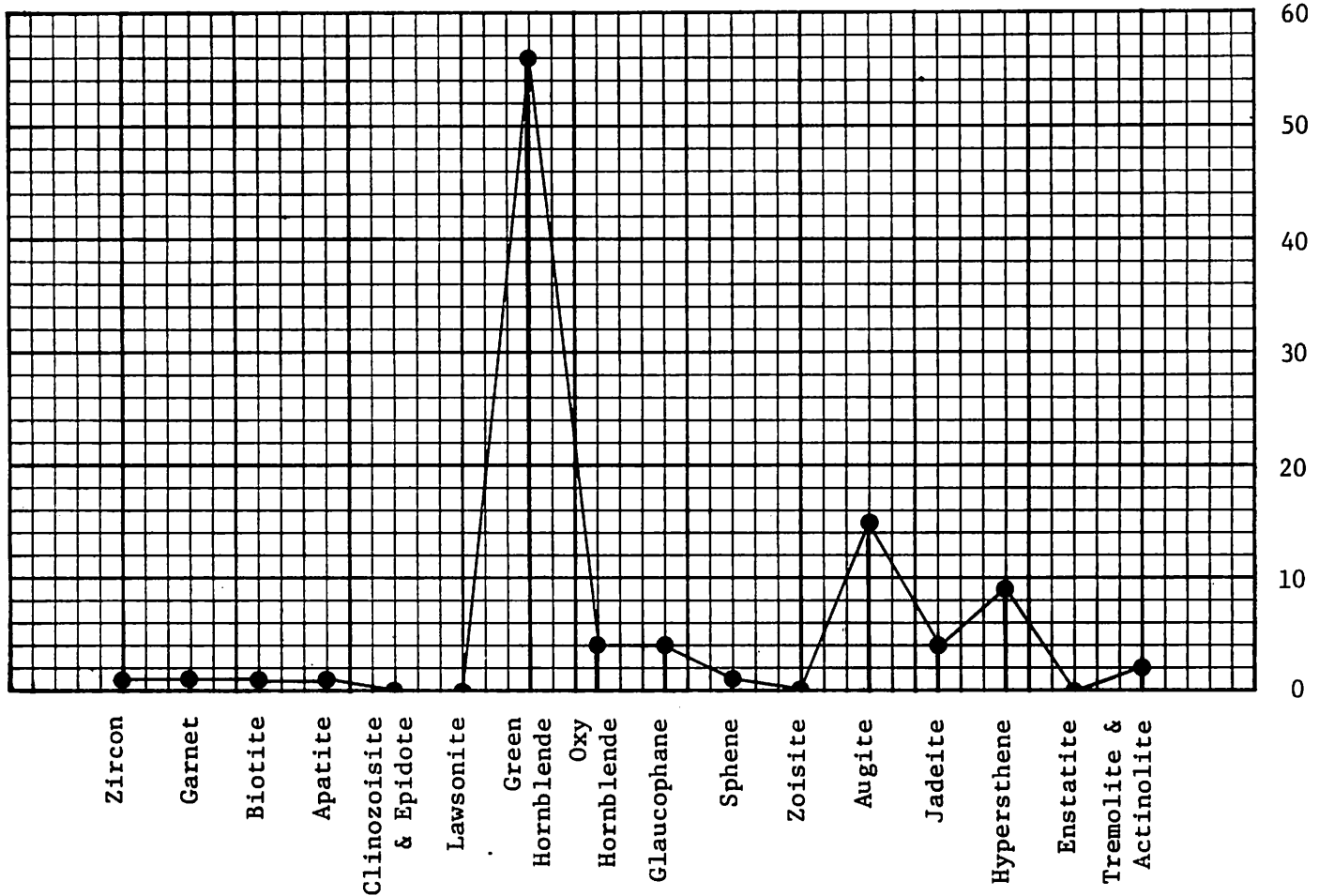
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	7
Pyrite	1
Rock Frag.	3

Analyst T. Yancey



Location 37°53'13"N 122°38'55"W Wt. % of SF/Total Sample 42.50  
 Depth 14.64 meters 8.00 fathoms Wt. % of HM/SF 0.96  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 172  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 58.2  
 % Opaques 5.2  
 % Alterites and Unknowns 36.6



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

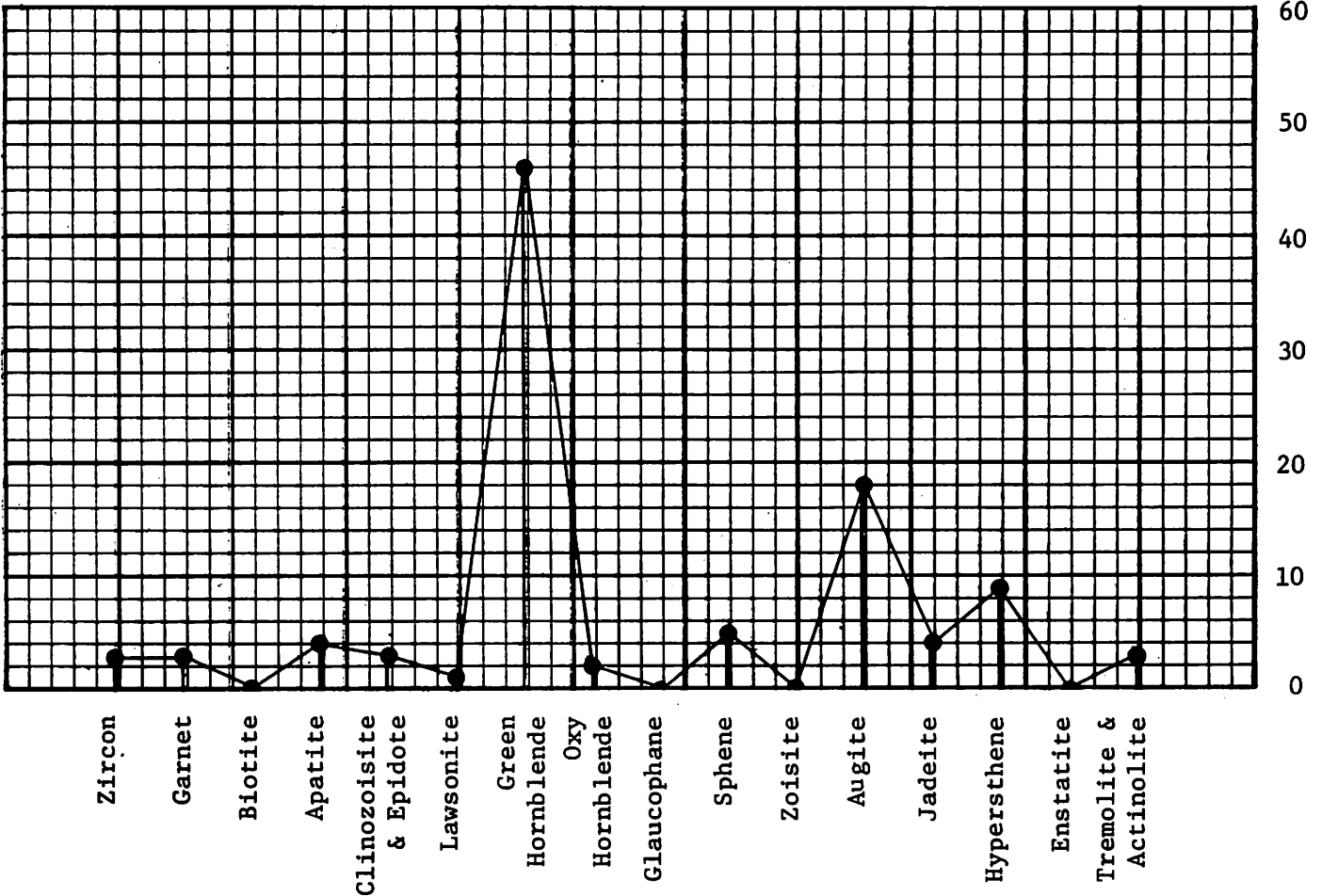
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Magnetite	6
Picotite	1
Pyrite	1
Rock Frag.	1

Analyst T. Yancey

SAMPLE 2004

Location 37°53'13"N 122°38'55"W Wt. % of SF/Total Sample 21.15  
 Depth 14.64 meters 8.00 fathoms Wt. % of HM/SF 2.15  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 195  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 52.8  
 % Opaques 5.1  
 % Alterites and Unknowns 42.1



Other Transparent Minerals

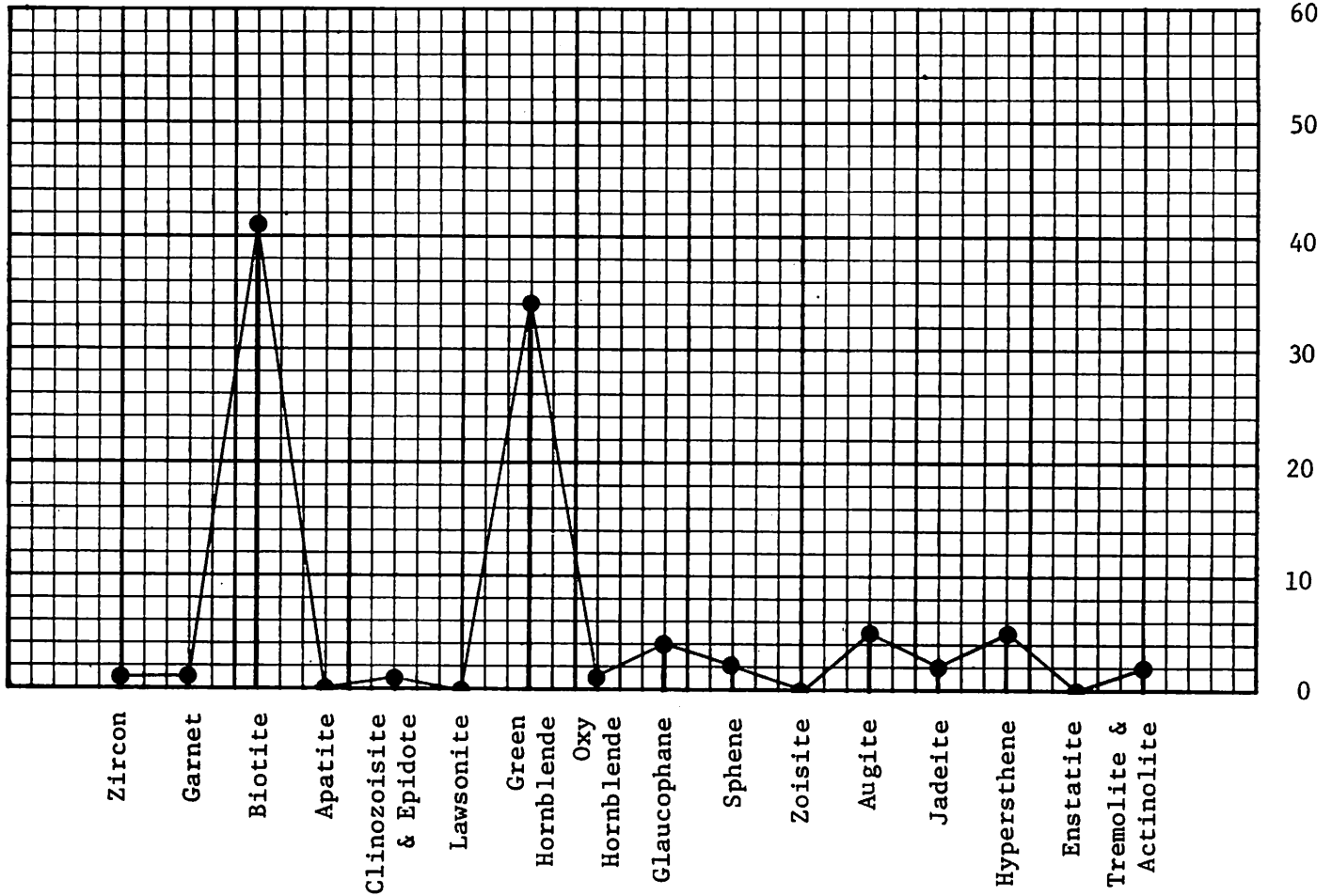
Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	4
Picotite	2
Rock Frag.	3

Analyst T. Yancey

Location 37°53'2"N 122°38'27"W Wt. % of SF/Total Sample 17.84  
 Depth 15.86 meters 8.67 fathoms Wt. % of HM/SF 0.08  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 138  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 72.4  
 % Opaques 5.1  
 % Alterites and Unknowns 22.5



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Chlorite</u>	<u>1</u>
<u>Carbonate</u>	<u>1</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

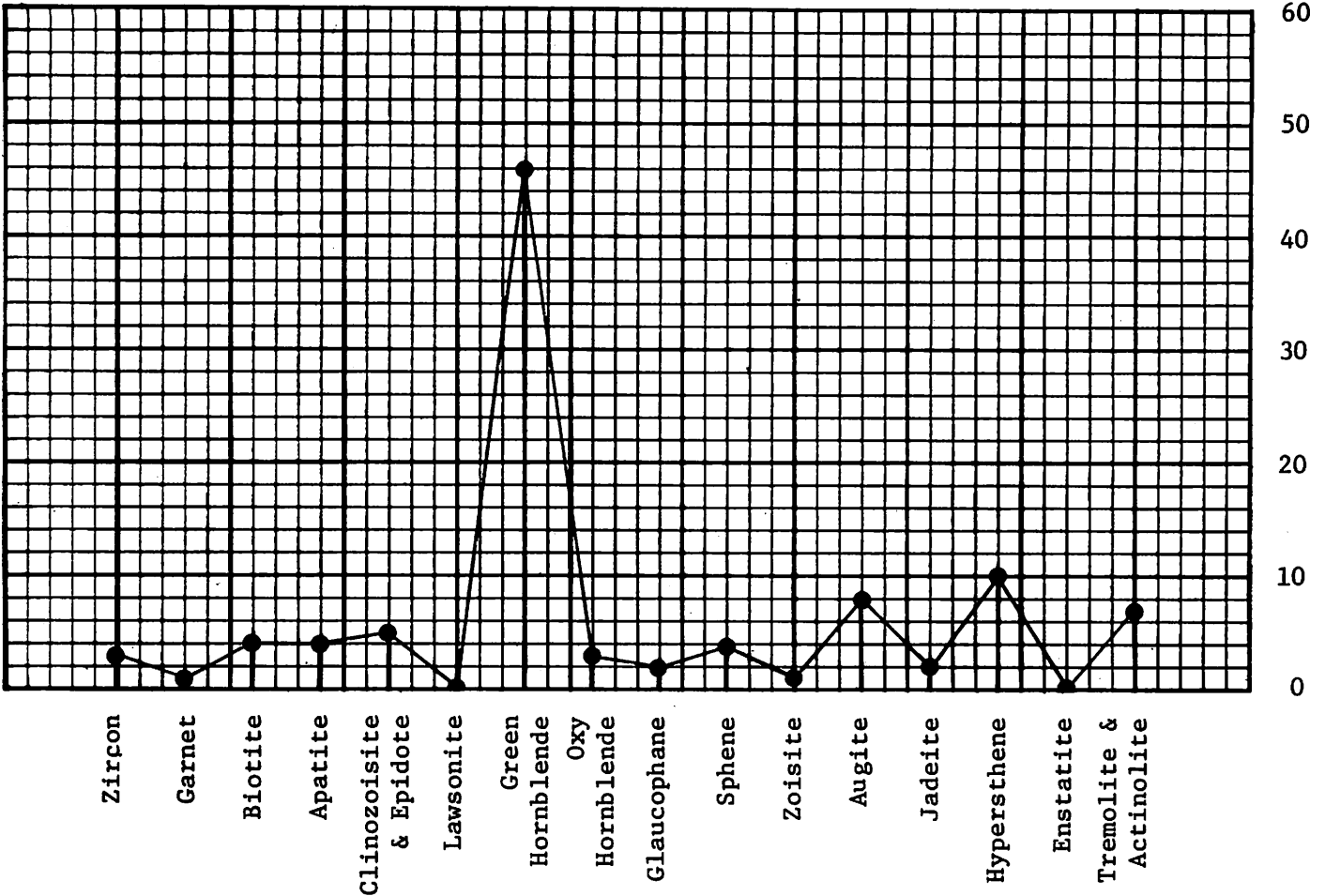
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>3</u>
<u>Magnetite</u>	<u>2</u>
<u>Rock Frag.</u>	<u>2</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Analyst C. Isselhardt

SAMPLE 2005

Location 37°53'2"N 122°38'27"W Wt. % of SF/Total Sample 40.48  
 Depth 15.86 meters 8.67 fathoms Wt. % of HM/SF 0.49  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 159  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 62.8  
 % Opaques 7.0  
 % Alterites and Unknowns 30.2



Other Transparent Minerals

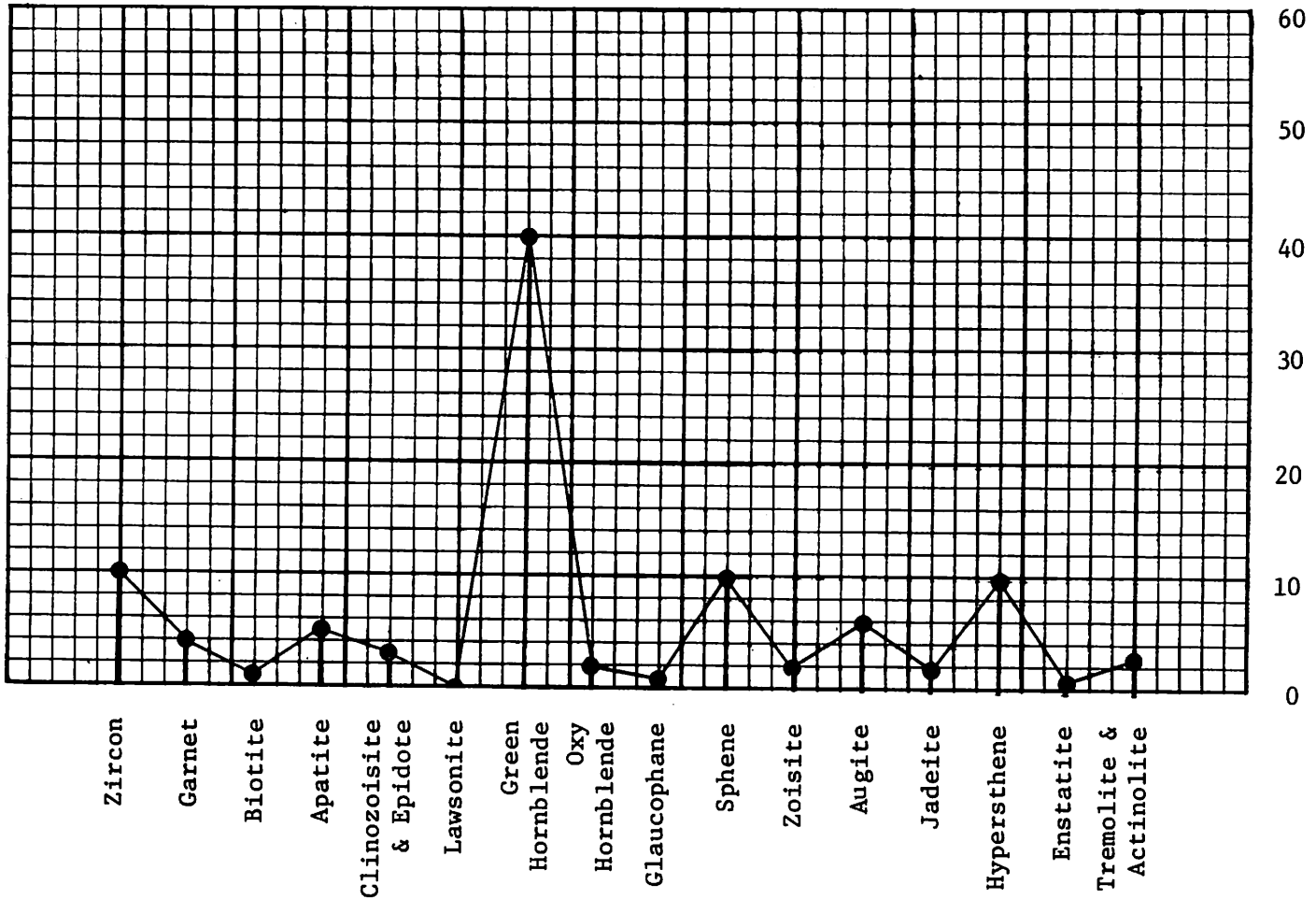
<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	2
Picotite	2
Rock Frag.	3
_____	_____
_____	_____

Analyst C. Isselhardt

Location 37°53'2"N 122°38'27"W Wt. % of SF/Total Sample 20.73  
 Depth 15.86 meters 8.67 fathoms Wt. % of HM/SF 0.59  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 153  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 65.4  
 % Opaques 20.9  
 % Alterites and Unknowns 13.7



Other Transparent Minerals

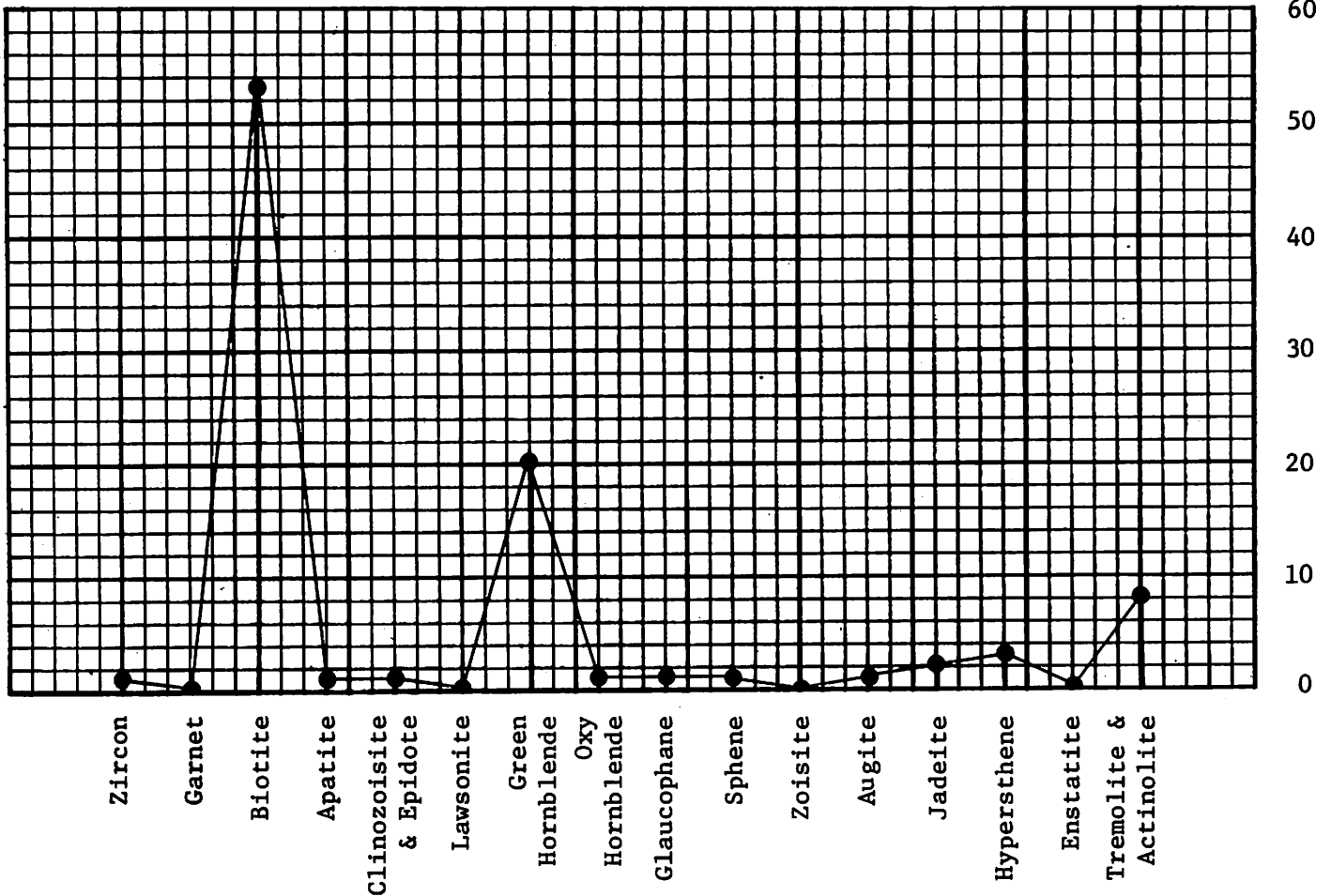
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>	<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____	Hematite	2
_____	_____	Magnetite	10
_____	_____	Picotite	6
_____	_____	Rock Frag.	3
_____	_____	_____	_____
_____	_____	_____	_____

Analyst C. Isselhardt

SAMPLE 2006

Location 37°52'48"N 122°38'13"W Wt. % of SF/Total Sample 17.84  
 Depth 16.48 meters 9.00 fathoms Wt. % of HM/SF 0.15  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 281  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 80  
 % Opaques 5  
 % Alterites and Unknowns 15



Other Transparent Minerals

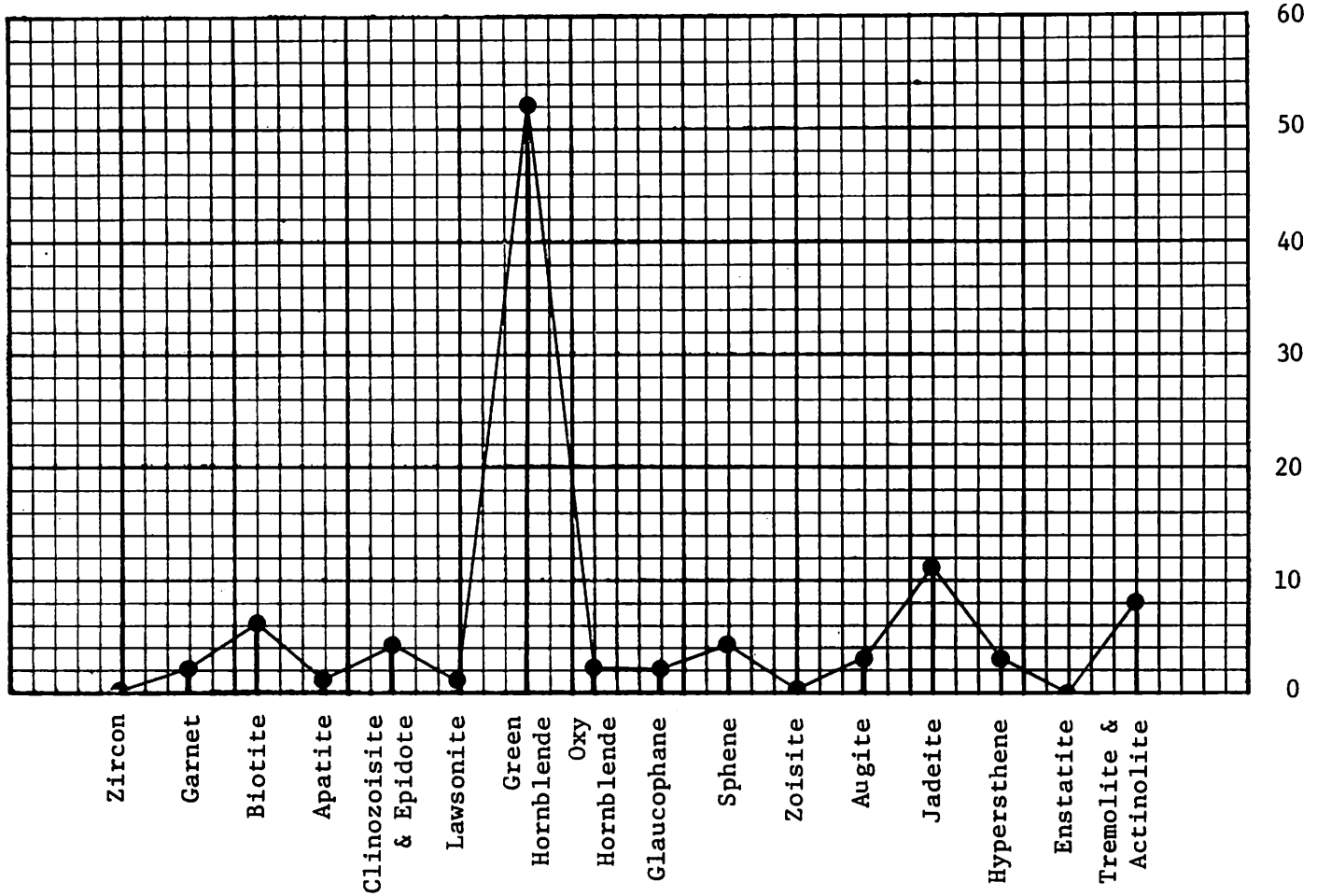
<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Carbonate</u>	<u>4</u>
<u>Chlorite</u>	<u>11</u>

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>6</u>
<u>Picotite</u>	<u>1</u>
<u>Rock Frag.</u>	<u>6</u>

Analyst L. Osuch

Location 37°52'48"N 122°38'13"W Wt. % of SF/Total Sample 41.07  
 Depth 16.48 meters 9.00 fathoms Wt. % of HM/SF 0.33  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 199  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 53  
 % Opaques 12  
 % Alterites and Unknowns 35



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	2

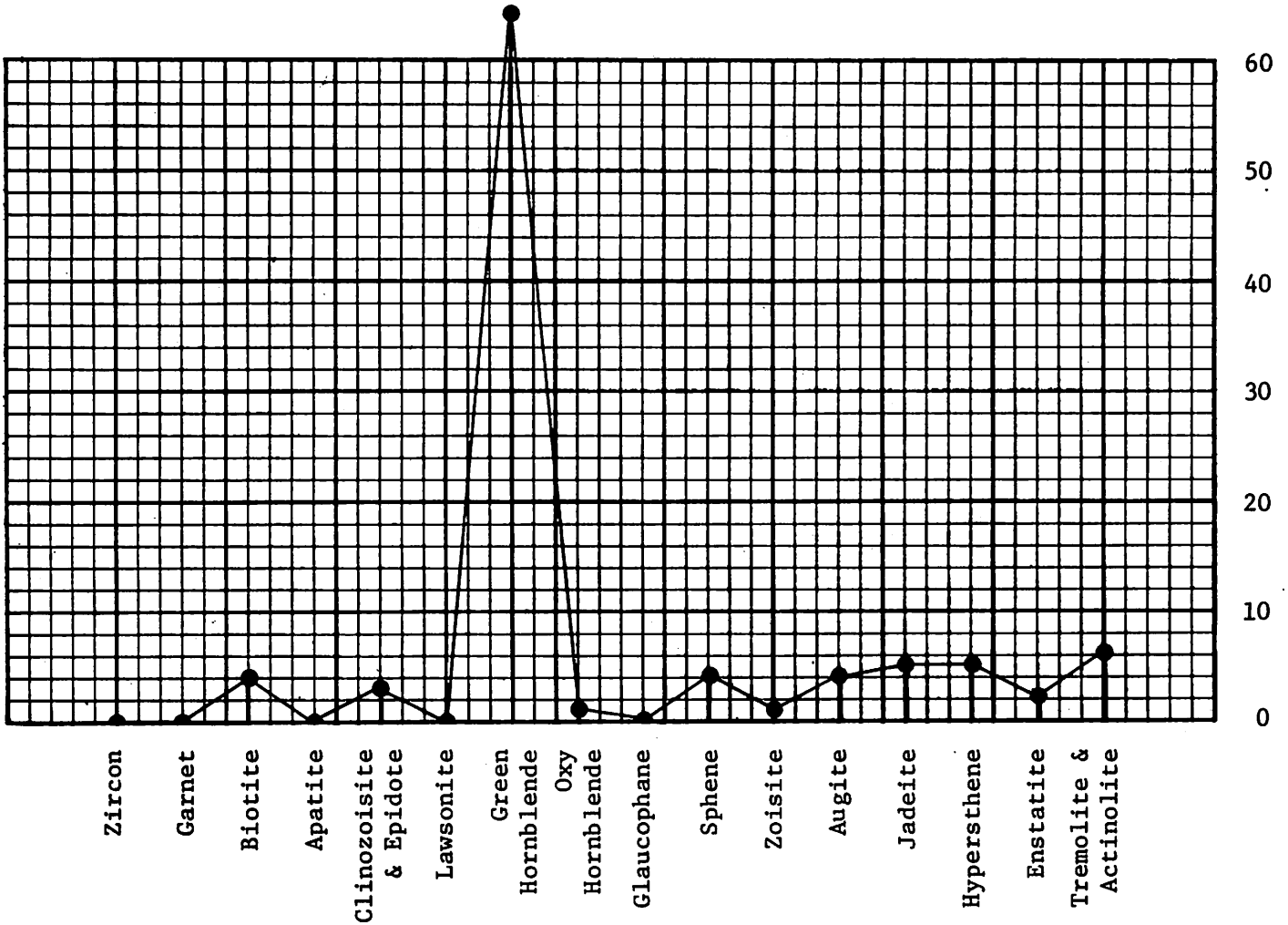
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	1
Rock Frag.	18

Analyst L. Osuch

SAMPLE 2006

Location 37°52'48"N 122°38'13"W Wt. % of SF/Total Sample 19.67  
 Depth 16.48 meters 9.00 fathoms Wt. % of HM/SF 2.11  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 162  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 63  
 % Opaques 9  
 % Alterites and Unknowns 28



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

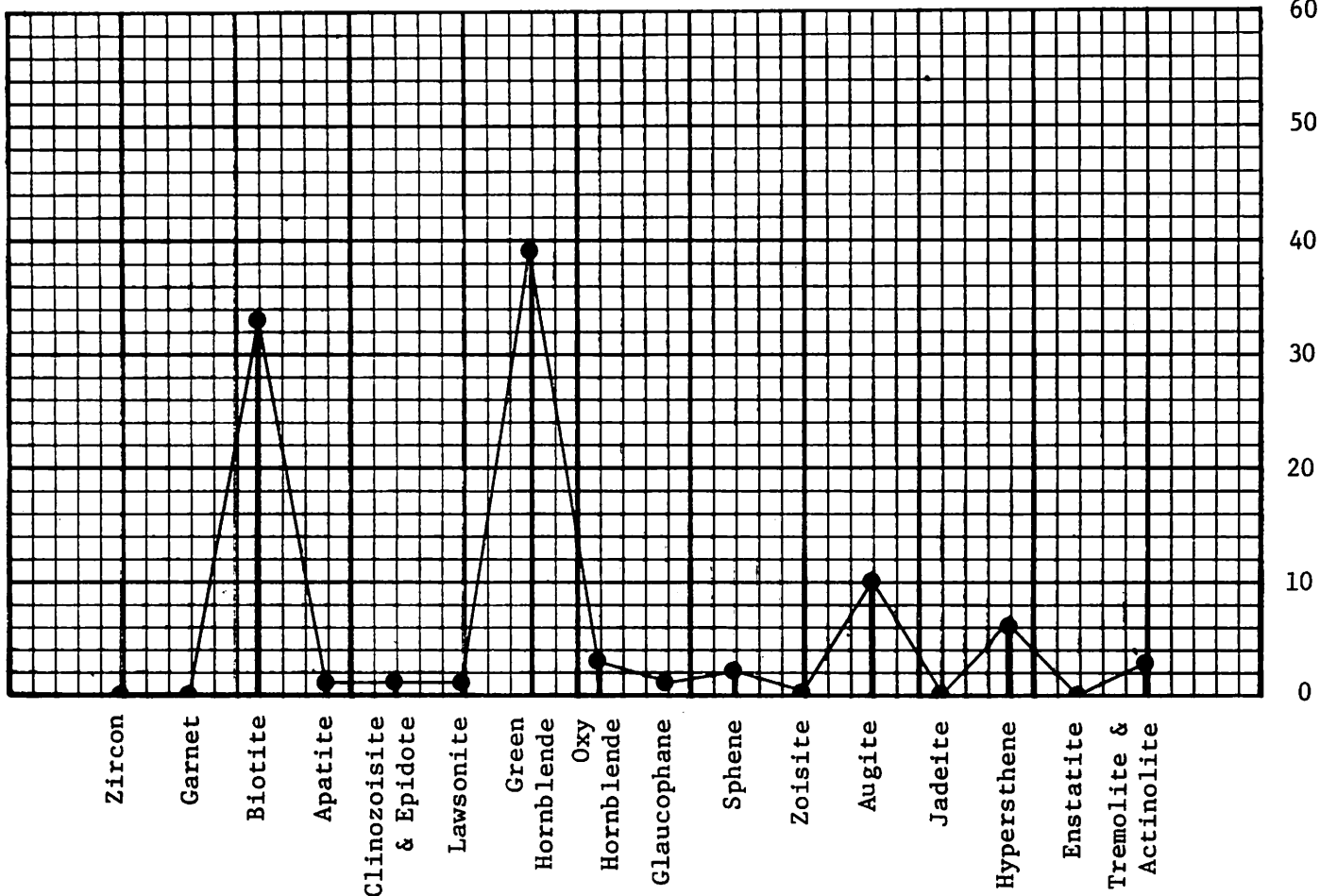
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	4
Picotite	2
Rock Frag.	7

Analyst L. Osuch



Location 37°52'33"N 122°38'24"W Wt. % of SF/Total Sample 12.00  
 Depth 17.38meters 9.50 fathoms Wt. % of HM/SF 0.12  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 274  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 54.8  
 % Opaques 4.7  
 % Alterites and Unknowns 40.5



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

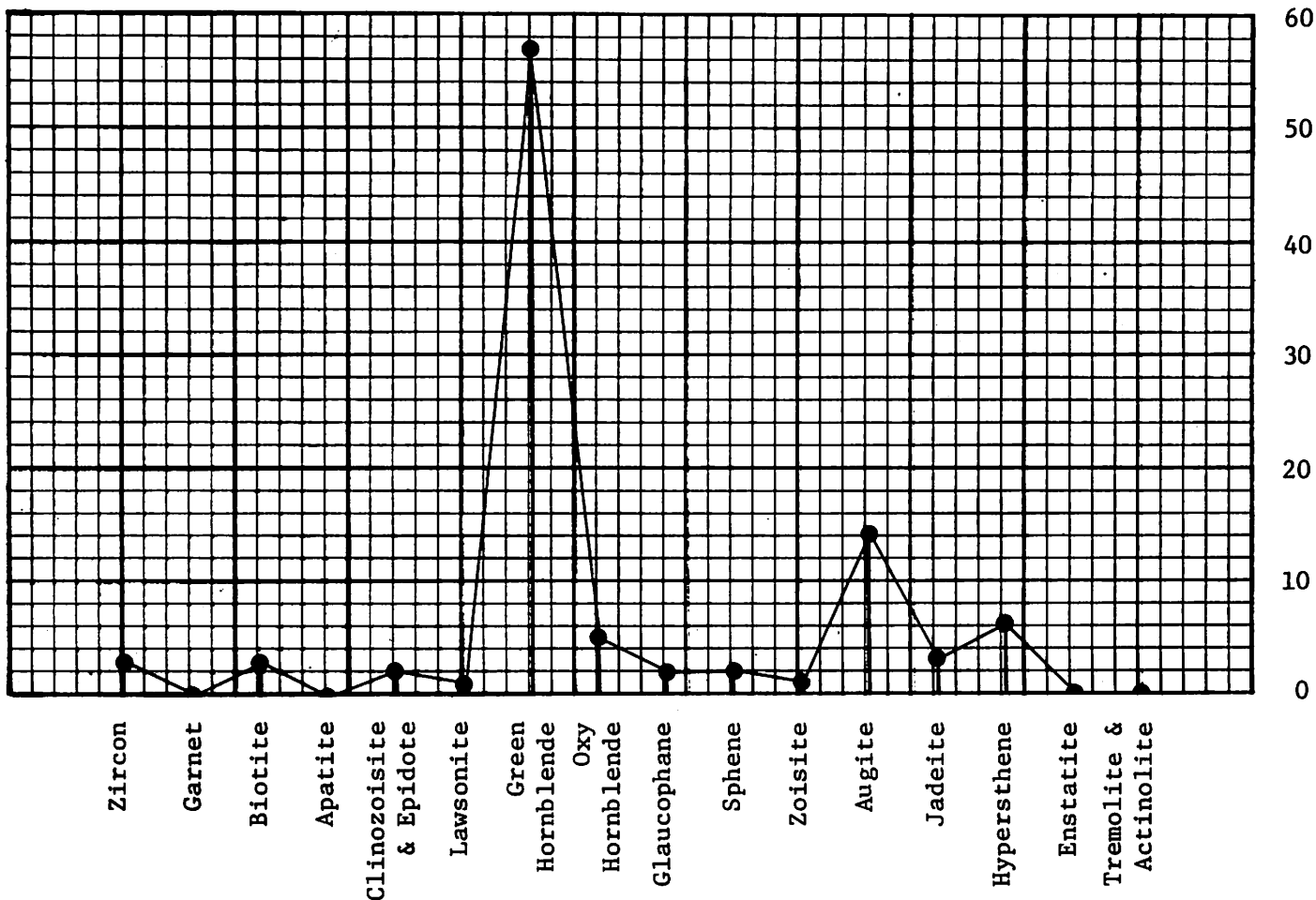
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	10
Rock Frag.	1
_____	_____
_____	_____
_____	_____

Analyst T. Yancey

SAMPLE 2008

Location 37°52'33"N 122°38'24"W Wt. % of SF/Total Sample 40.70  
 Depth 17.38 meters 9.50 fathoms Wt. % of HM/SF 0.47  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 184  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 56.0  
 % Opaques 3.8  
 % Alterites and Unknowns 40.2



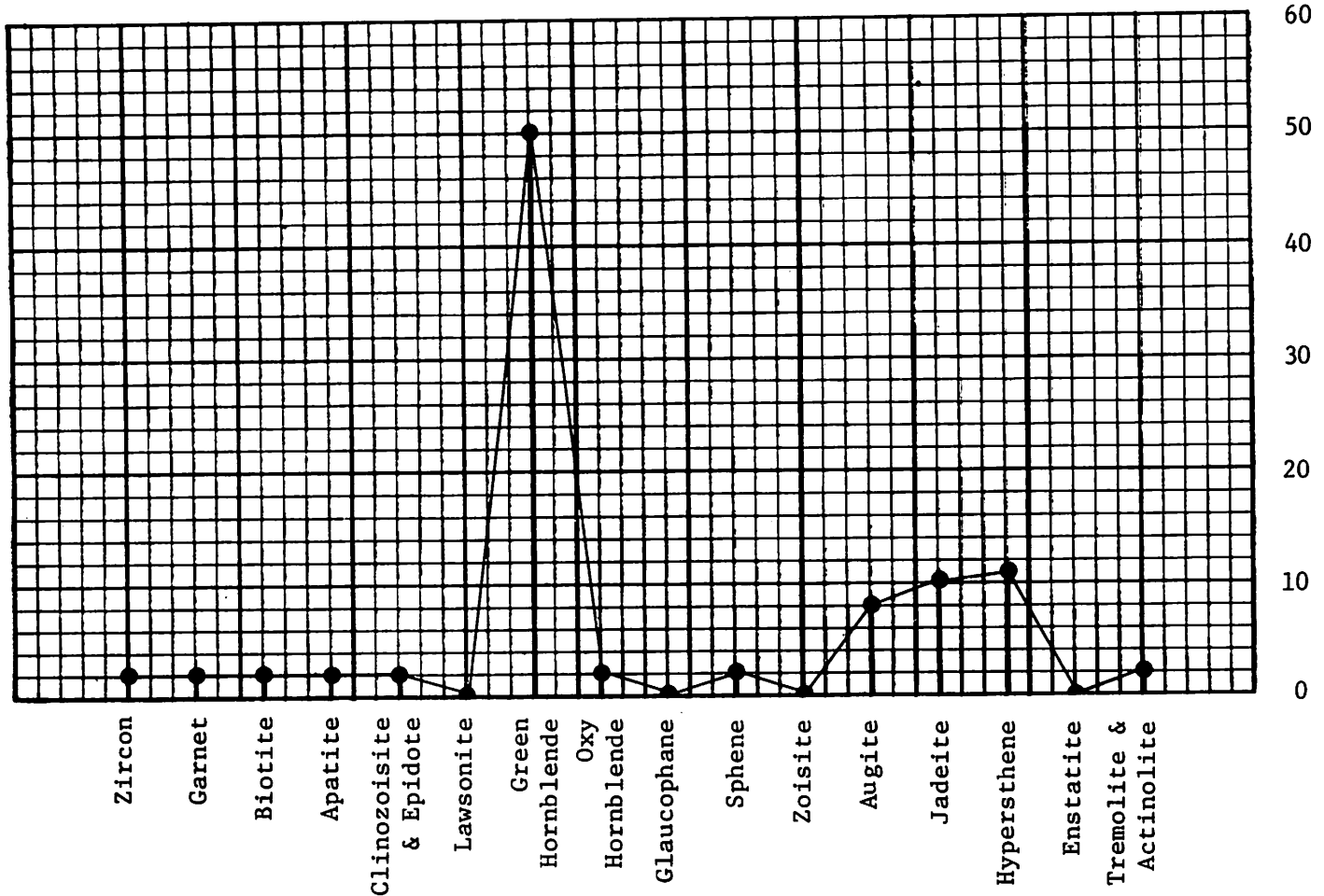
Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1
Tourmaline	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	3
Pyrite	1
Rock Frag.	2

Location 37°52'33"N 122°38'24"W Wt. % of SF/Total Sample 23.10  
 Depth 17.38 meters 9.50 fathoms Wt. % of HM/SF 1.47  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 173  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 56.1  
 % Opaques 13.3  
 % Alterites and Unknowns 30.6



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	2
Pumpellyite	1

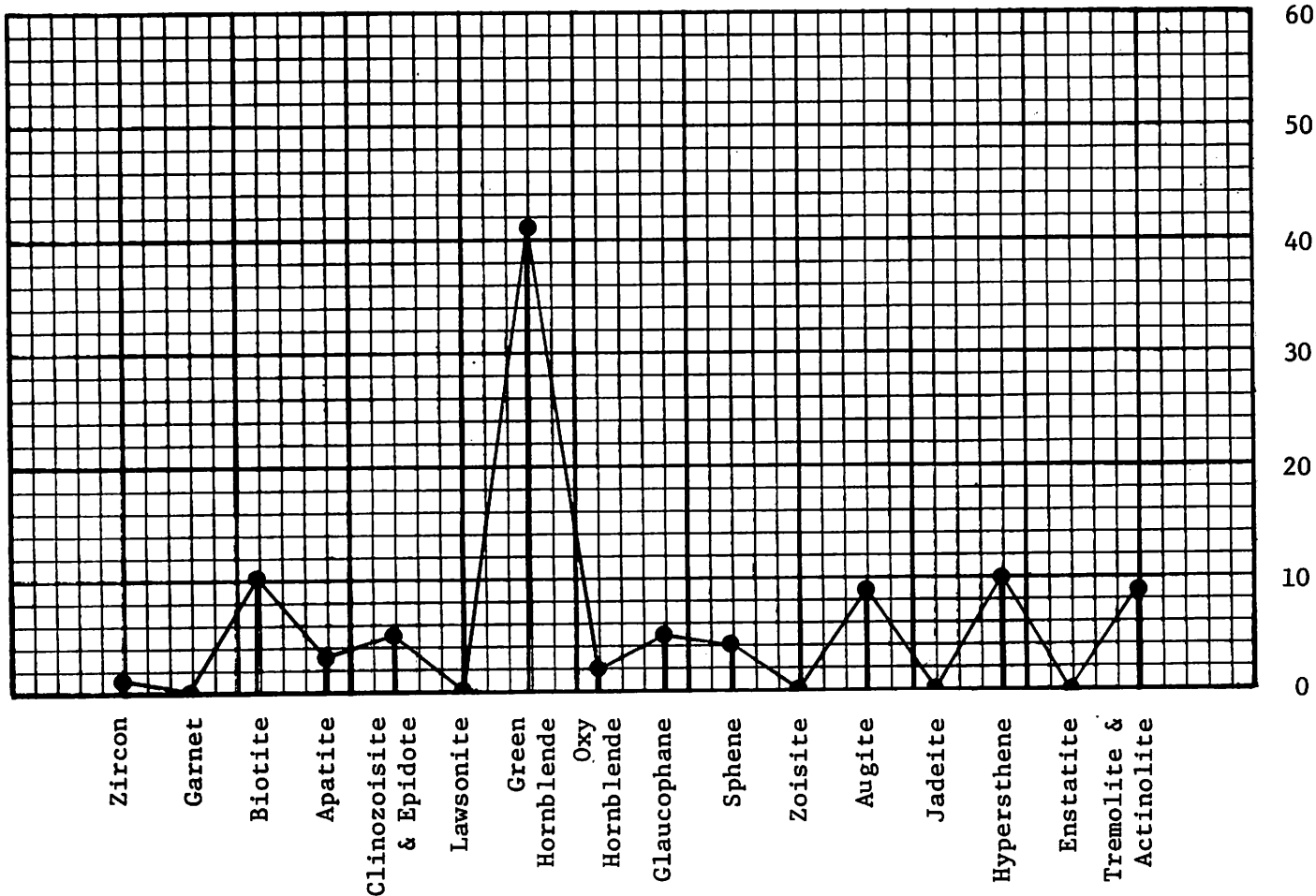
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Magnetite	18
Picotite	5

Analyst T. Yancey

SAMPLE 2009

Location 37°52'53"N 122°38'59"W Wt. % of SF/Total Sample 20.62  
 Depth 16.77 meters 9.17 fathoms Wt. % of HM/SF 0.28  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 170  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 58.8  
 % Opaques 7.1  
 % Alterites and Unknowns 34.1



Other Transparent Minerals

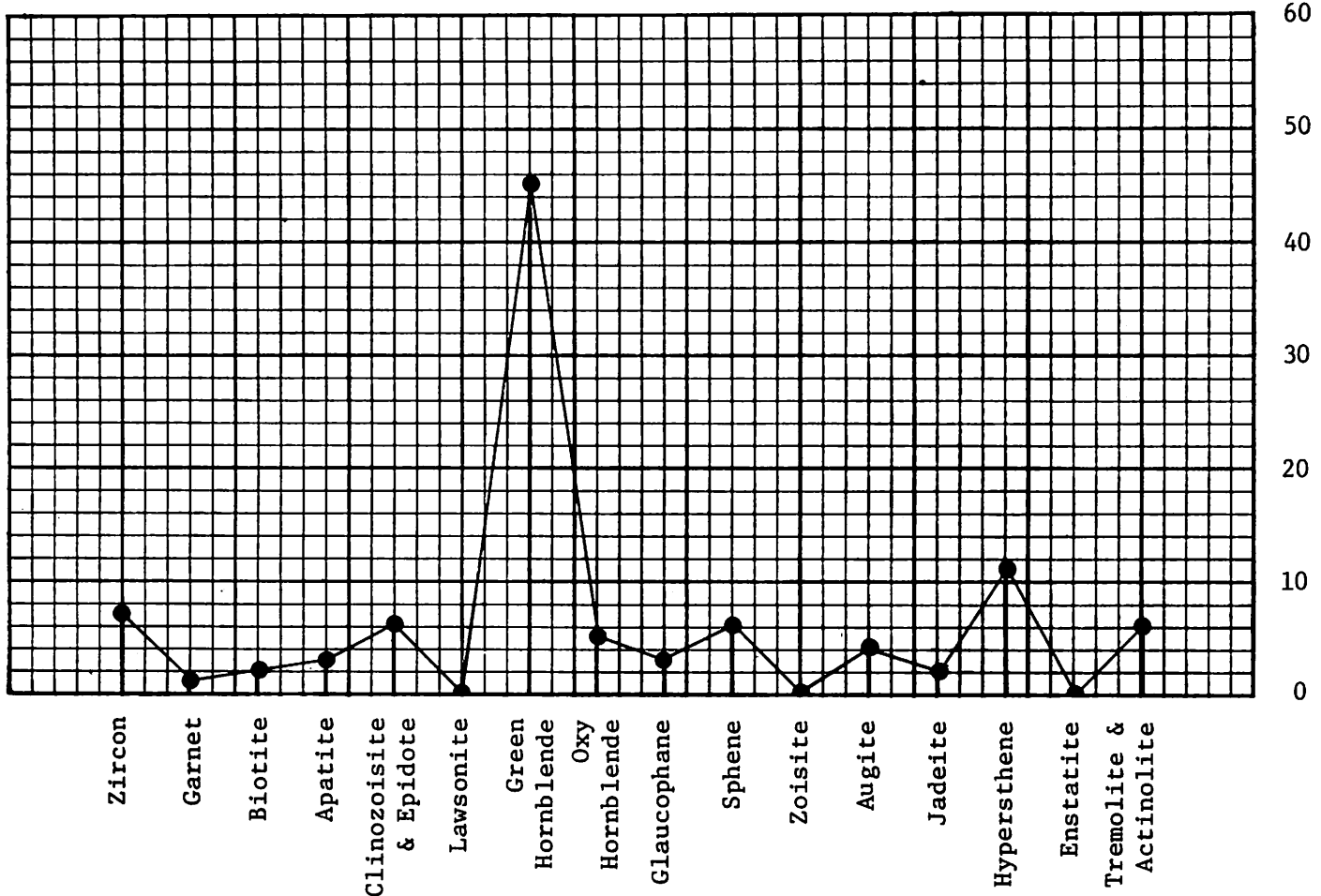
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	4
Picotite	1
Pyrite	2
Rock Frag.	3

Analyst C. Isselhardt

Location 37°52'53"N 122°38'59"W Wt. % of SF/Total Sample 44.80  
 Depth 16.77 meters 9.17 fathoms Wt. % of HM/SF 1.12  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 169  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 59.2  
 % Opaques 5.9  
 % Alterites and Unknowns 34.9



Other Transparent Minerals

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	2
Picotite	2
Rock Frag.	5
_____	_____
_____	_____

Analyst C. Isselhardt

SAMPLE 2009

Location 37°52'53"N 122°38'59"W Wt. % of SF/Total Sample 17.70

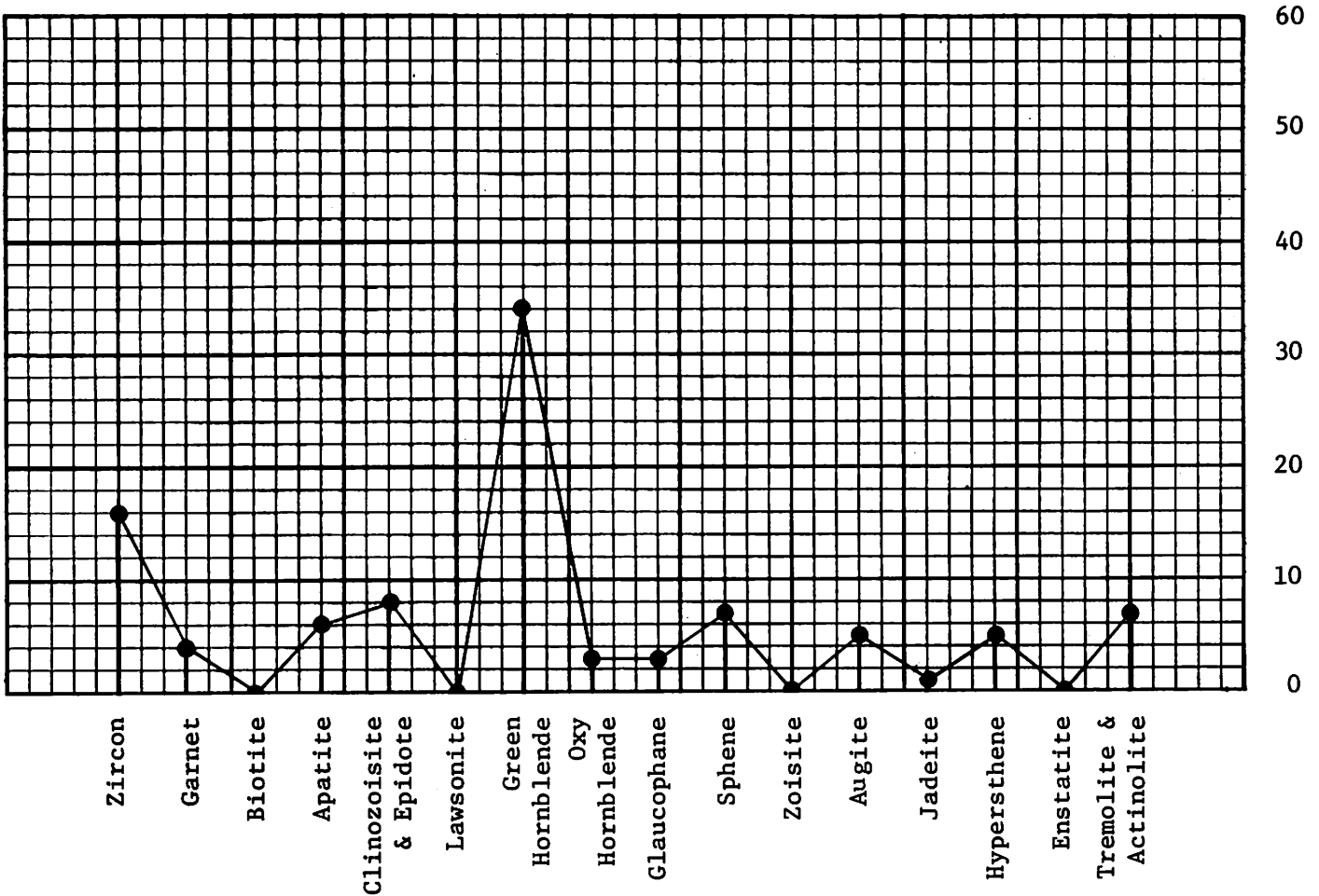
Depth 16.77 meters 9.17 fathoms Wt. % of HM/SF 1.25

Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 179

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 55.8

% Opaques 19.6

% Alterites and Unknowns 24.6



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

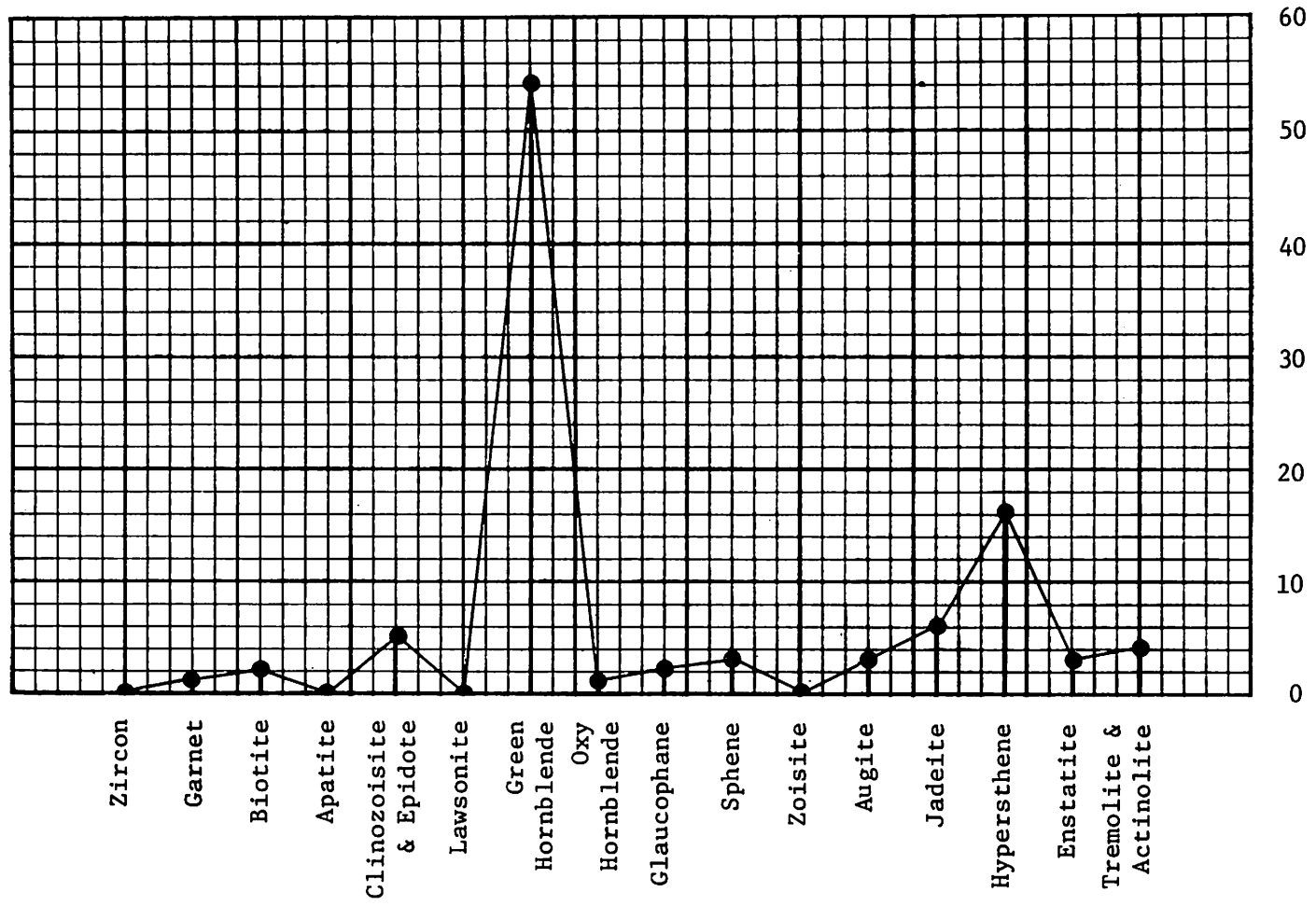
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	6
Magnetite	21
Picotite	3
Rock Frag.	5

Analyst C. Isselhardt

SAMPLE 2010

Location 37°53'8"N 122°39'29"W Wt. % of SF/Total Sample 23.95  
 Depth 14.63 meters 8.00 fathoms Wt. % of HM/SF 1.06  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 141  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 72  
 % Opaques 9  
 % Alterites and Unknowns 19



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

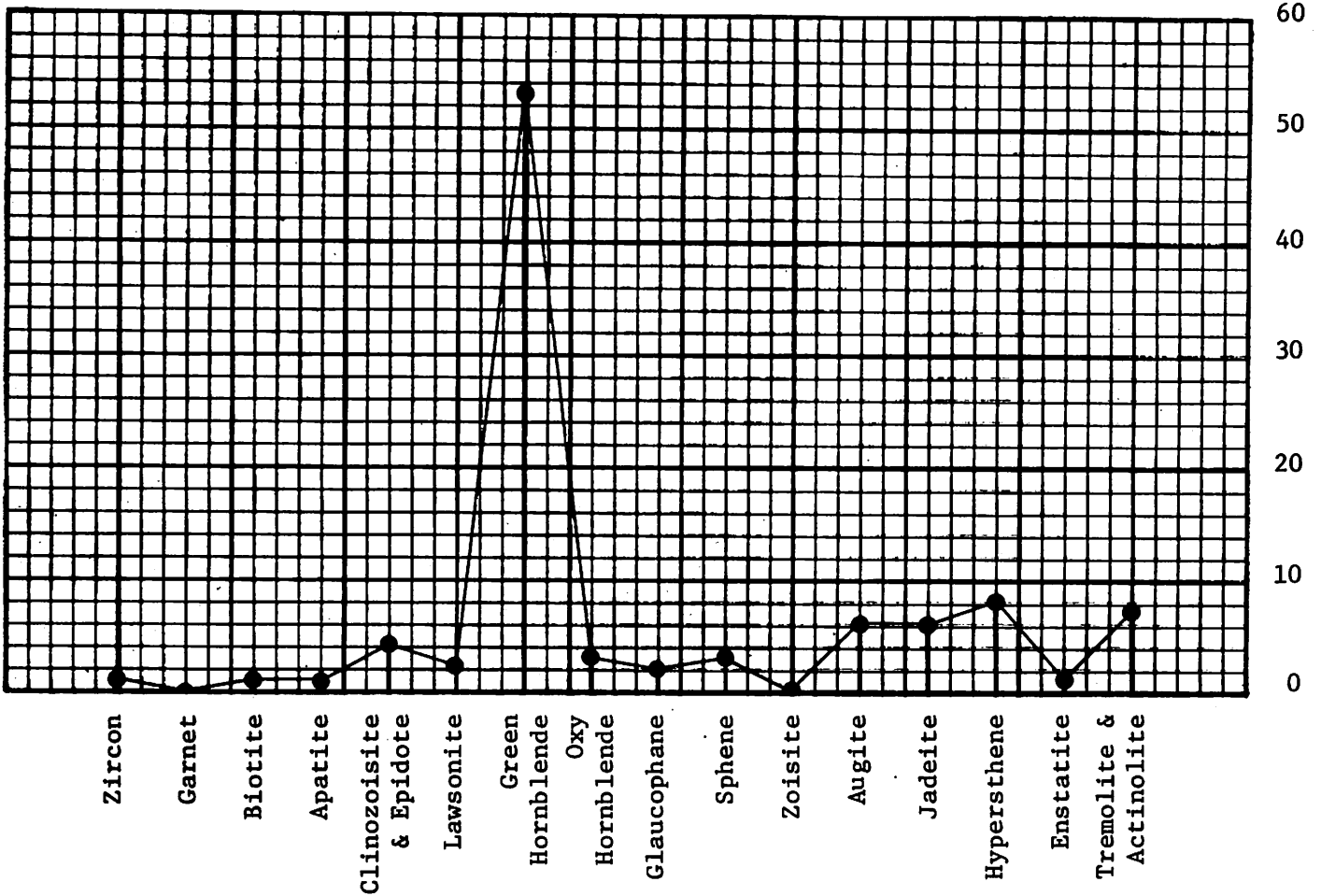
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	4
Picotite	2
Rock Frag.	5
_____	_____
_____	_____

Analyst L. Osuch

SAMPLE 2010

Location 37°53'8"N 122°39'29"W Wt. % of SF/Total Sample 40.66  
 Depth 14.63 meters 8.00 fathoms Wt. % of HM/SF 2.57  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 139  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 73  
 % Opaques 10  
 % Alterites and Unknowns 17



Other Transparent Minerals

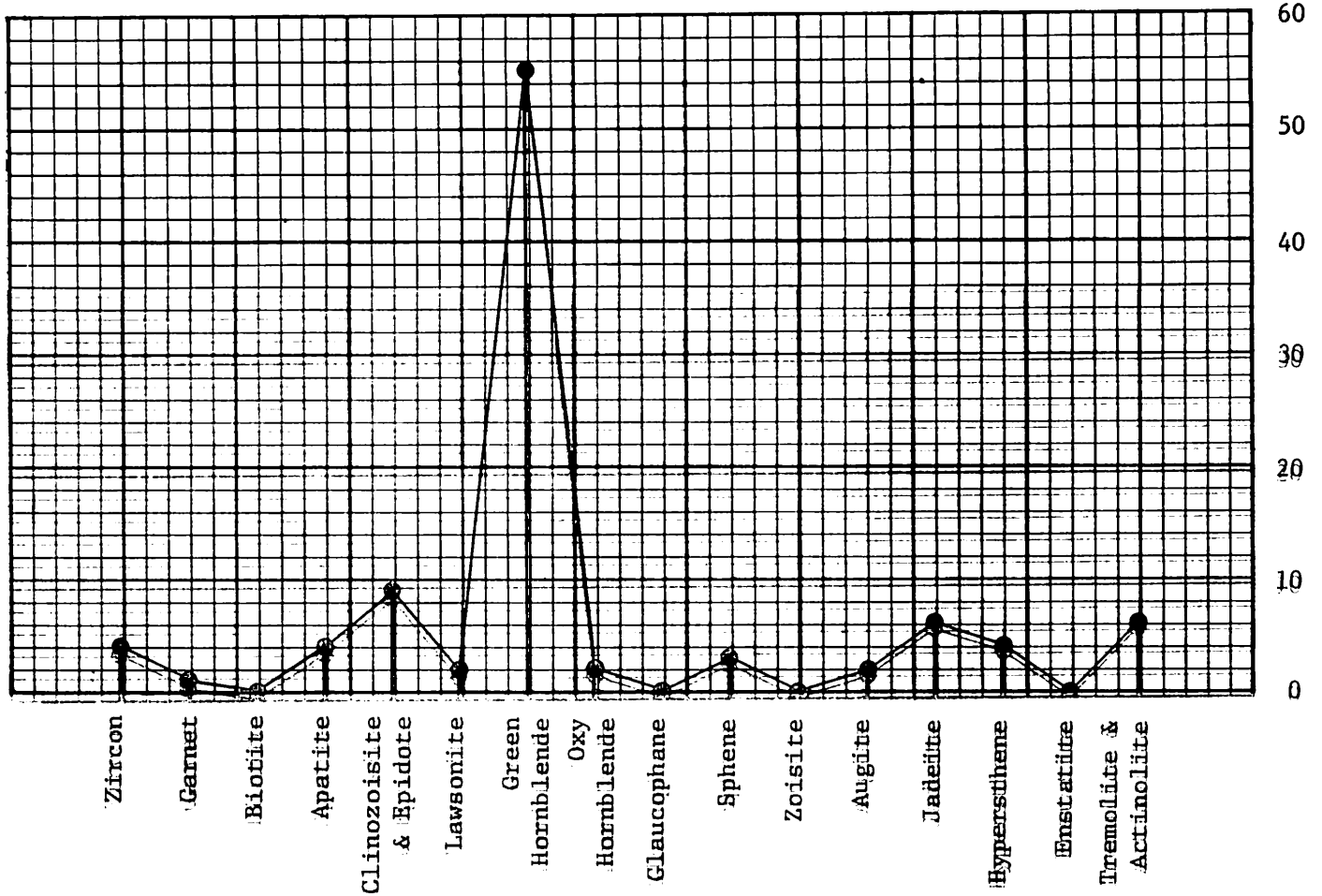
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1
Chlorite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	5
Picotite	2
Rock Frag.	5



Location 37°53'8"N 122°39'29"W Wt. % of SF/Total Sample 21.60  
 Depth 14.63 meters 8.00 fathoms Wt. % of HM/SF 4.66  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 153  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 65  
 % Opaques 17  
 % Alterites and Unknowns 18



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Carbonate</u>	<u>1</u>
_____	_____
_____	_____
_____	_____

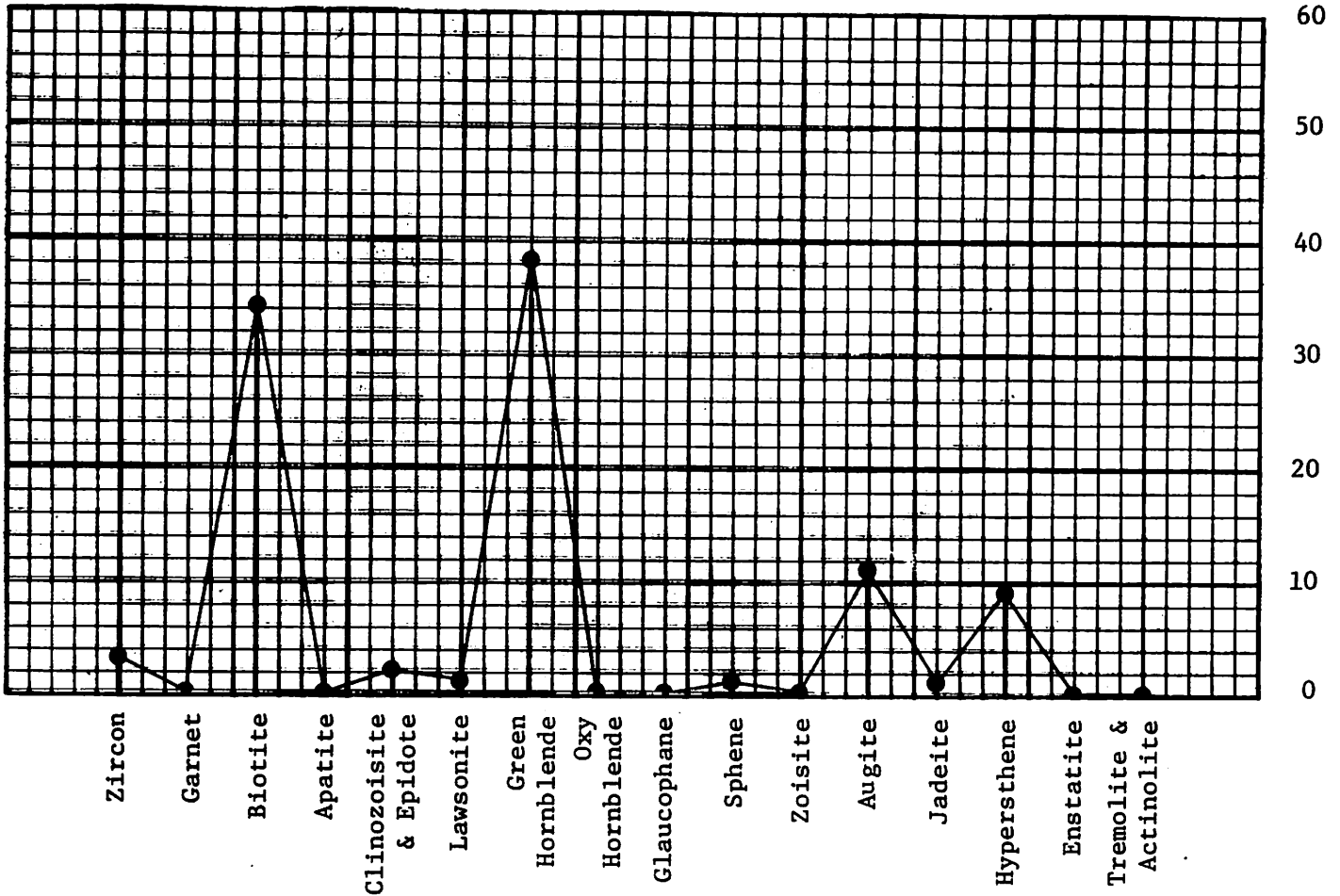
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>3</u>
<u>Magnetite</u>	<u>14</u>
<u>Picotite</u>	<u>3</u>
<u>Rock Frag.</u>	<u>6</u>
_____	_____
_____	_____

Analyst L. Osuch

SAMPLE 2011

Location 37°52'56"N 122°39'52"W Wt. % of SF/Total Sample 6.95  
 Depth 13.72 meters 7.50 fathoms Wt. % of HM/SF 2.05  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 277  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 53.8  
 % Opaques 23.8  
 % Alterites and Unknowns 22.4



Other Transparent Minerals

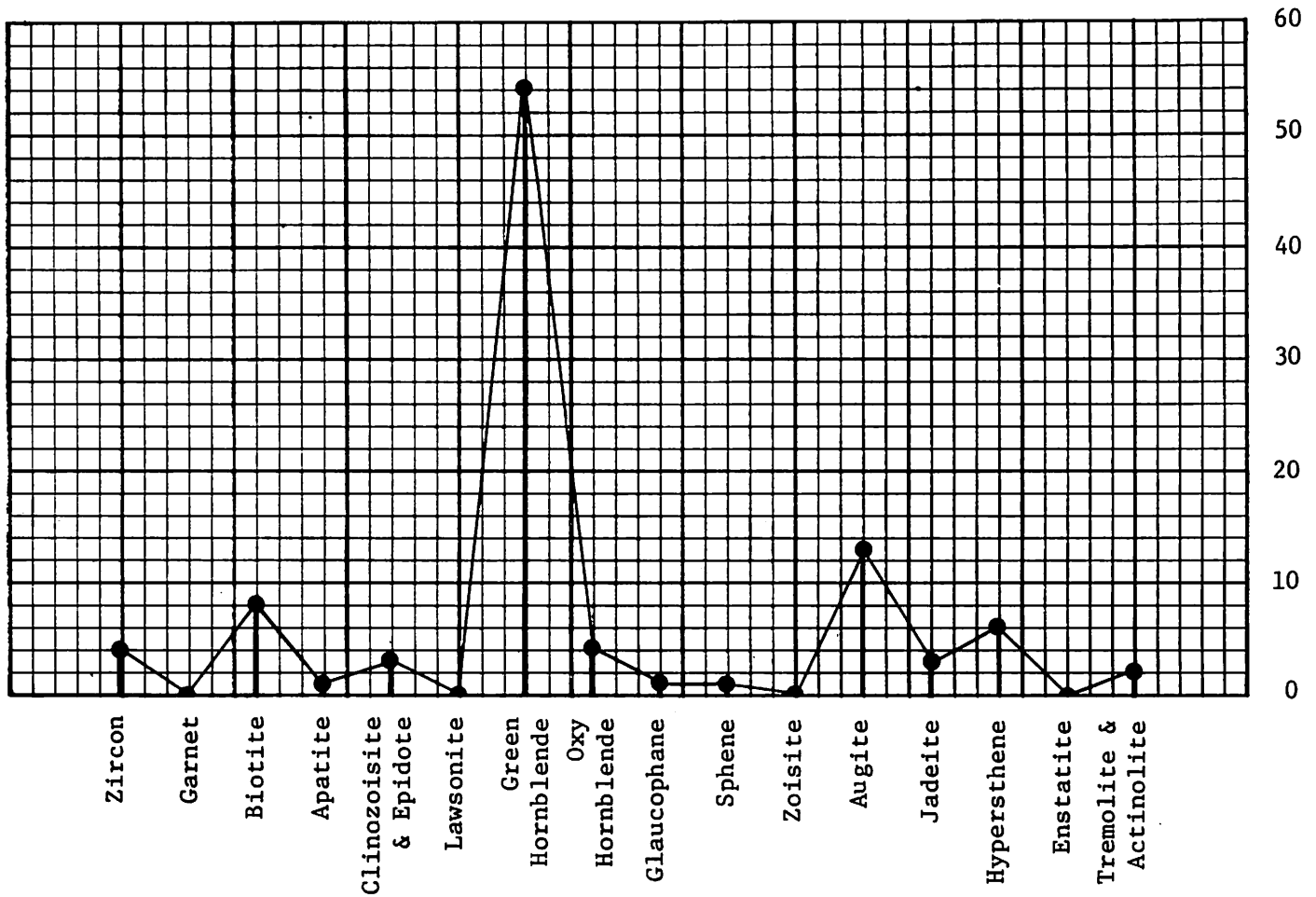
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	7
Magnetite	55
Picotite	2
Pyrite	2
_____	_____
_____	_____

Analyst T. Yancey

Location 37°52'56"N 122°39'52"W Wt. % of SF/Total Sample 23.53  
 Depth 13.72 meters 7.50 fathoms Wt. % of HM/SF 0.60  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 231  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 47.2  
 % Opaques 16.5  
 % Alterites and Unknowns 36.3



Other Transparent Minerals

Other Opaque Minerals

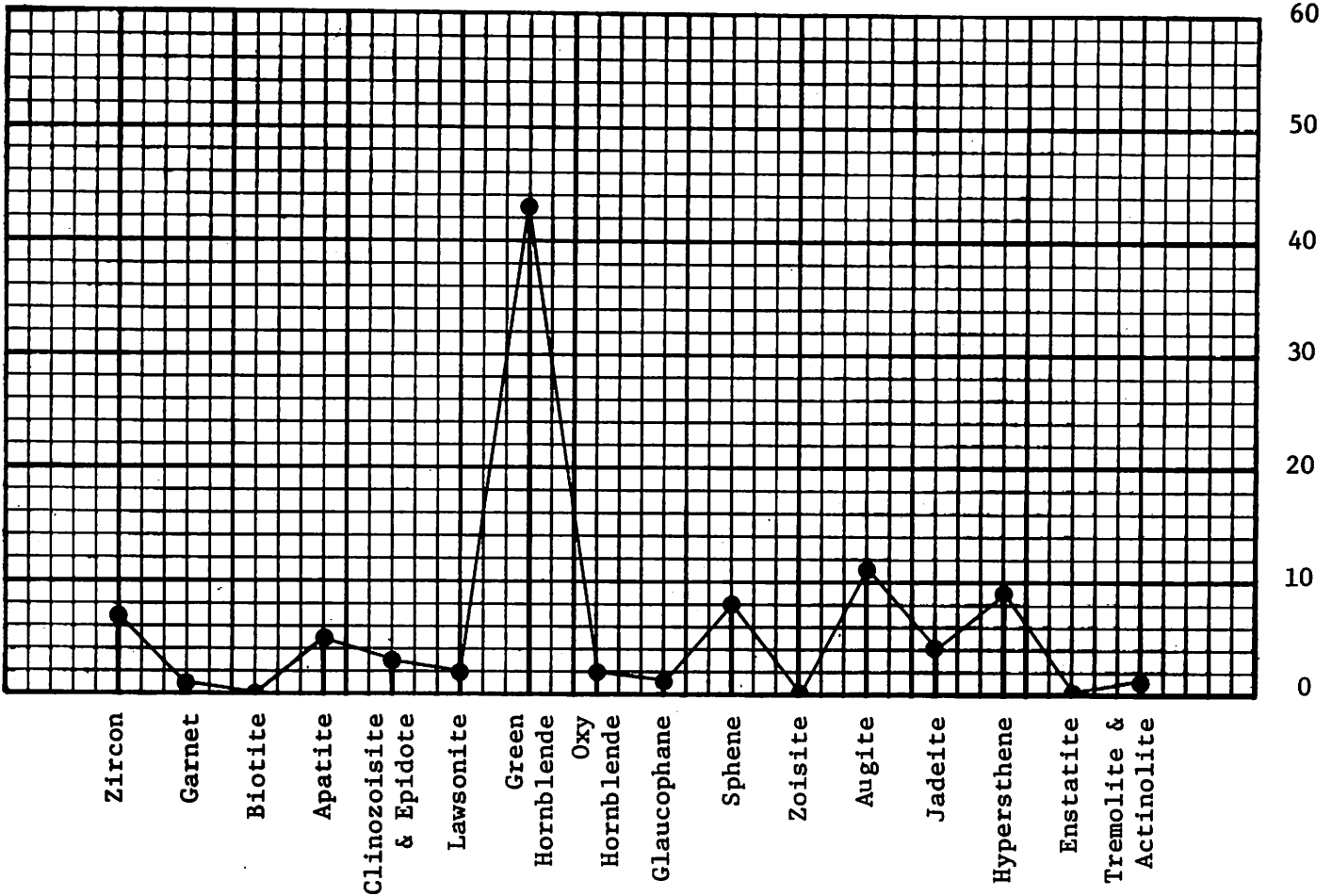
<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	9
Magnetite	26
Picotite	1
Pyrite	2
_____	_____
_____	_____

Analyst T. Yancey

SAMPLE 2011

Location 37°52'56"N 122°39'52"W Wt. % of SF/Total Sample 35.80  
 Depth 13.72 meters 7.50 fathoms Wt. % of HM/SF 1.29  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 204  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 53.9  
 % Opaques 15.2  
 % Alterites and Unknowns 30.9



Other Transparent Minerals

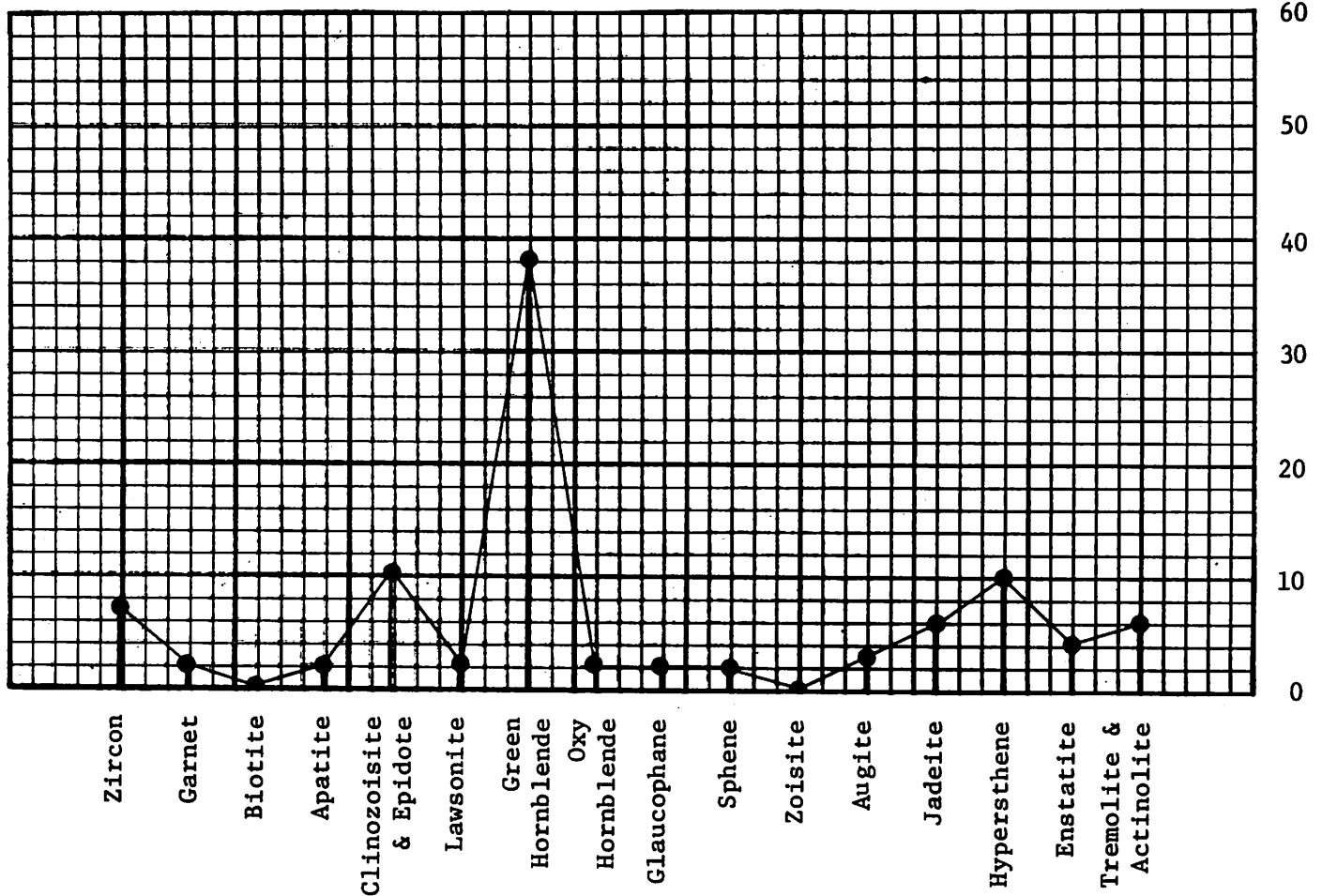
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	3
Carbonate	2

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	26
Picotite	2

Analyst T. Yancey

Location 37°52'39"N 122°39'20"W Wt. % of SF/Total Sample 19.10  
 Depth 16.47 meters 9.0 fathoms Wt. % of HM/SF 2.05  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 195  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 64.1  
 % Opaques 11.8  
 % Alterites and Unknowns 24.1



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	3
Carbonate	1

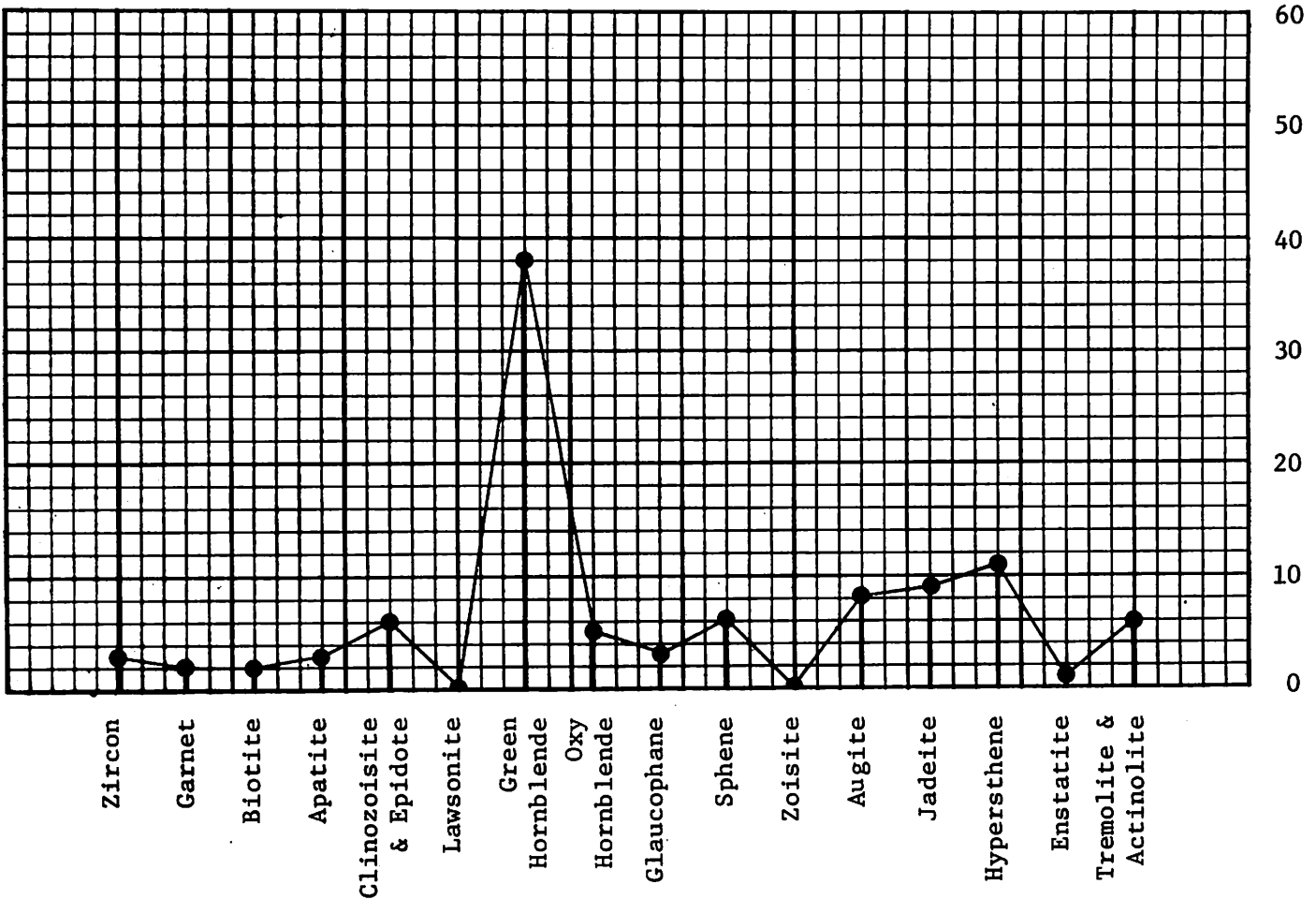
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	9
Rock Frag.	13

Analyst C. Isselhardt

SAMPLE 2012

Location 37°52'39"N 122°39'20"W Wt. % of SF/Total Sample 26.80  
 Depth 16.47 meters 9.0 fathoms Wt. % of HM/SF 3.33  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 189  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 57.7  
 % Opaques 17.9  
 % Alterites and Unknowns 24.4



Other Transparent Minerals

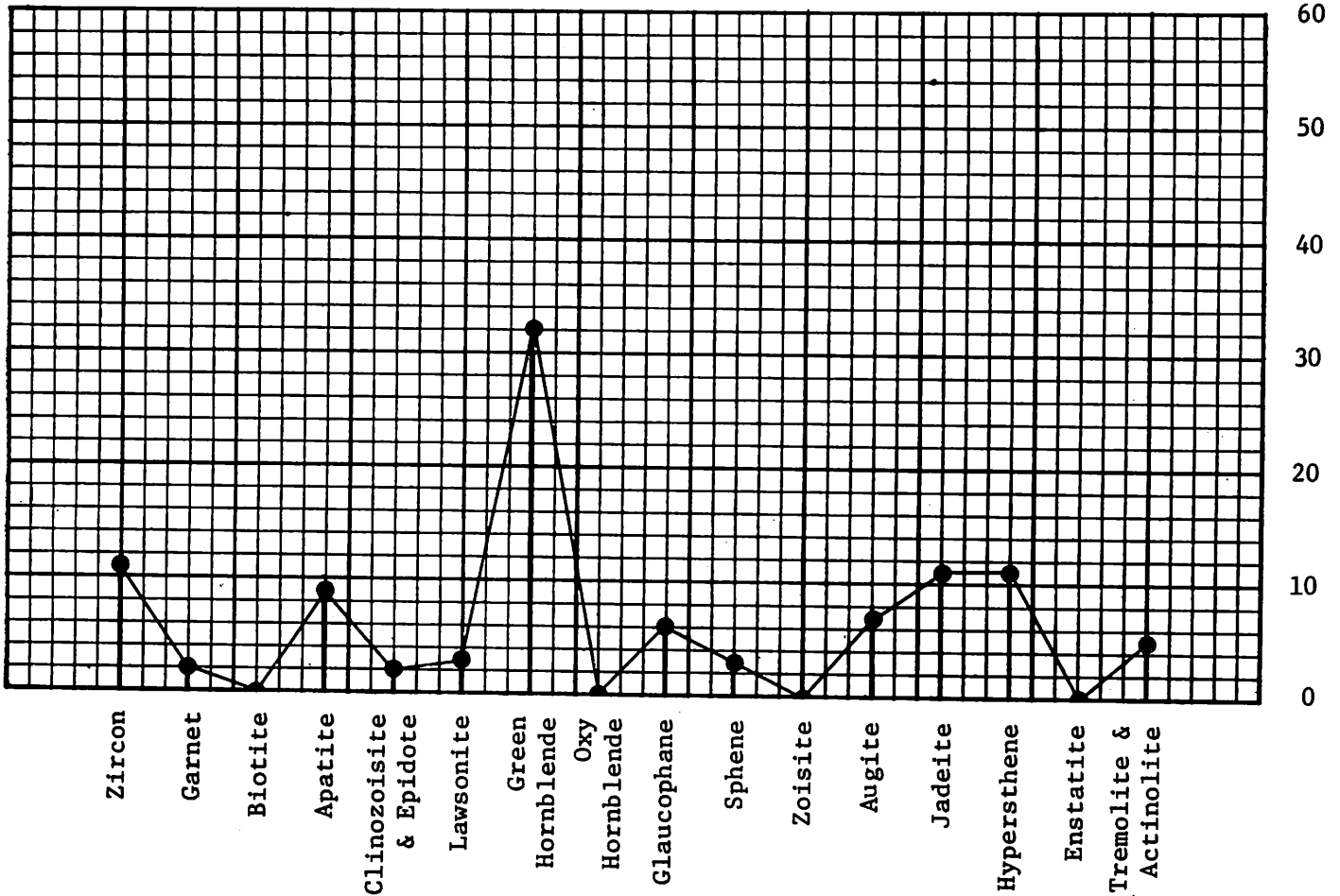
<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	18
Picotite	4
Rock Frag.	10
_____	_____
_____	_____

Analyst C. Isselhardt

Location 37°52'39"N 122°39'20"W Wt. % of SF/Total Sample 20.70  
 Depth 16.47 meters 9.0 fathoms Wt. % of HM/SF 6.48  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 186  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 56.5  
 % Opaques 21.5  
 % Alterites and Unknowns 22.0



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

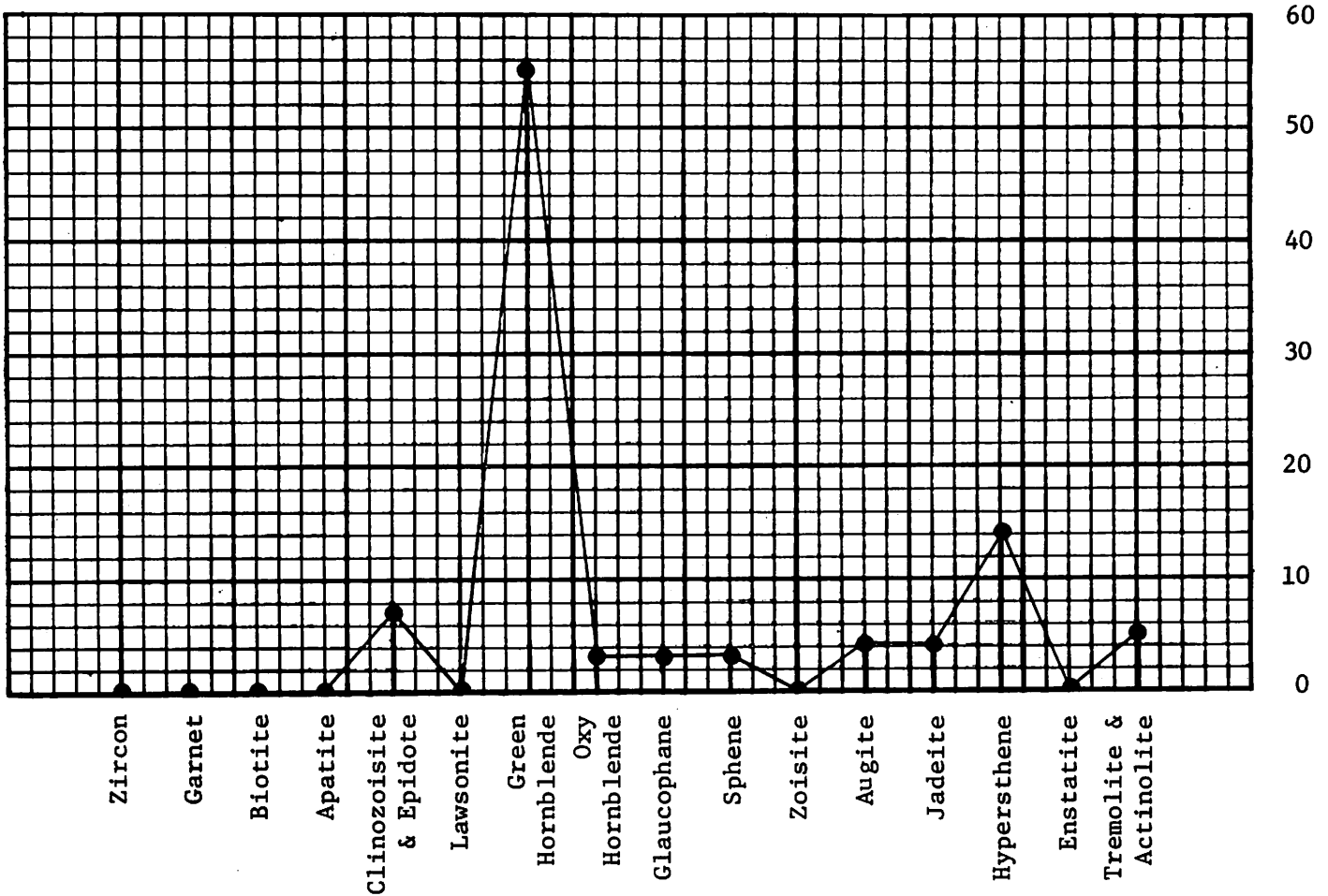
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	7
Magnetite	16
Picotite	6
Rock Frag.	11
_____	_____
_____	_____

Analyst C. Isselhardt

SAMPLE 2013

Location 37°52'28"N 122°38'42"W Wt. % of SF/Total Sample 19.93  
 Depth 17.69 meters 9.67 fathoms Wt. % of HM/SF 0.33  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 189  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 54  
 % Opaques 14  
 % Alterites and Unknowns 32



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3

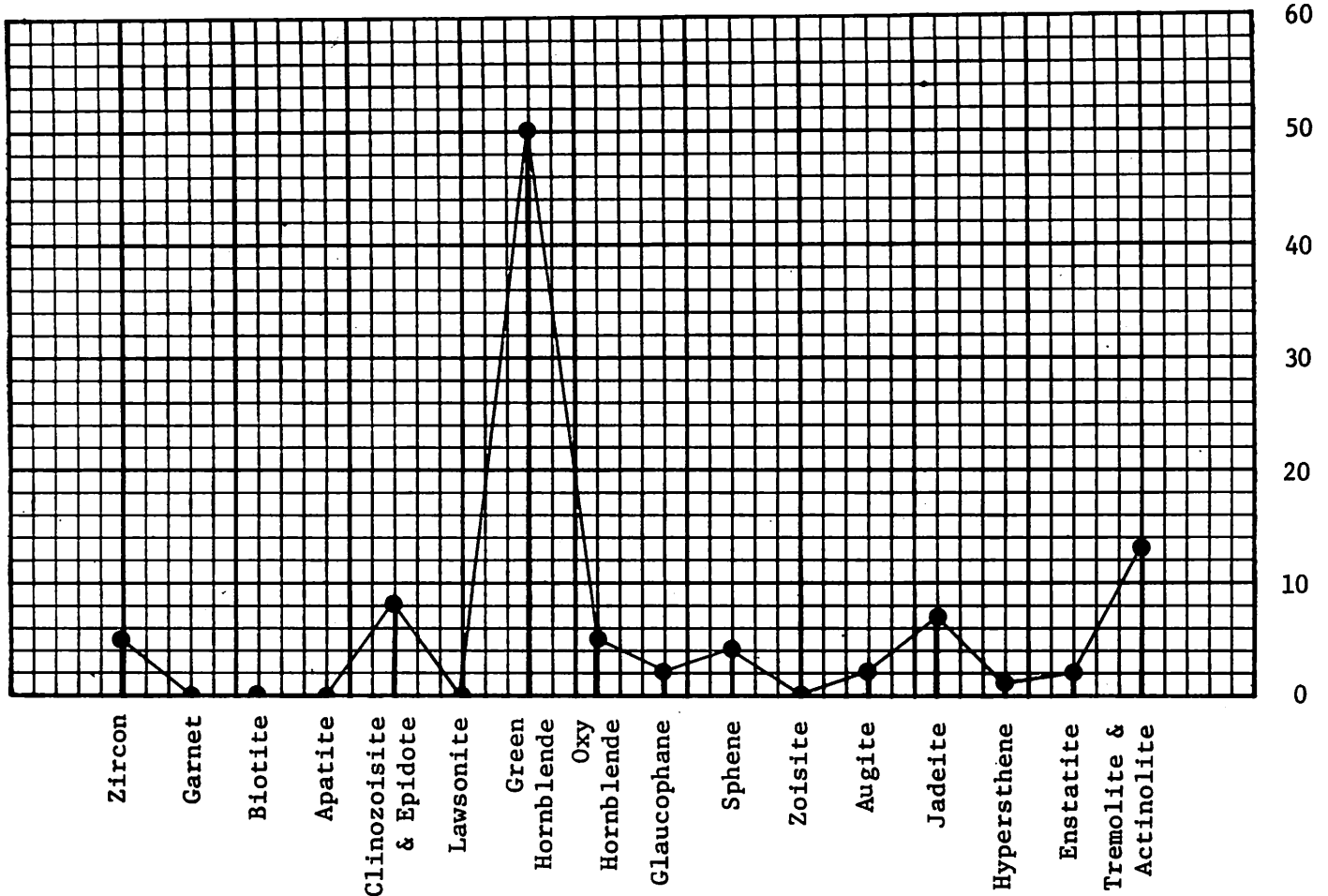
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	5
Rock Frag.	20

Analyst L. Osuch



Location 37°52'28"N 122°38'42"W Wt. % of SF/Total Sample 36.90  
 Depth 17.69 meters 9.67 fathoms Wt. % of HM/SF 0.85  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 194  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 54  
 % Opaques 16  
 % Alterites and Unknowns 30



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3

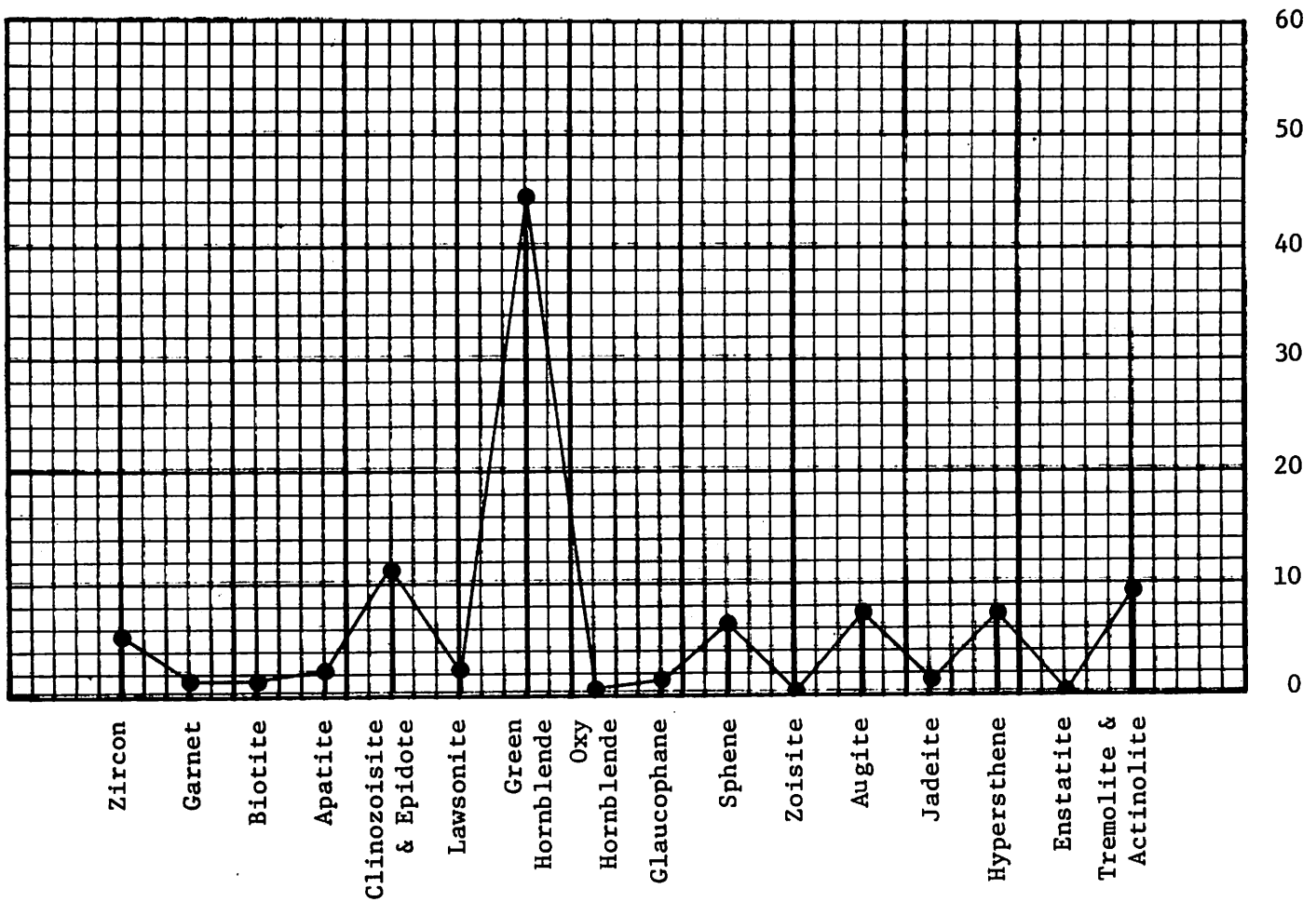
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	9
Picotite	1
Rock Frag.	20

Analyst L. Osuch

SAMPLE 2013

Location <u>37°52'28"N 122°38'42"W</u>	Wt. % of SF/Total Sample <u>24.87</u>
Depth <u>17.69 meters 9.67 fathoms</u>	Wt. % of HM/SF <u>3.12</u>
Size Fraction (SF) <u>0.088 - 0.061 mm</u>	Total Grains Counted <u>174</u>
Graph % = $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$	% Transparent Grains <u>59</u>
	% Opaques <u>15</u>
	% Alterites and Unknowns <u>26</u>



Other Transparent Minerals

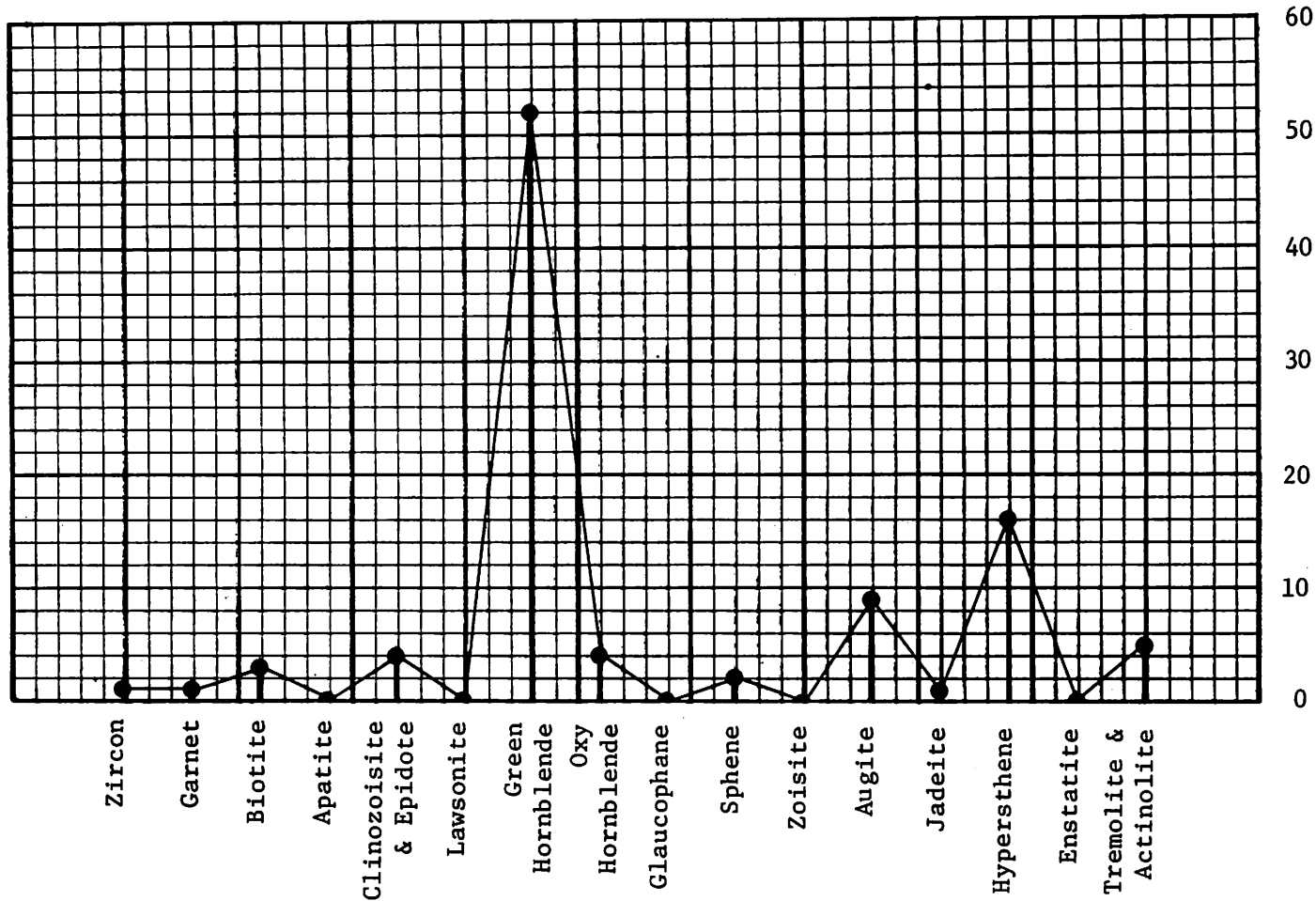
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	2
Chlorite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	13
Picotite	3
Rock Frag.	9

Analyst L. Osuch

Location 37°52'04"N 122°37'40"W Wt. % of SF/Total Sample 23.08  
 Depth 18.00 meters 9.83 fathoms Wt. % of HM/SF 0.36  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 158  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 63.8  
 % Opaques 5.3  
 % Alterites and Unknowns 30.9



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1
Carbonate	1

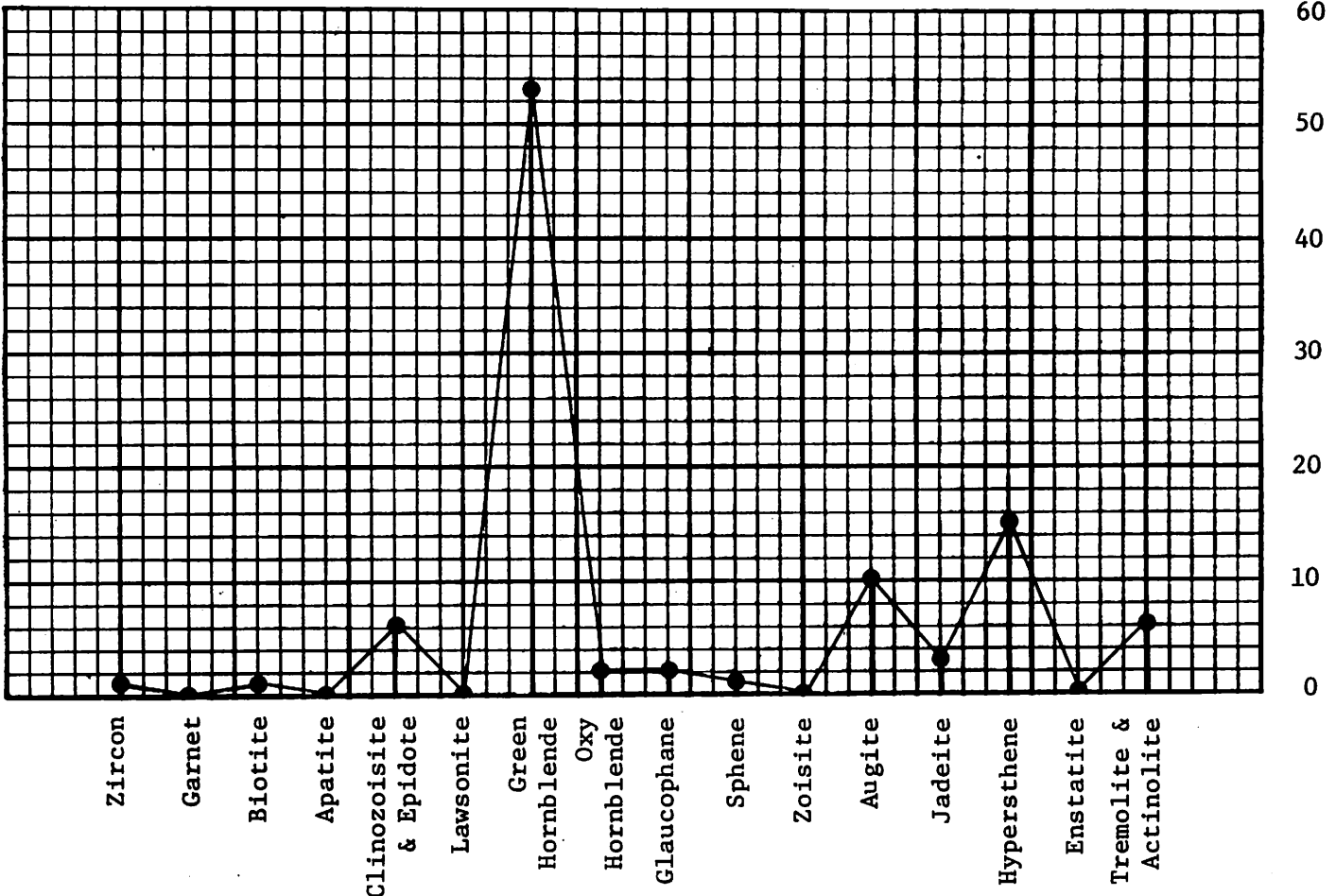
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	5
Picotite	1
Pyrite	1
Rock Frag.	1

Analyst T. Yancey

SAMPLE 2014

Location 37°52'04"N 122°37'40"W Wt. % of SF/Total Sample 33.20  
 Depth 18.00 meters 9.83 fathoms Wt. % of HM/SF 1.70  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 165  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 60.9  
 % Opaques 4.8  
 % Alterites and Unknowns 34.3



Other Transparent Minerals

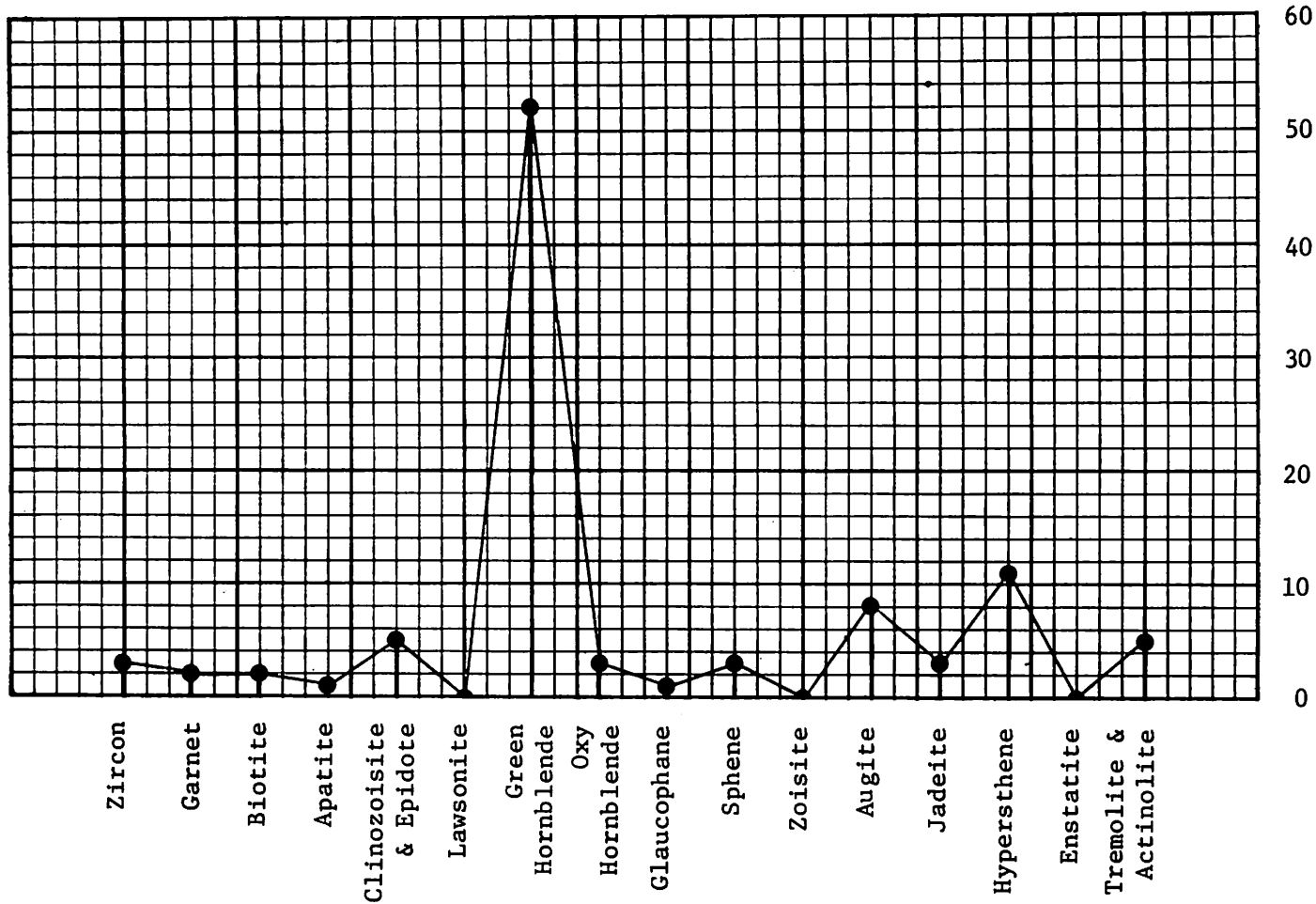
<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1
Carbonate	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	5
Picotite	1

SAMPLE 2014

Location 37°52'04"N 122°37'40"W Wt. % of SF/Total Sample 24.43  
 Depth 18.00 meters 9.83 fathoms Wt. % of HM/SF 3.80  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 168  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 61.6  
 % Opaques 7.9  
 % Alterites and Unknowns 30.5



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	1
Carbonate	1

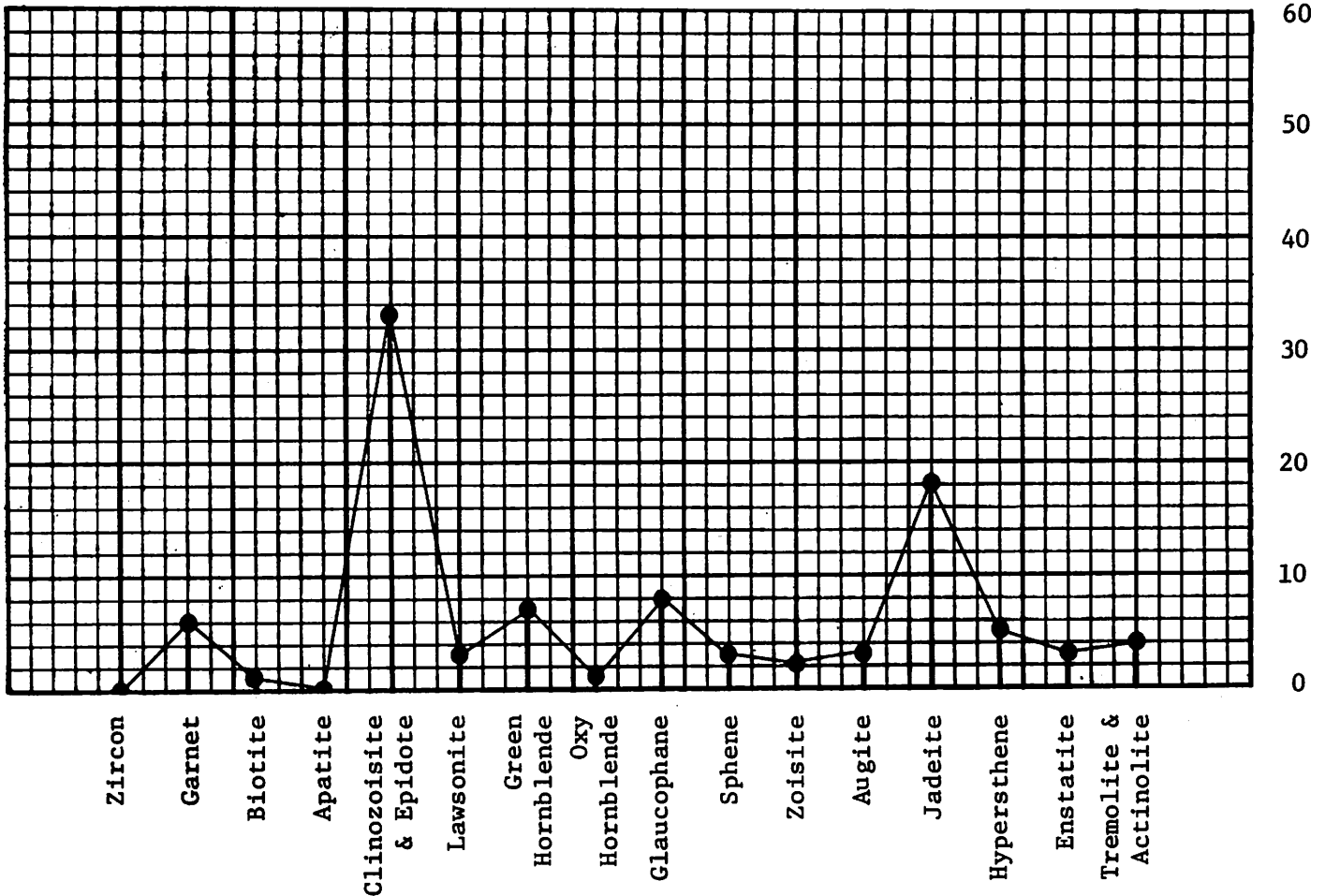
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	9
Picotite	1
Pyrite	1
Rock Frag.	1

Analyst T. Yancey

SAMPLE 2015

Location 37°53'40"N 122°41'58"W Wt. % of SF/Total Sample 5.73  
 Depth mean high tide level meters          fathoms Wt. % of HM/SF 4.66  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 289  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 35  
 % Opaques 31  
 % Alterites and Unknowns 34



Other Transparent Minerals

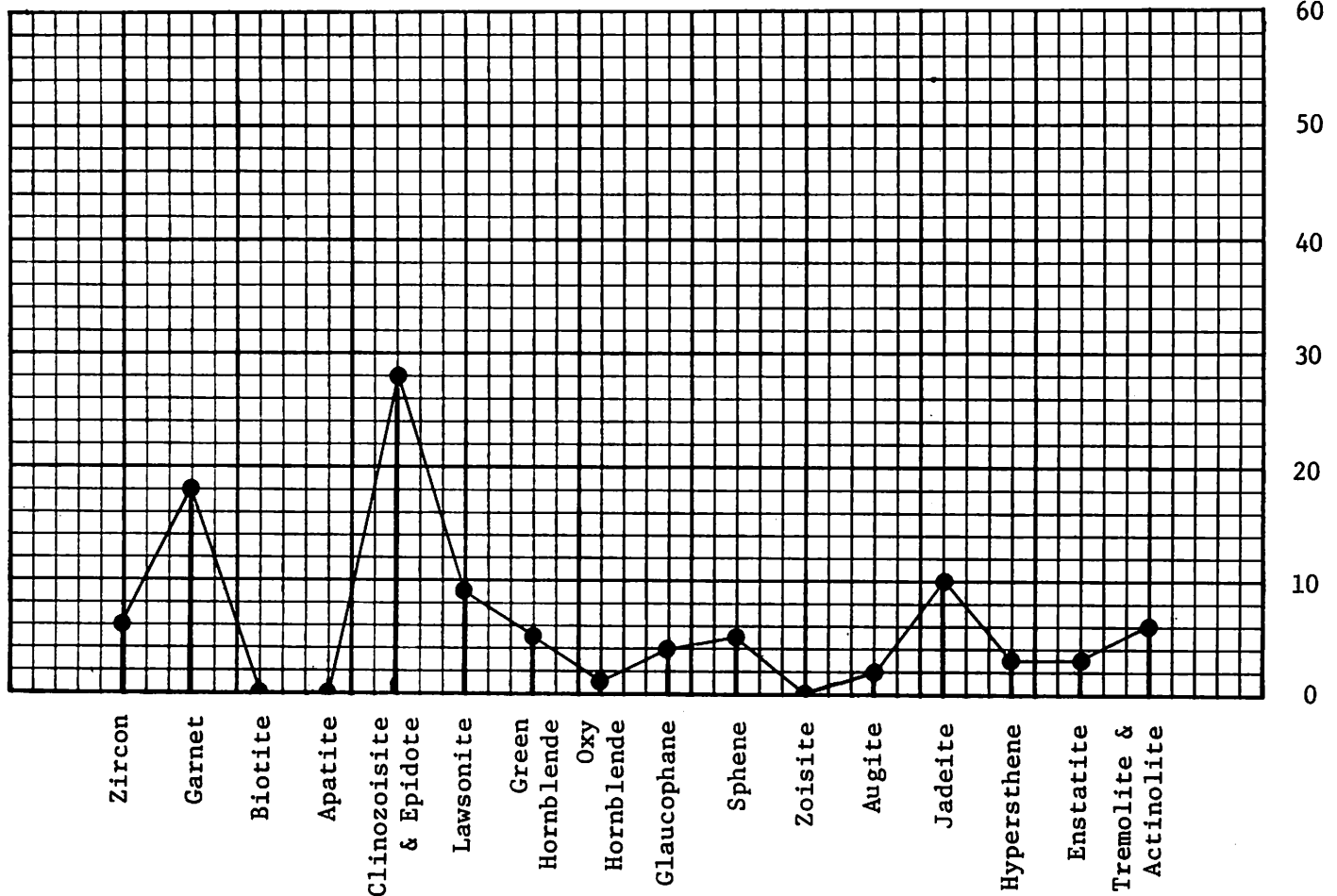
<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Pumpellyite</u>	<u>1</u>
<u>Topaz</u>	<u>2</u>

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>52</u>
<u>Magnetite</u>	<u>8</u>
<u>Pyrite</u>	<u>1</u>
<u>Rock Frag.</u>	<u>29</u>

Analyst L. Osuch

Location 37°53'40"N 122°41'58"W Wt. % of SF/Total Sample 0.67  
 Depth mean high tide level meters                      fathoms Wt. % of HM/SF 17.56  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 368  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 28  
 % Opaques 60  
 % Alterites and Unknowns 12



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	34
Magnetite	137
Picotite	13
Pyrite	21
Rock Frag.	17

Analyst L. Osuch

SAMPLE 2015

Location 37°53'40"N 122°41'58"W

Wt. % of SF/Total Sample 0.13

Depth mean high tide level meters          fathoms

Wt. % of HM/SF 12.40

Size Fraction (SF) 0.088 - 0.061 mm

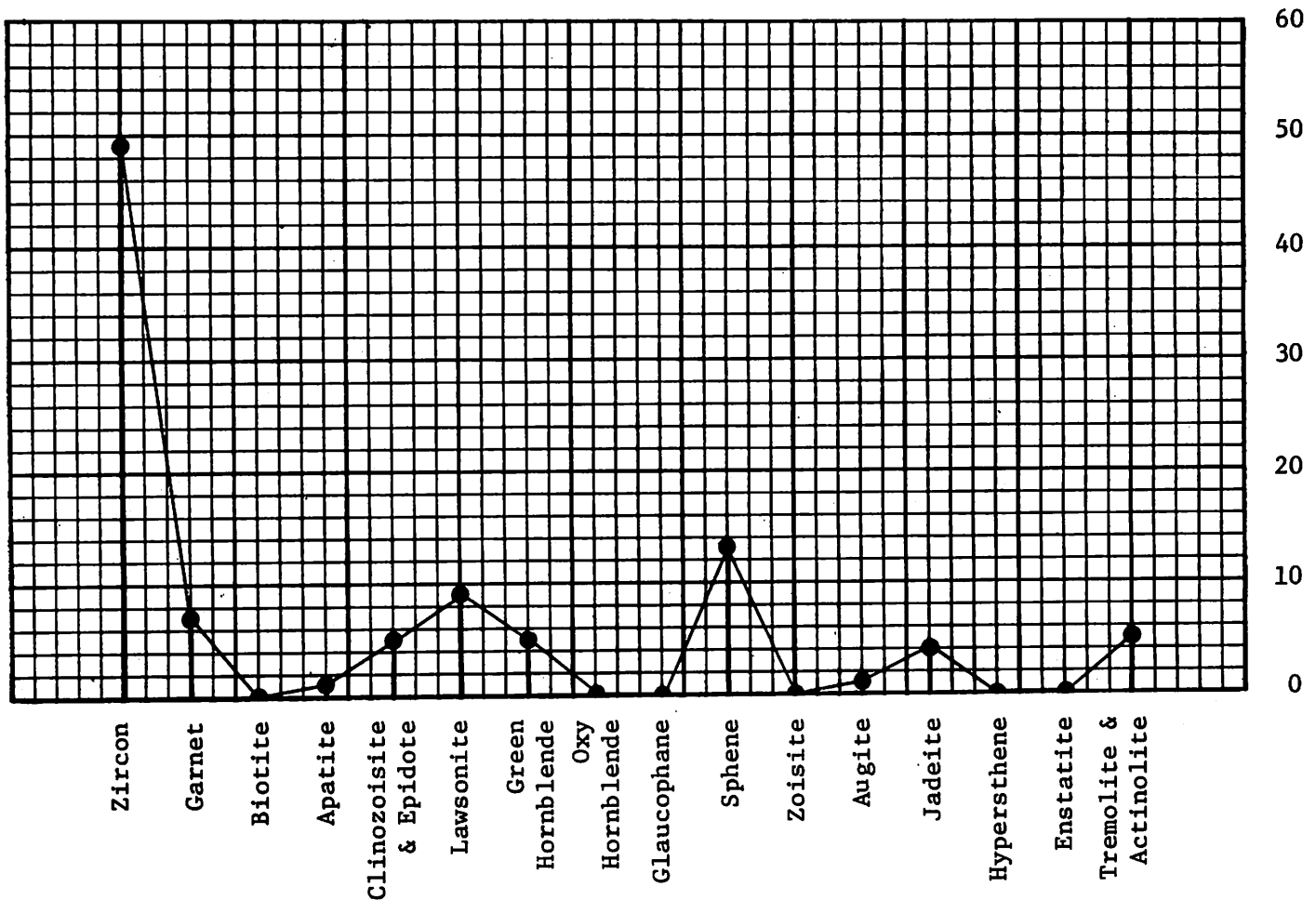
Total Grains Counted 387

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 26

% Opaques 68

% Alterites and Unknowns 6



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	1

Other Opaque Minerals

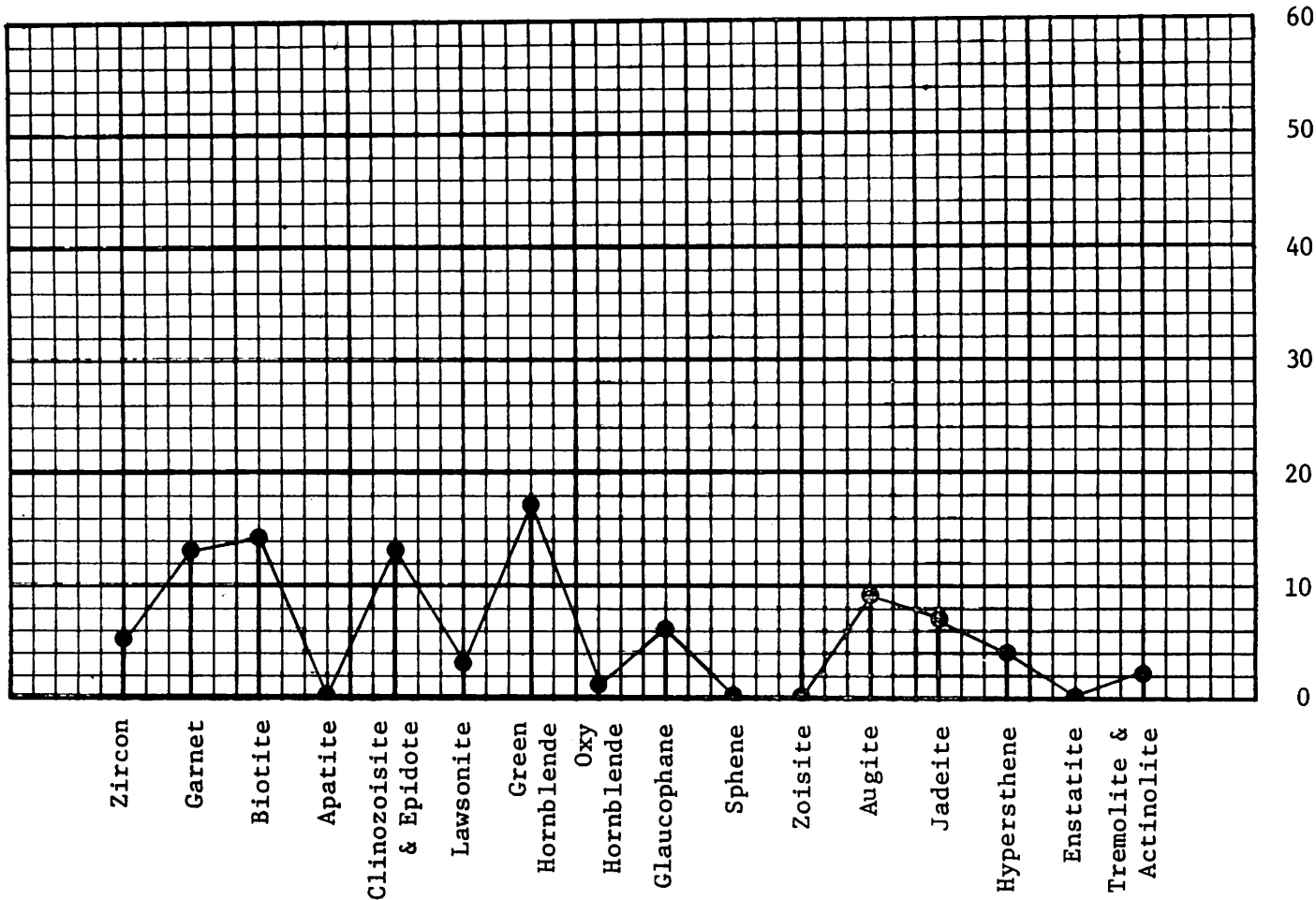
<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	46
Magnetite	145
Picotite	8
Pyrite	42
Rock Frag.	23

Analyst L. Osuch



SAMPLE 2016

Location 37°53'39"N 122°41'58"W Wt. % of SF/Total Sample 1.05  
 Depth mean tide meters          fathoms Wt. % of HM/SF 1.60  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 535  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 20.2  
 % Opaques 29.9  
 % Alterites and Unknowns 49.9



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	5
Carbonate	3
Pumpellyite	1

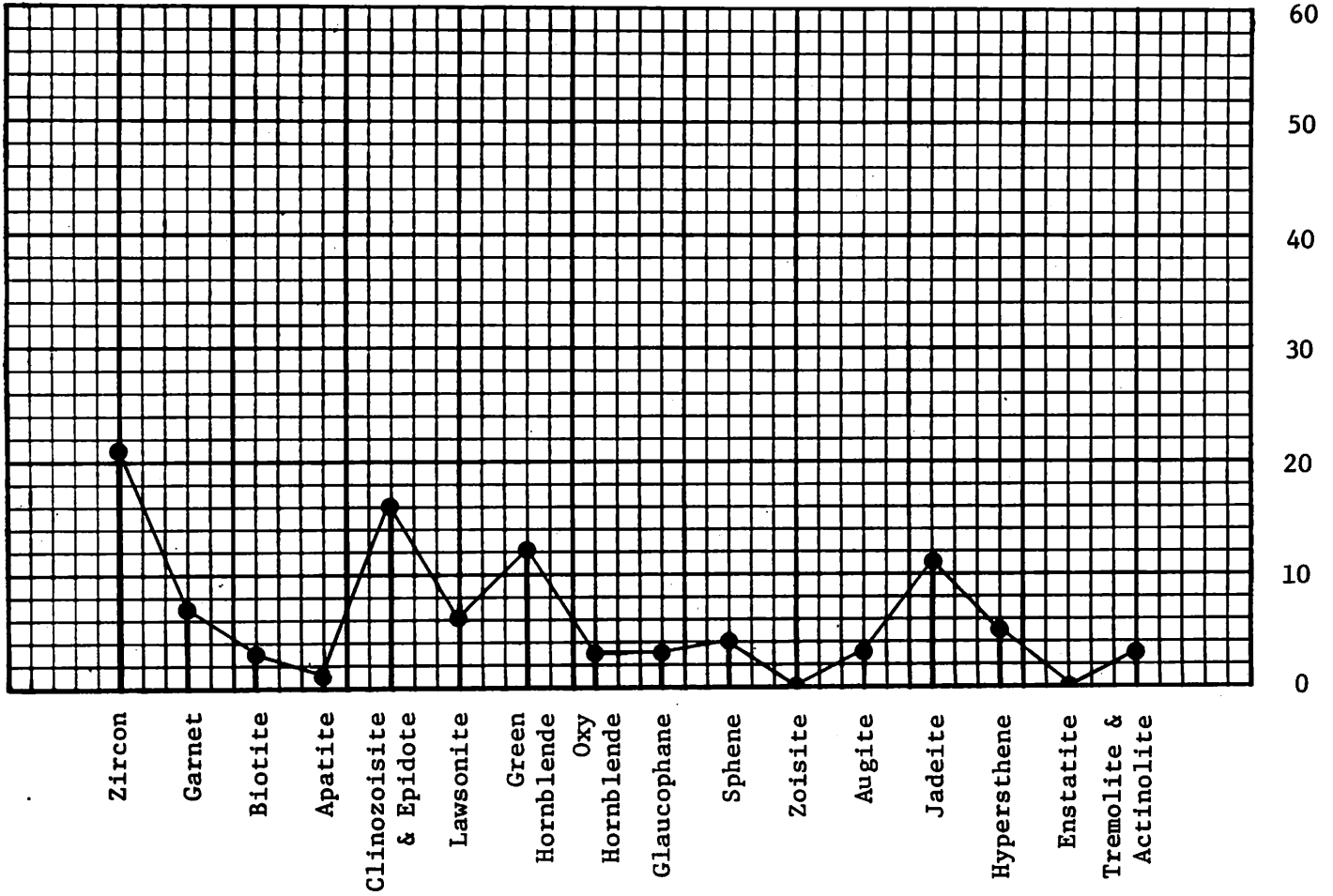
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	93
Magnetite	41
Picotite	7
Pyrite	19

Analyst T. Yancey

SAMPLE 2016

Location 37°53'39"N 122°41'58"W Wt. % of SF/Total Sample 0.41  
 Depth mean tide meters                      fathoms Wt. % of HM/SF 1.69  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 293  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 27.6  
 % Opaques 41.3  
 % Alterites and Unknowns 31.1



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1
Pumpellyite	1
Tourmaline	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	25
Magnetite	54
Picotite	21
Pyrite	21

Analyst T. Yancey

Location 37°53'39"N 122°41'58"W

Wt. % of SF/Total Sample 0.29

Depth mean tide meters \_\_\_\_\_ fathoms \_\_\_\_\_

Wt. % of HM/SF 0.81

Size Fraction (SF) 0.088 - 0.061 mm

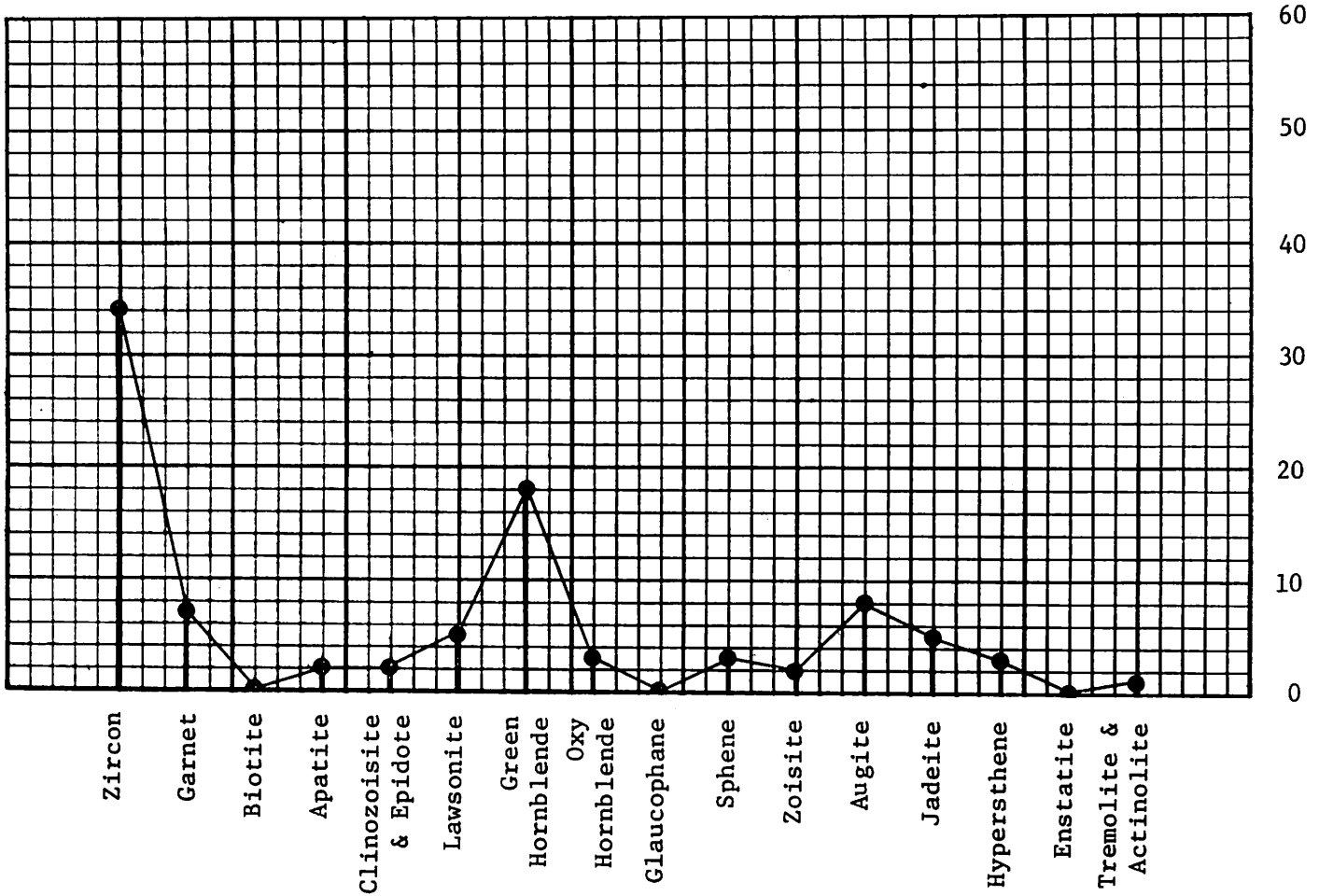
Total Grains Counted 277

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 35.0

% Opaques 45.5

% Alterites and Unknowns 19.5



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	3
Carbonate	2
Pumpellyite	1

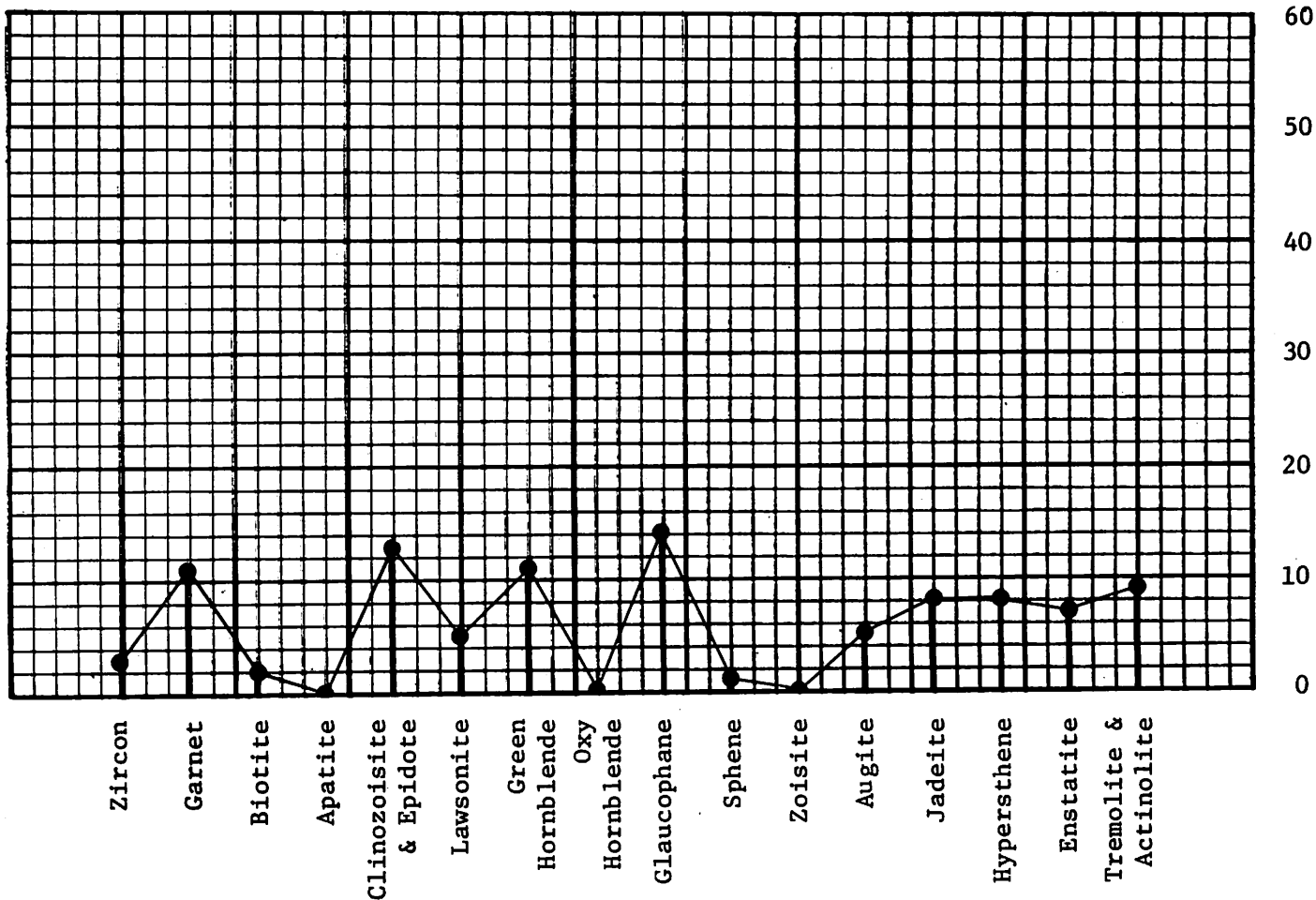
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	24
Magnetite	69
Picotite	3
Pyrite	30

Analyst T. Yancey

SAMPLE 2017

Location 37°53'47"N 122°41'54"W Wt. % of SF/Total Sample 4.54  
 Depth high tide level meters                      fathoms Wt. % of HM/SF 2.82  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 235  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 42.5  
 % Opaques 16.6  
 % Alterites and Unknowns 40.9



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Chlorite	2
Carbonate	5

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	19
Magnetite	6
Pyrite	5
Rock Frag.	9

Analyst C. Isselhardt

SAMPLE 2017

Location 37°53'47"N 122°41'54"W

Wt. % of SF/Total Sample 0.25

Depth high tide meters          fathoms

Wt. % of HM/SF 11.8

Size Fraction (SF) 0.124 - 0.088 mm

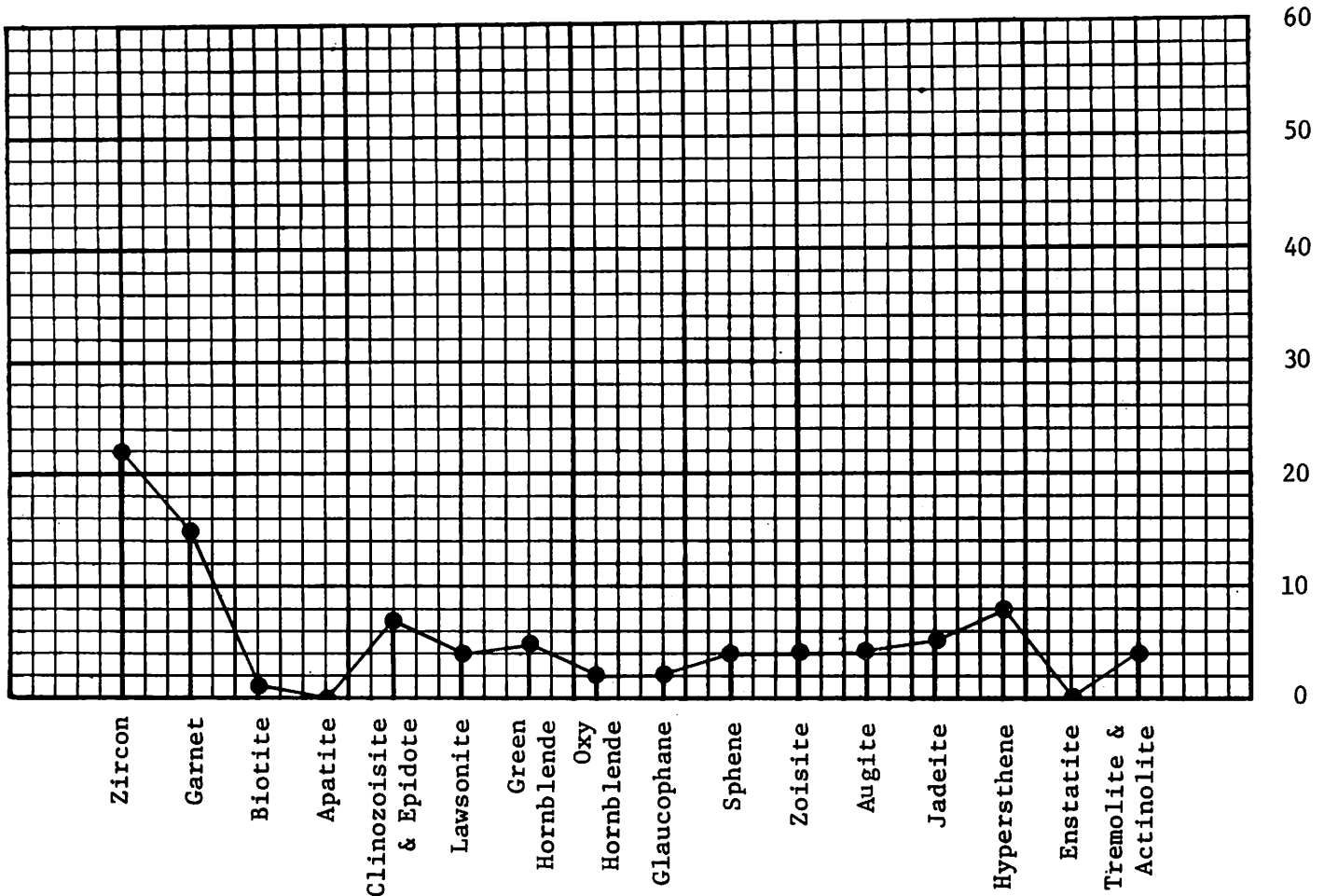
Total Grains Counted 249

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 42

% Opaques 32

% Alterites and Unknowns 26



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Pumpellyite</u>	<u>2</u>
<u>Carbonate</u>	<u>1</u>
<u>        </u>	<u>        </u>
<u>        </u>	<u>        </u>
<u>        </u>	<u>        </u>
<u>        </u>	<u>        </u>

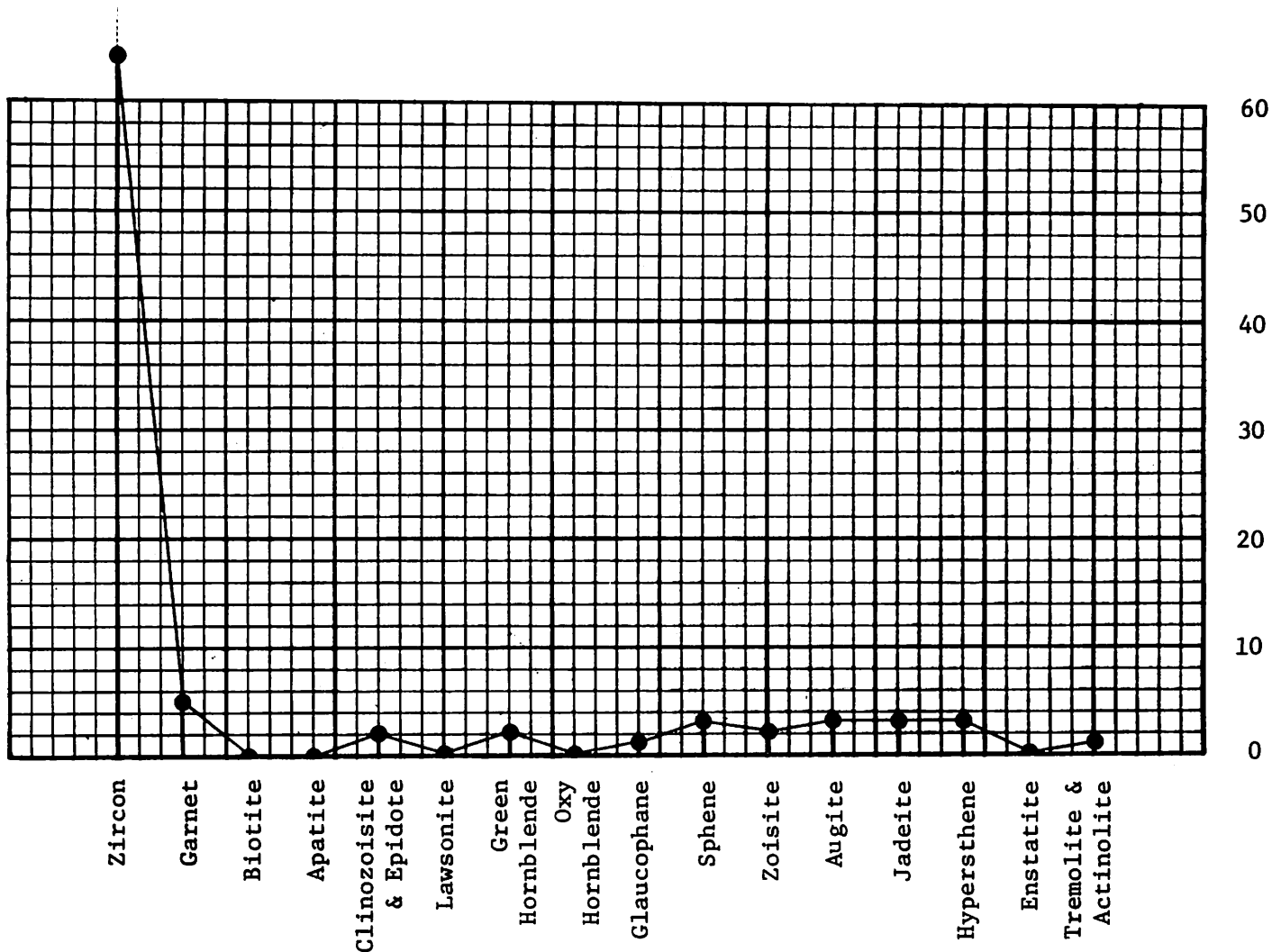
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>25</u>
<u>Magnetite</u>	<u>43</u>
<u>Picotite</u>	<u>13</u>
<u>Rock Frag.</u>	<u>12</u>
<u>        </u>	<u>        </u>
<u>        </u>	<u>        </u>

Analyst C. Isselhardt

SAMPLE 2017

Location 37°53'47"N 122°41'54"W Wt. % of SF/Total Sample 0.19  
 Depth high tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 0.96  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 280  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 44  
 % Opaques 49  
 % Alterites and Unknowns 7



Other Transparent Minerals

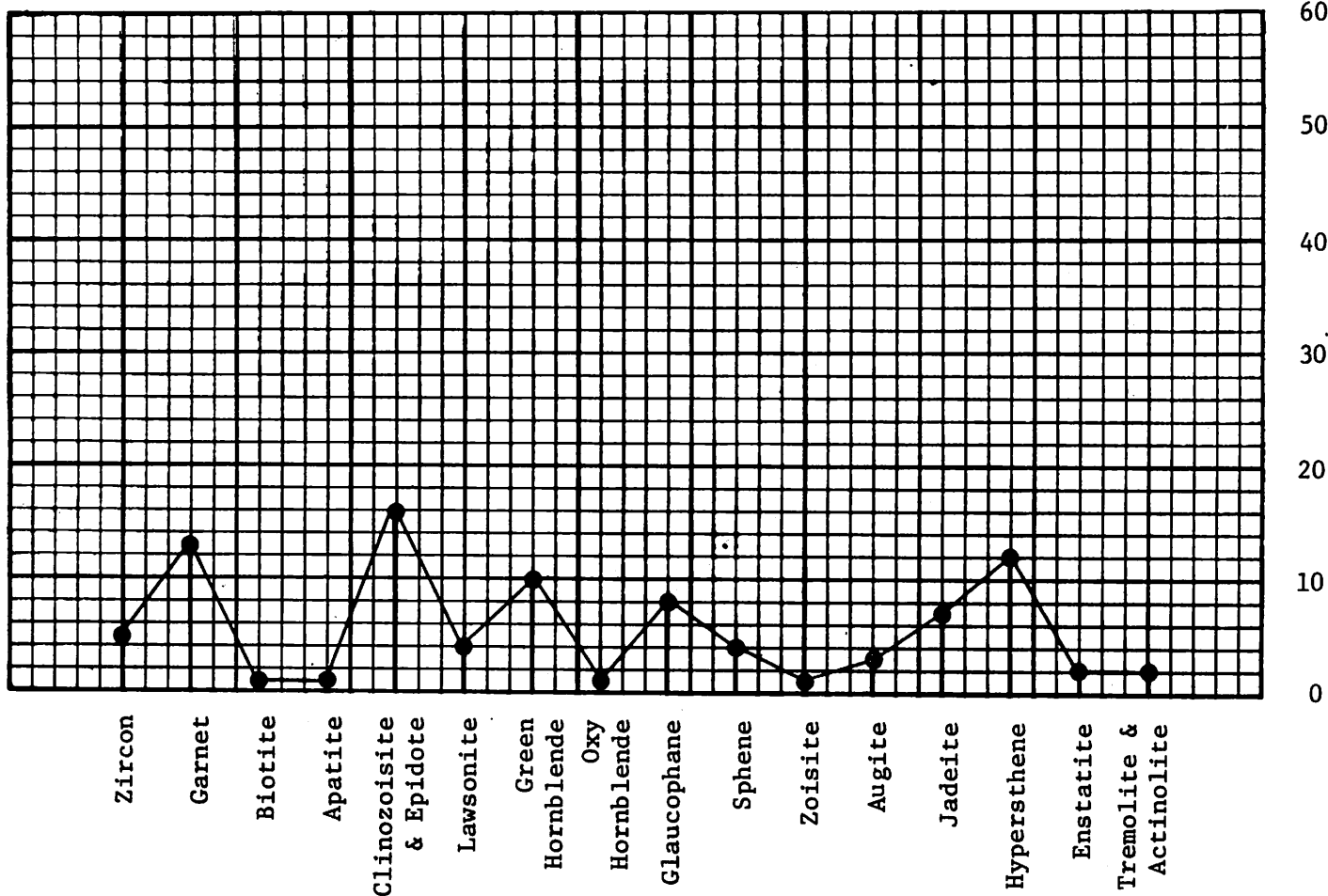
<u>Mineral</u>	<u>No. Grains Counted</u>

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	40
Magnetite	92
Picotite	19
Rock Frag.	6

Analyst C. Isselhardt

Location 37°53'45"N 122°41'46"W Wt. % of SF/Total Sample 9.75  
 Depth mean tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 1.03  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 491  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 18.9  
 % Opaques 17.9  
 % Alterites and Unknowns 63.2



Other Transparent Minerals

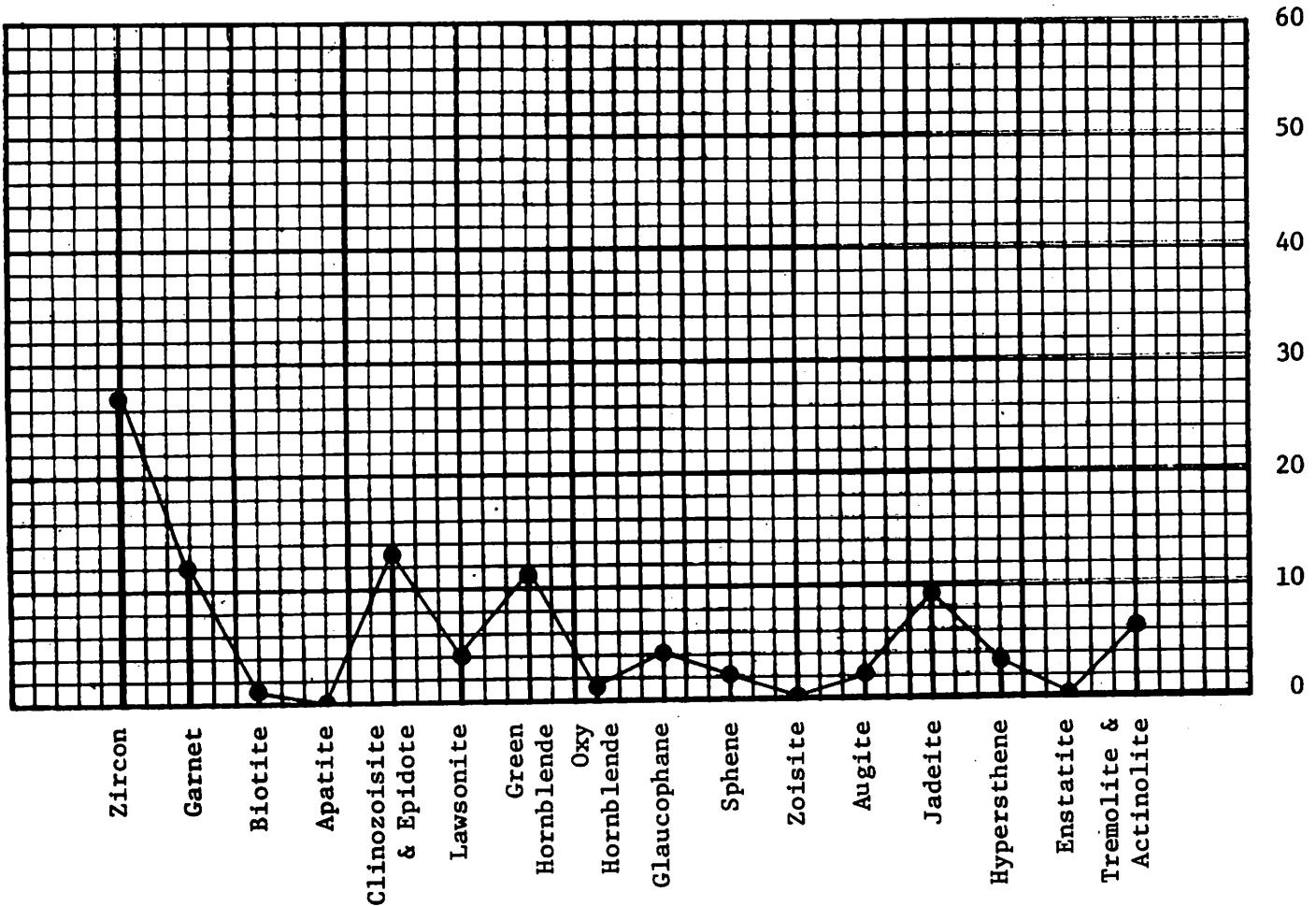
<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3
Pumpellyite	3
Chlorite	1
Tourmaline	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	38
Magnetite	16
Picotite	6
Pyrite	5
Rock Frag.	10

Analyst C. Isselhardt

Location 37°53'45"N 122°41'46"W Wt. % of SF/Total Sample 1.43  
 Depth mean tide meters                      fathoms Wt. % of HM/SF 2.67  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 323  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 24.8  
 % Opaques 44.9  
 % Alterites and Unknowns 30.3



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Carbonate</u>	<u>2</u>
<u>Pumpellyite</u>	<u>1</u>
<u>                    </u>	<u>                    </u>
<u>                    </u>	<u>                    </u>
<u>                    </u>	<u>                    </u>
<u>                    </u>	<u>                    </u>

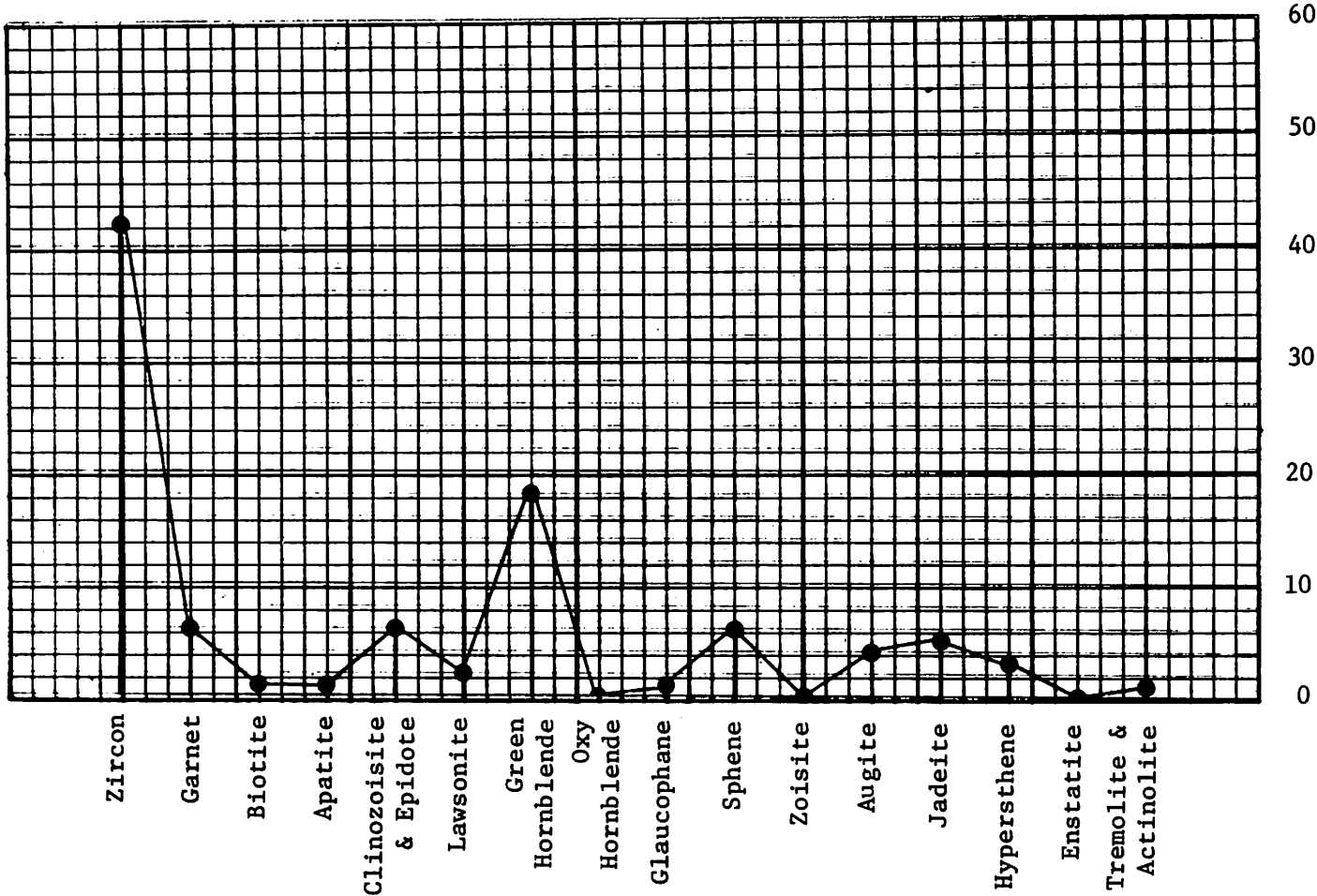
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>18</u>
<u>Magnetite</u>	<u>66</u>
<u>Picotite</u>	<u>14</u>
<u>Pyrite</u>	<u>14</u>
<u>Gold</u>	<u>1</u>
<u>Rock Frag.</u>	<u>10</u>



SAMPLE 2018

Location 37°53'45"N 122°41'46"W Wt. % of SF/Total Sample 0.23  
 Depth mean tide meters                      fathoms Wt. % of HM/SF 2.43  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 368  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 27.7  
 % Opaques 49.5  
 % Alterites and Unknowns 22.8



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	1

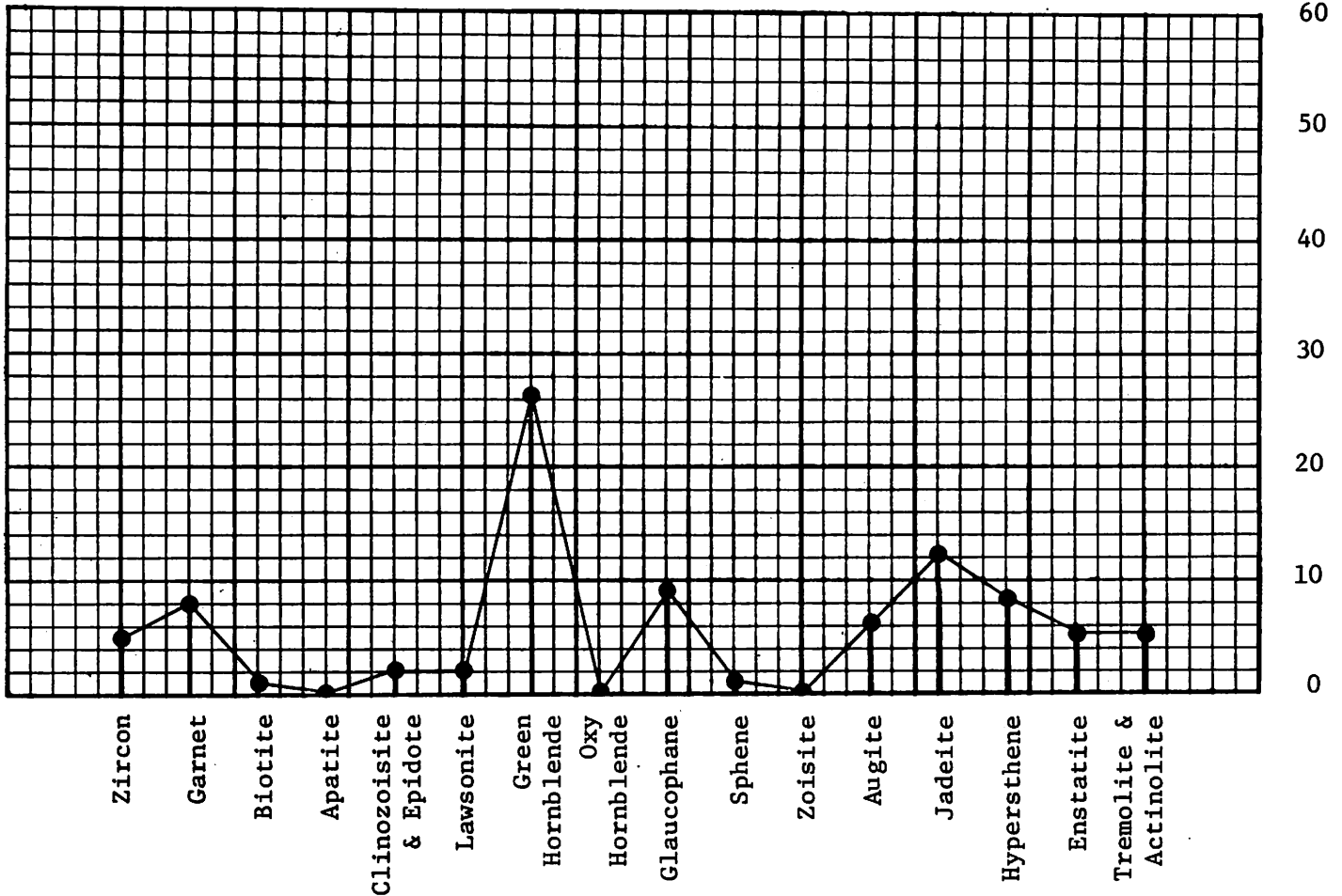
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	42
Magnetite	48
Picotite	25
Pyrite	49
Rock Frag.	3

Analyst C. Isselhardt

SAMPLE 2019

Location 37°54'07"N 122°41'28"W Wt. % of SF/Total Sample 36.90  
 Depth mean tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 0.31  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 460  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 18.9  
 % Opaques 25.2  
 % Alterites and Unknowns 55.9



Other Transparent Minerals

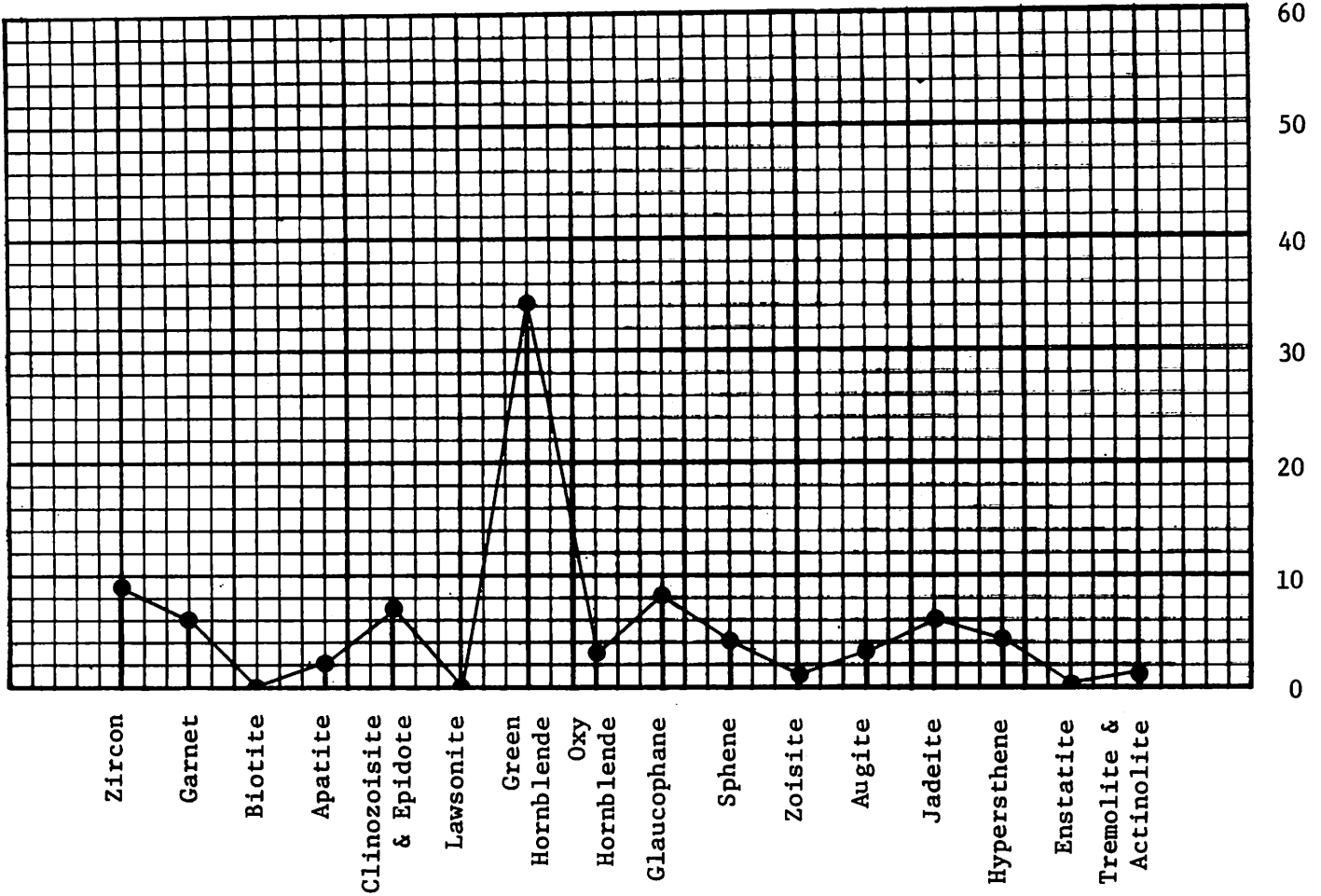
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	4
Carbonate	3
Pumpellyite	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	53
Magnetite	39
Picotite	15
Pyrite	9

Analyst T. Yancey

Location 37°54'07"N 122°41'28"W Wt. % of SF/Total Sample 6.30  
 Depth mean tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 2.94  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 380  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 23.9  
 % Opaques 14.5  
 % Alterites and Unknowns 61.6



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	3
Carbonate	6
Pumpellyite	2

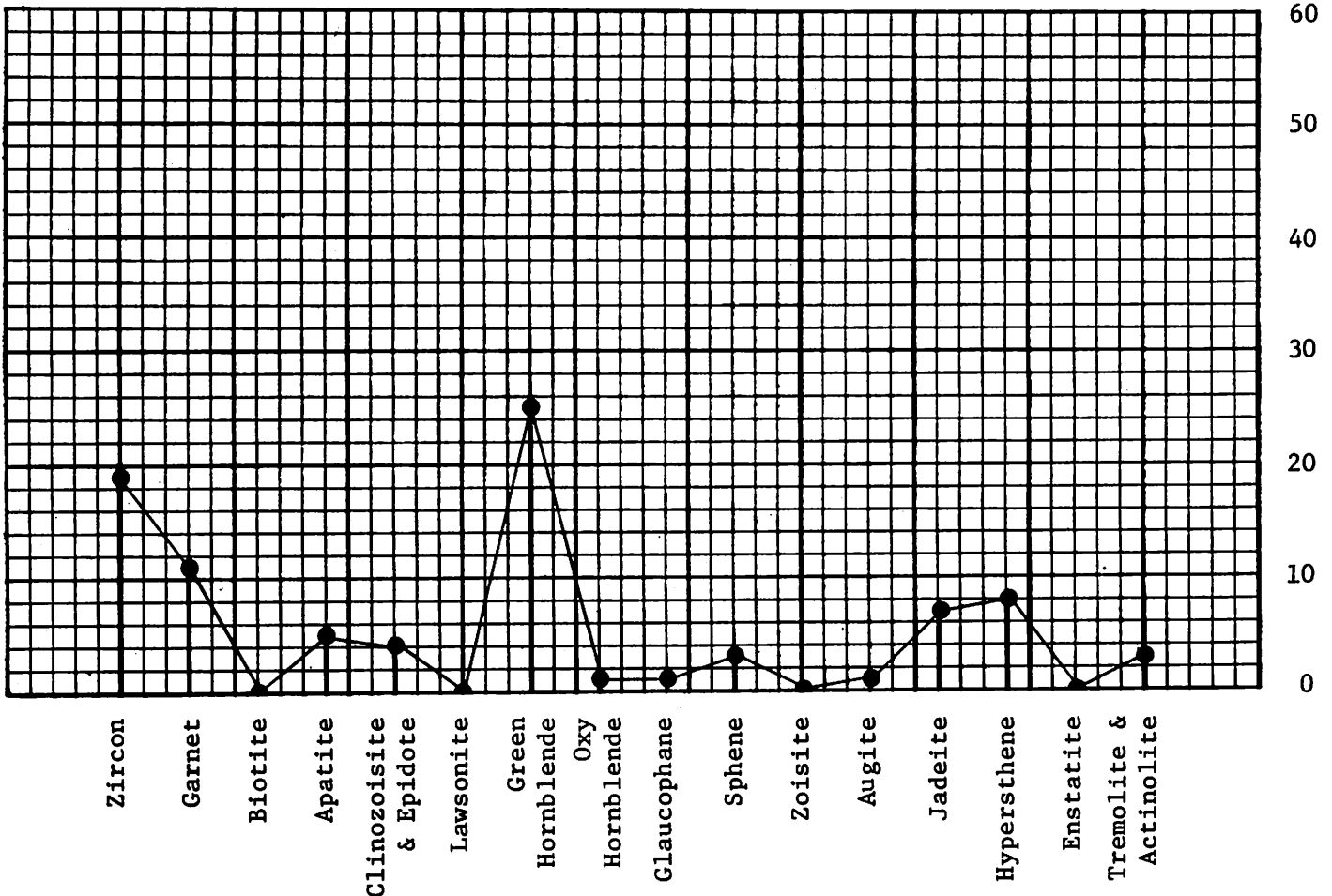
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	12
Magnetite	28
Picotite	9
Pyrite	6

Analyst T. Yancey

SAMPLE 2019

Location 37°54'07"N 122°41'28"W Wt. % of SF/Total Sample 0.45  
 Depth mean tide meters                      fathoms Wt. % of HM/SF 9.94  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 218  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 33.9  
 % Opaques 39.9  
 % Alterites and Unknowns 26.2



Other Transparent Minerals

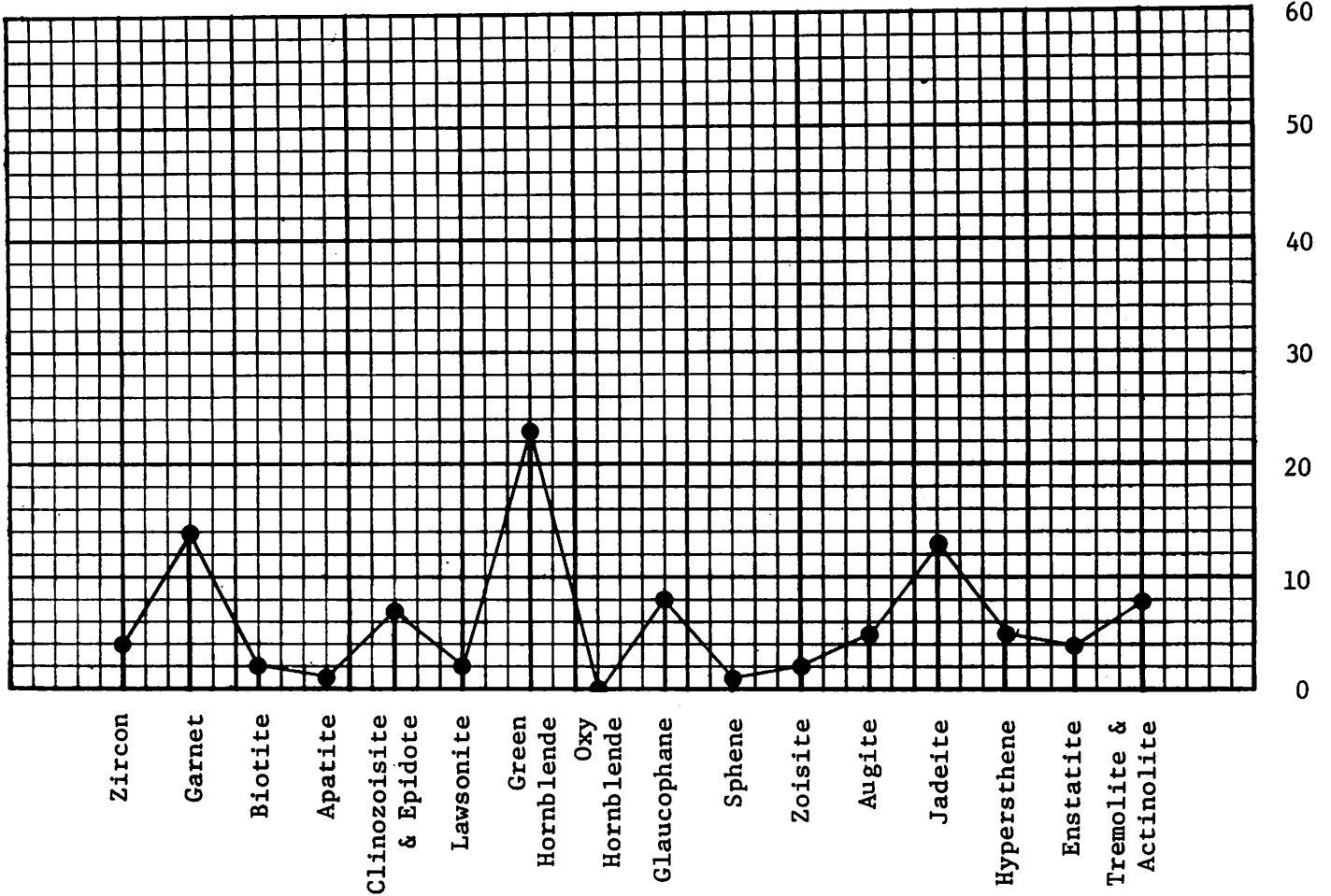
<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>3</u>
<u>Carbonate</u>	<u>3</u>
<u>Tourmaline</u>	<u>2</u>

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>8</u>
<u>Magnetite</u>	<u>44</u>
<u>Picotite</u>	<u>26</u>
<u>Pyrite</u>	<u>9</u>

Analyst T. Yancey

Location 37°54'4"N 122°41'27"W Wt. % of SF/Total Sample 40.7  
 Depth low tide meters          fathoms Wt. % of HM/SF 0.42  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 286  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 38  
 % Opaques 17  
 % Alterites and Unknowns 45



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	4
Carbonate	2

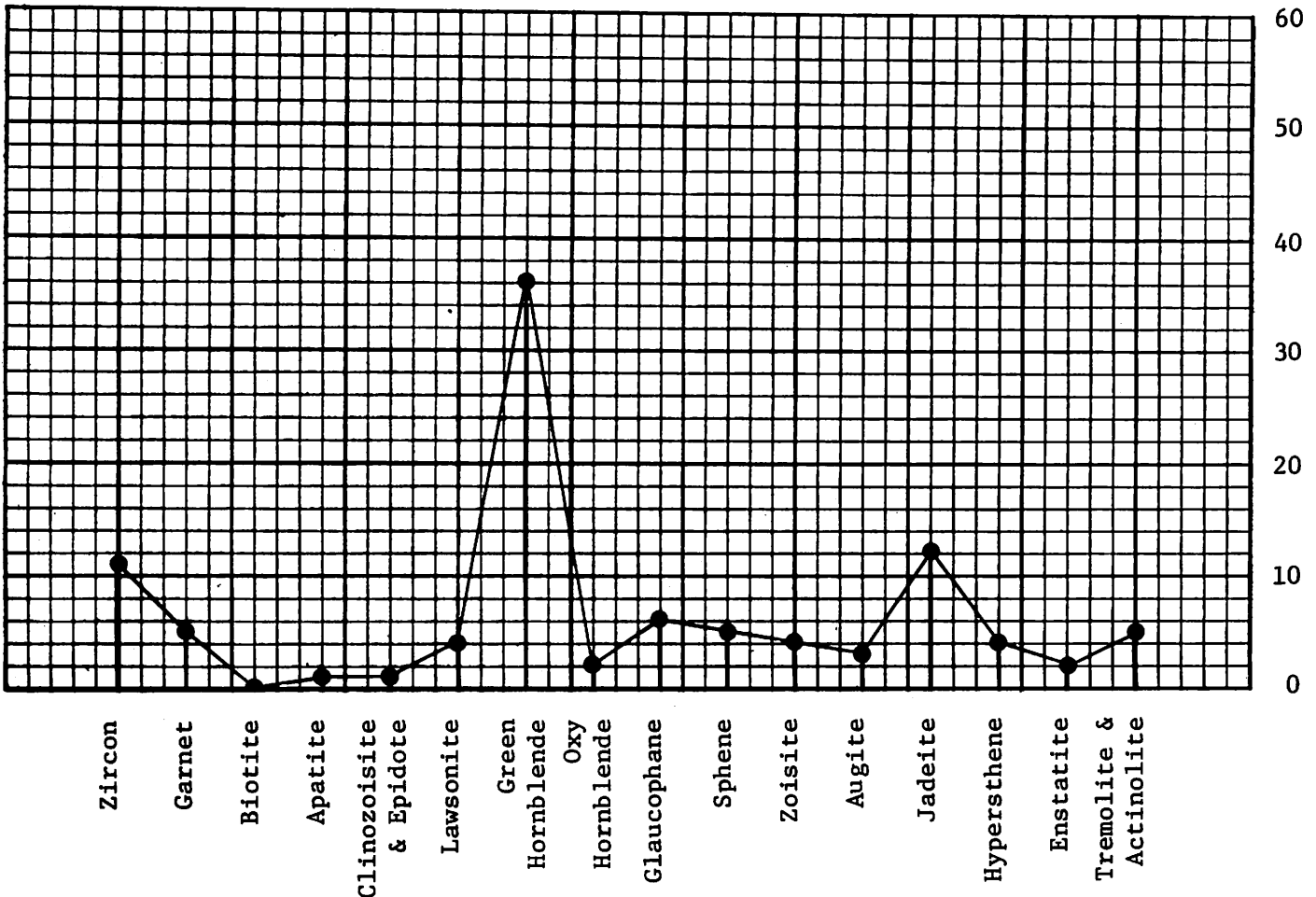
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	21
Magnetite	10
Picotite	3
Pyrite	5
Rock Frag.	9

Analyst C. Isselhardt

SAMPLE 2020

Location 37°54'4"N 122°41'27"W Wt. % of SF/Total Sample 6.46  
 Depth low tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 2.61  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 221  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 50.6  
 % Opaques 11.4  
 % Alterites and Unknowns 38



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

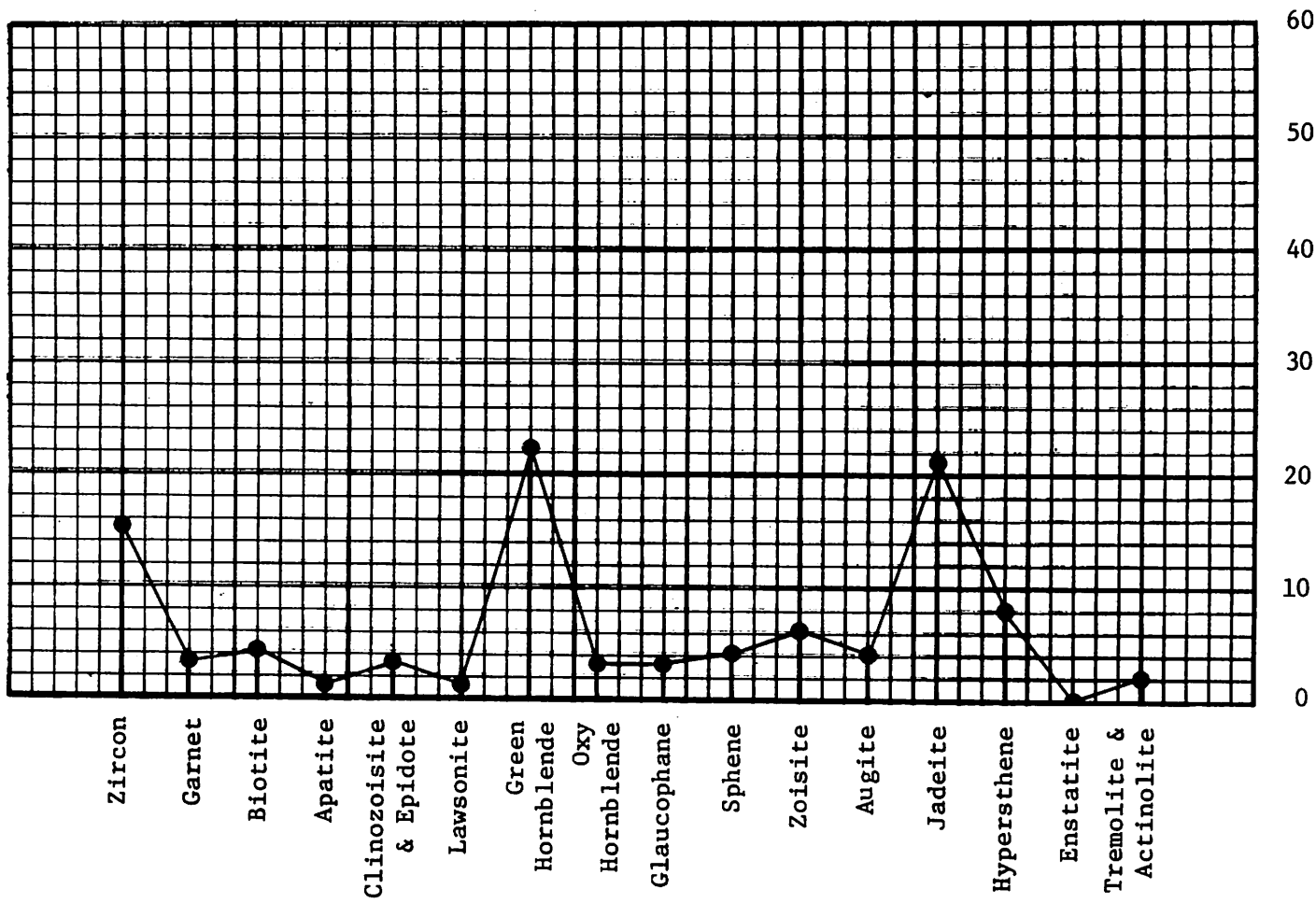
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	10
Picotite	2
Pyrite	2
Rock Frag.	6
_____	_____
_____	_____

Analyst C. Isselhardt

SAMPLE 2020

Location 37°54'4"N 122°41'27"W Wt. % of SF/Total Sample 0.434  
 Depth low tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 9.40  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 323  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 50.8  
 % Opaques 37.4  
 % Alterites and Unknowns 11.8



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Rutile</u>	<u>1</u>
<u>Carbonate</u>	<u>2</u>
_____	_____
_____	_____
_____	_____

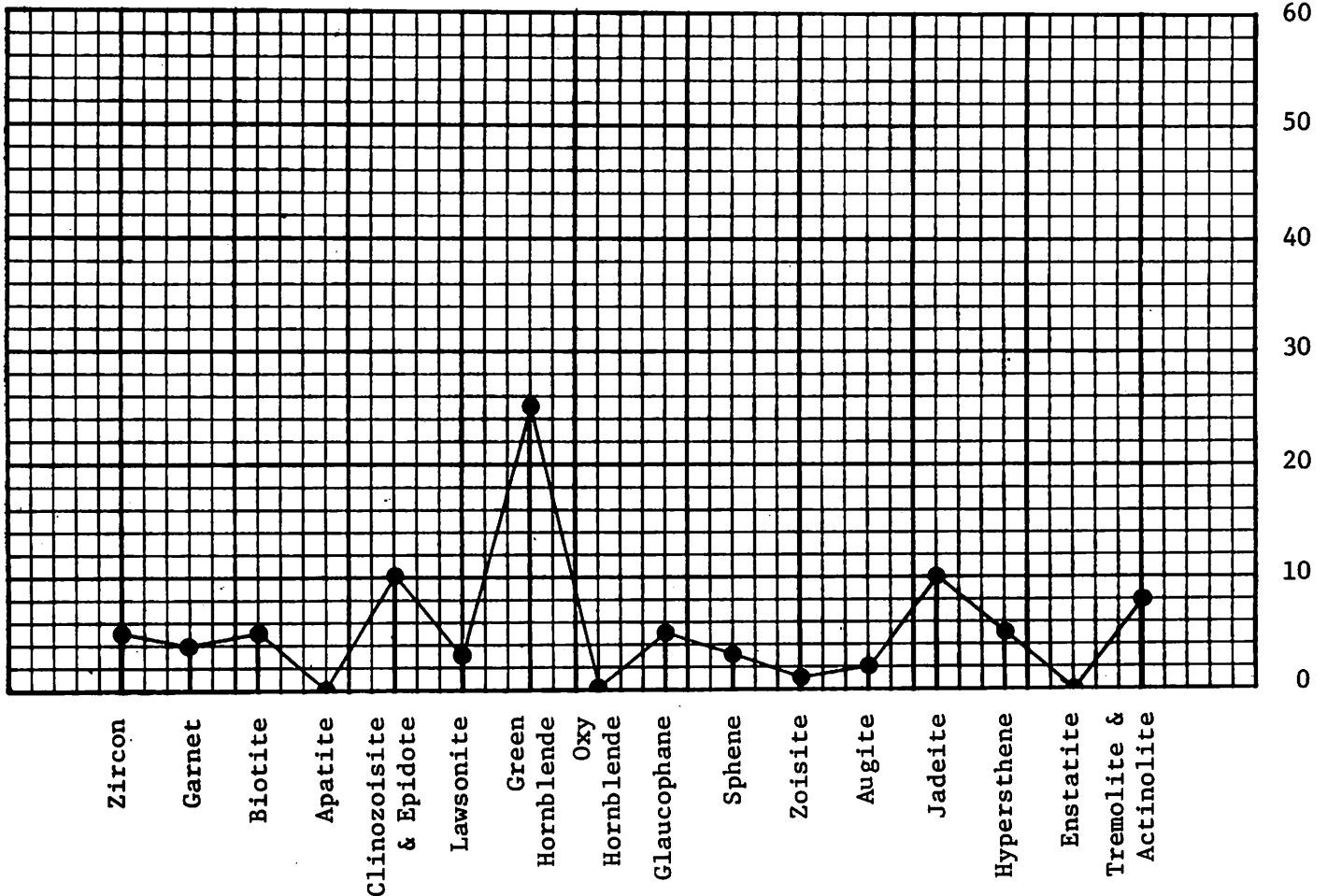
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
<u>Hematite</u>	<u>4</u>
<u>Magnetite</u>	<u>55</u>
<u>Picotite</u>	<u>17</u>
<u>Pyrite</u>	<u>4</u>
<u>Rock Frag.</u>	<u>36</u>
_____	_____

Analyst C. Isselhardt

SAMPLE 2021

Location 37°54'8"N 122°41'15"W Wt. % of SF/Total Sample 58.75  
 Depth mean tide level meters \_\_\_\_\_ fathoms Wt. % of HM/SF 0.24  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 278  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 36  
 % Opaques 26  
 % Alterites and Unknowns 38



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	4
Carbonate	10

Other Opaque Minerals

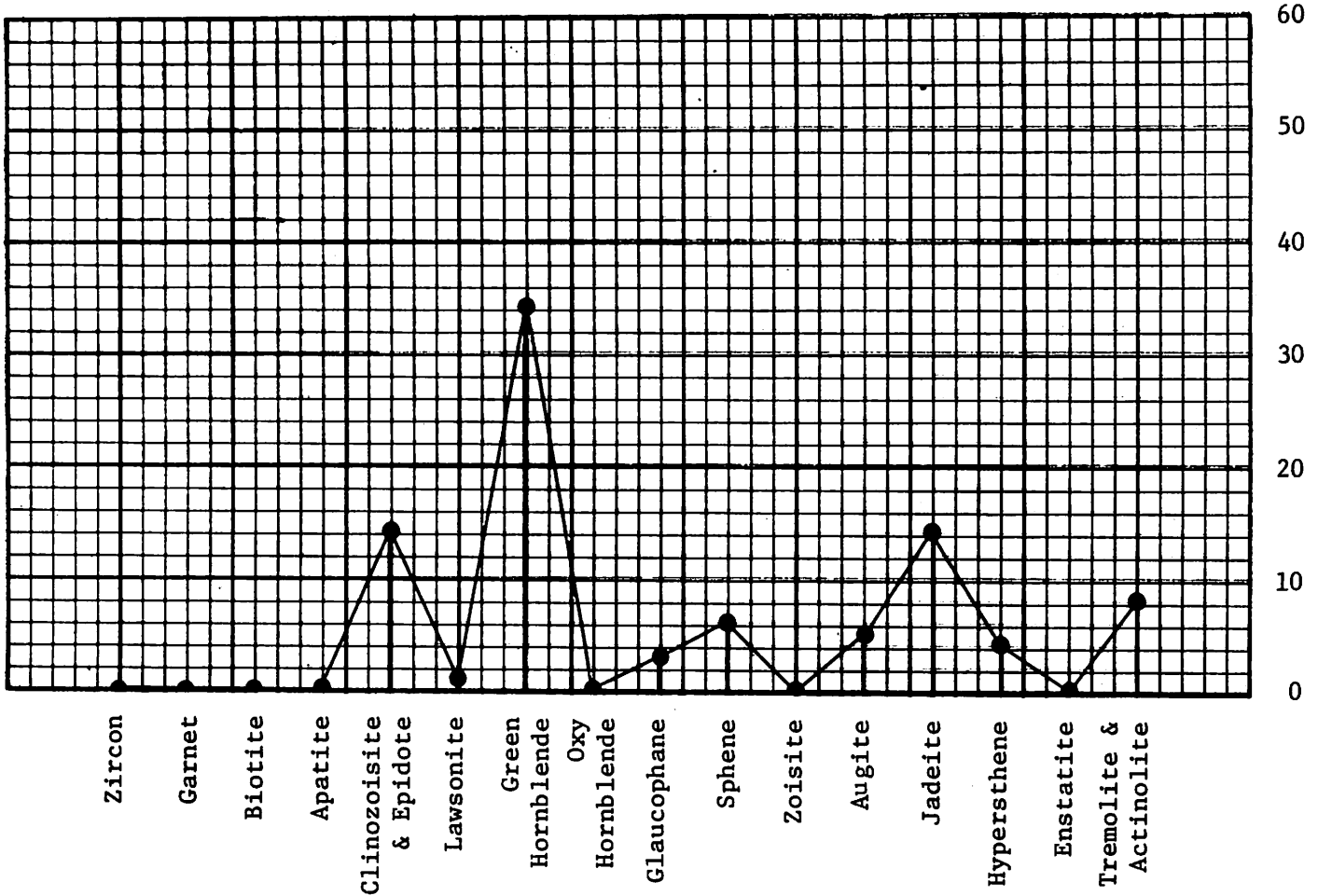
<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	45
Magnetite	10
Picotite	3
Pyrite	1
Rock Frag.	13

Analyst L. Osuch



SAMPLE 2021

Location 37°54'8"N 122°41'15"W Wt. % of SF/Total Sample 6.79  
 Depth mean tide level meters          fathoms Wt. % of HM/SF 2.96  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 186  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 54  
 % Opaques 22  
 % Alterites and Unknowns 24



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	2
Carbonate	9

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	12
Magnetite	2
Pyrite	3
Rock Frag.	25

Analyst L. Osuch

SAMPLE 2021

Location 37°54'8"N 122°41'15"W

Wt. % of SF/Total Sample 0.24

Depth mean tide level  
meters \_\_\_\_\_ fathoms \_\_\_\_\_

Wt. % of HM/SF 20.90

Size Fraction (SF) 0.088 - 0.061 mm

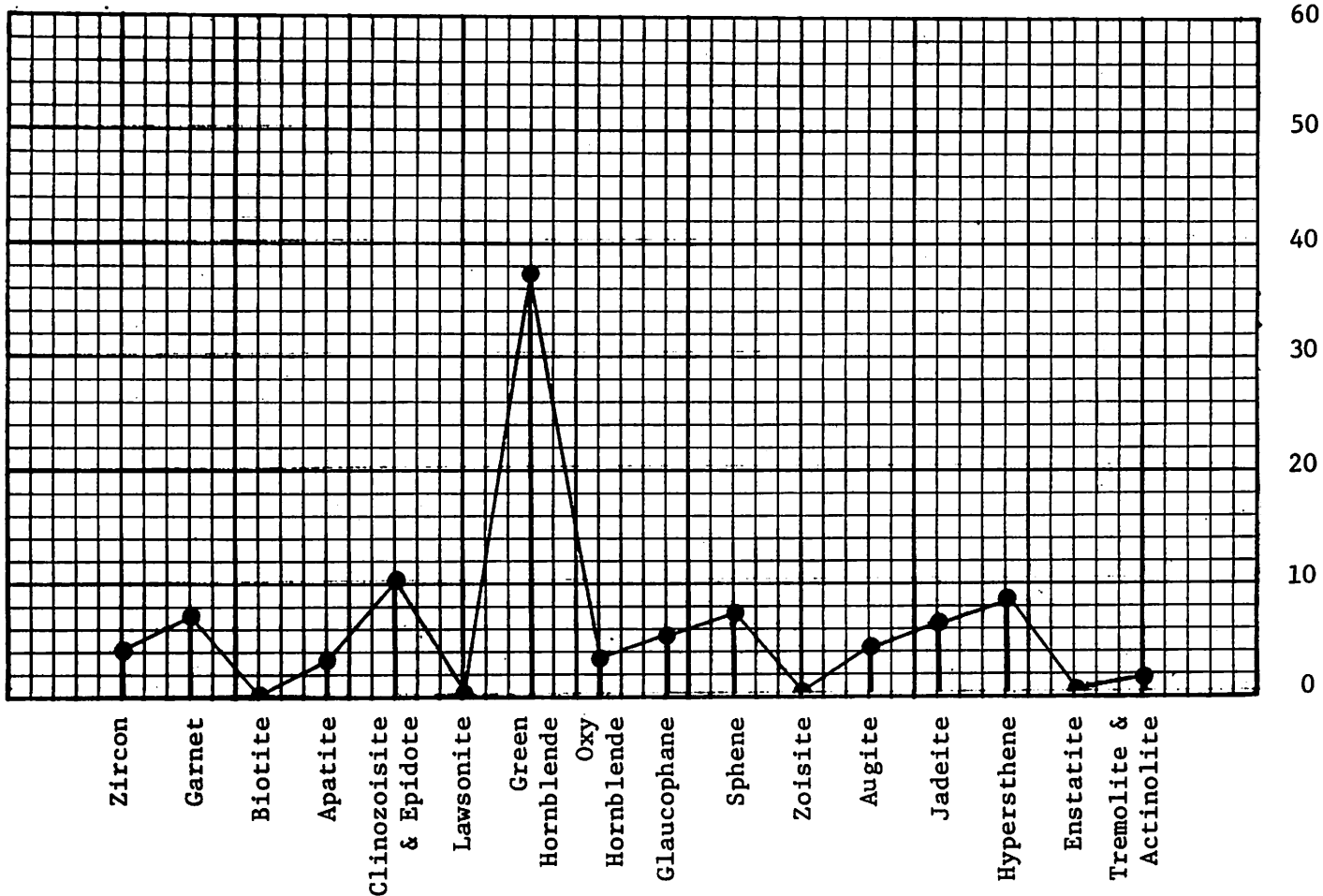
Total Grains Counted 178

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$

% Transparent Grains 56

% Opaques 19

% Alterites and Unknowns 25



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	2
Carbonate	3

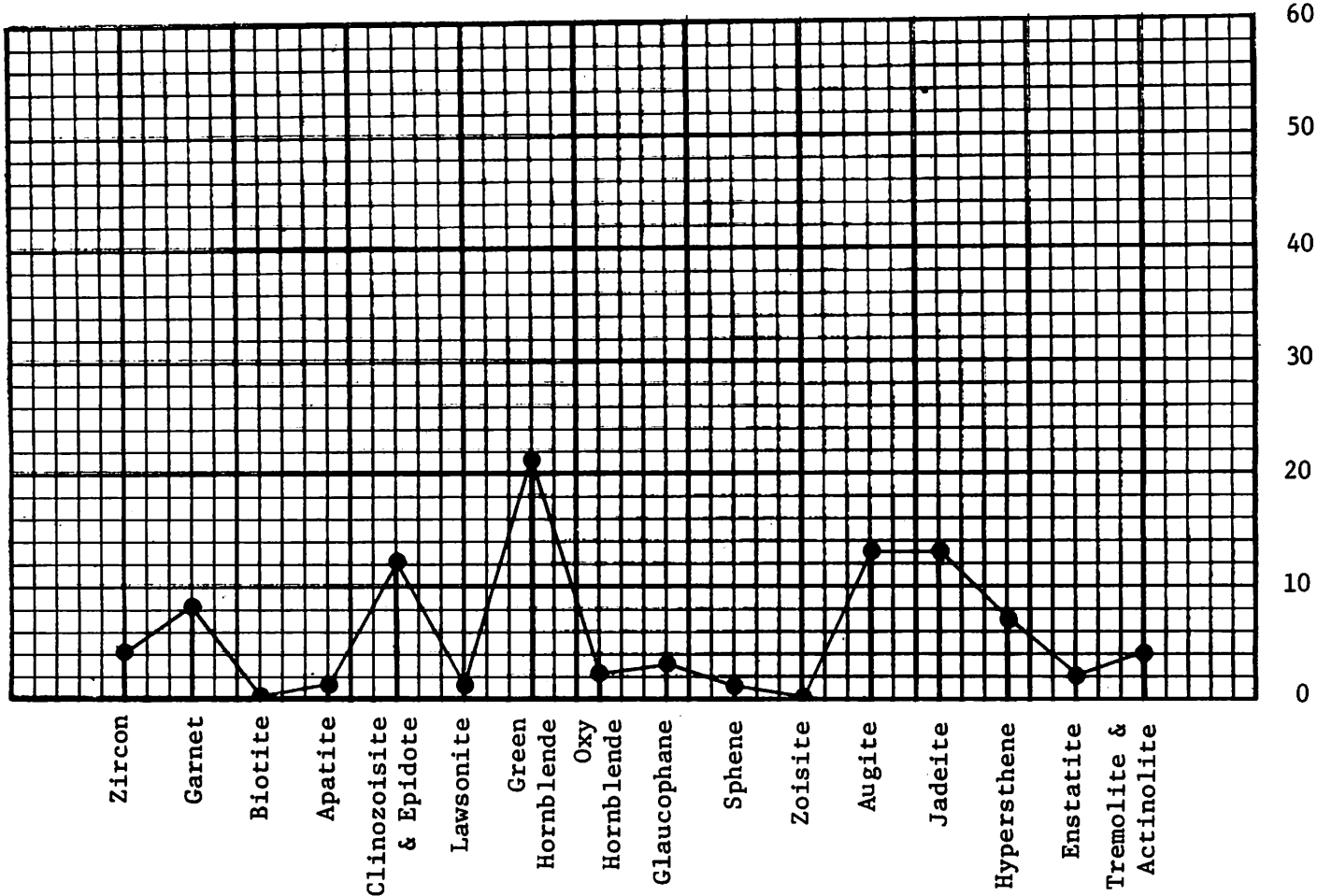
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	12
Picotite	3
Pyrite	1
Rock Frag.	13

Analyst L. Osuch

SAMPLE 2022

Location 37°54'20"N 122°40'47"W Wt. % of SF/Total Sample 22.1  
 Depth mean tide                      fathoms Wt. % of HM/SF 1.54  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 425  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 22.6  
 % Opaques 17.2  
 % Alterites and Unknowns 60.2



Other Transparent Minerals

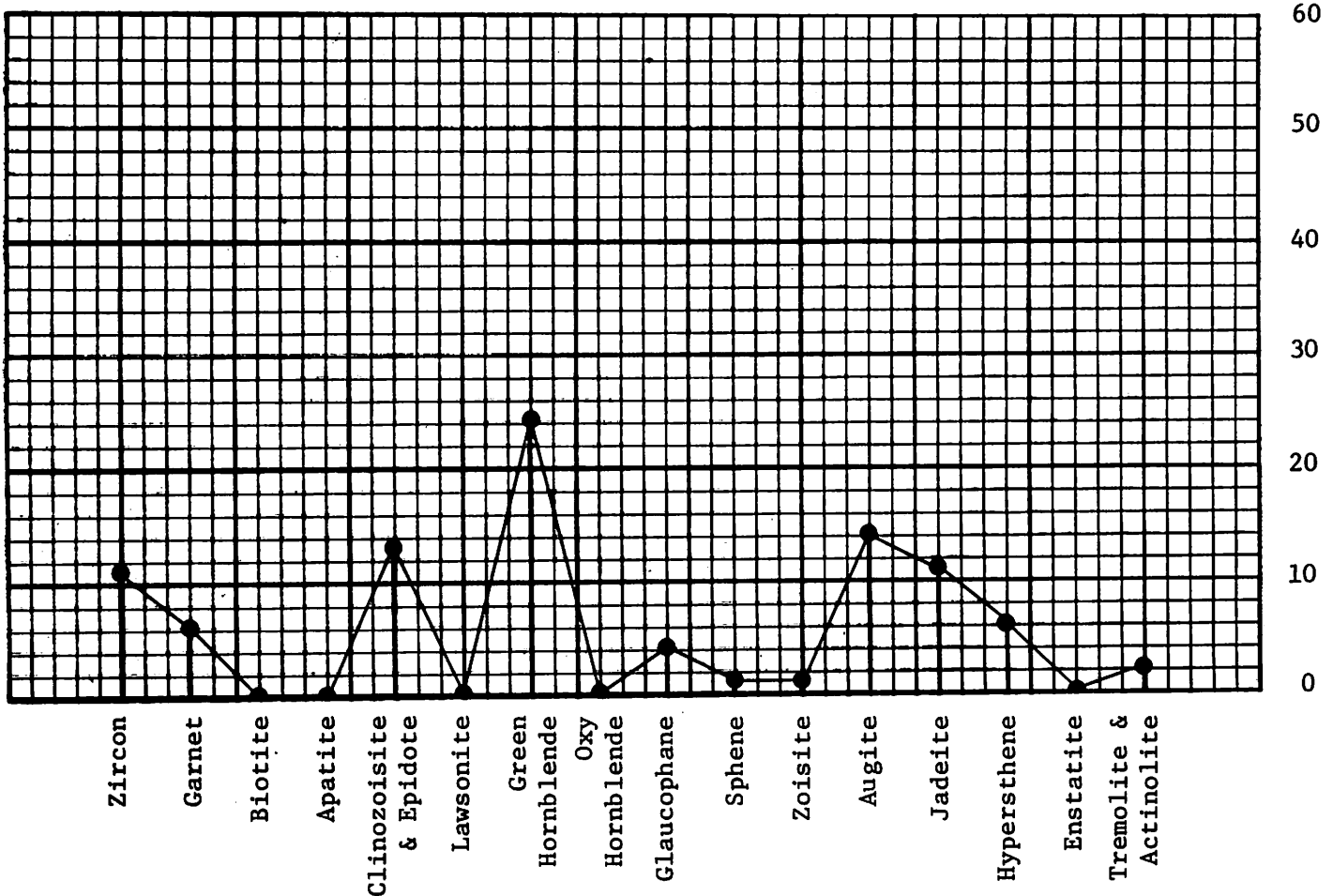
<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	2
Carbonate	5
Pumpellyite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	21
Magnetite	34
Picotite	4
Pyrite	5
Rock Frag.	9

Analyst T. Yancey

Location 37°54'20"N · 122°40'47"W Wt. % of SF/Total Sample 1.64  
 Depth mean tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 13.62  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 236  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 35.5  
 % Opaques 21.2  
 % Alterites and Unknowns 43.3



Other Transparent Minerals

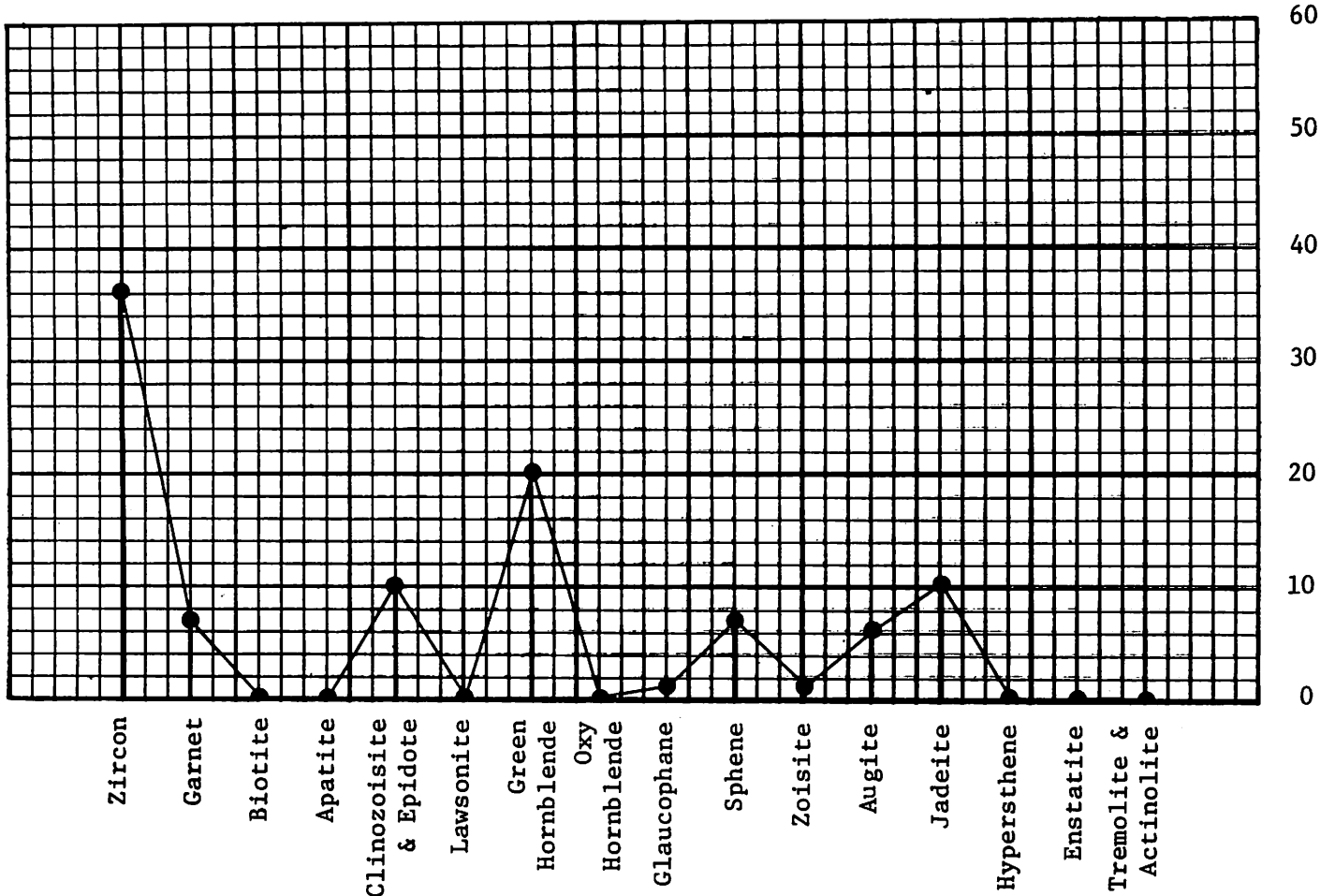
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Chlorite	1
Carbonate	3
Pumpellyite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	7
Magnetite	26
Picotite	13
Pyrite	1
Rock Frag.	3

SAMPLE 2022

Location 37°54'20"N 122°40'47"W Wt. % of SF/Total Sample 0.06  
 Depth mean tide meters                      fathoms Wt. % of HM/SF 86.6  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 200  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 35.0  
 % Opaques 44.0  
 % Alterites and Unknowns 21.0



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1

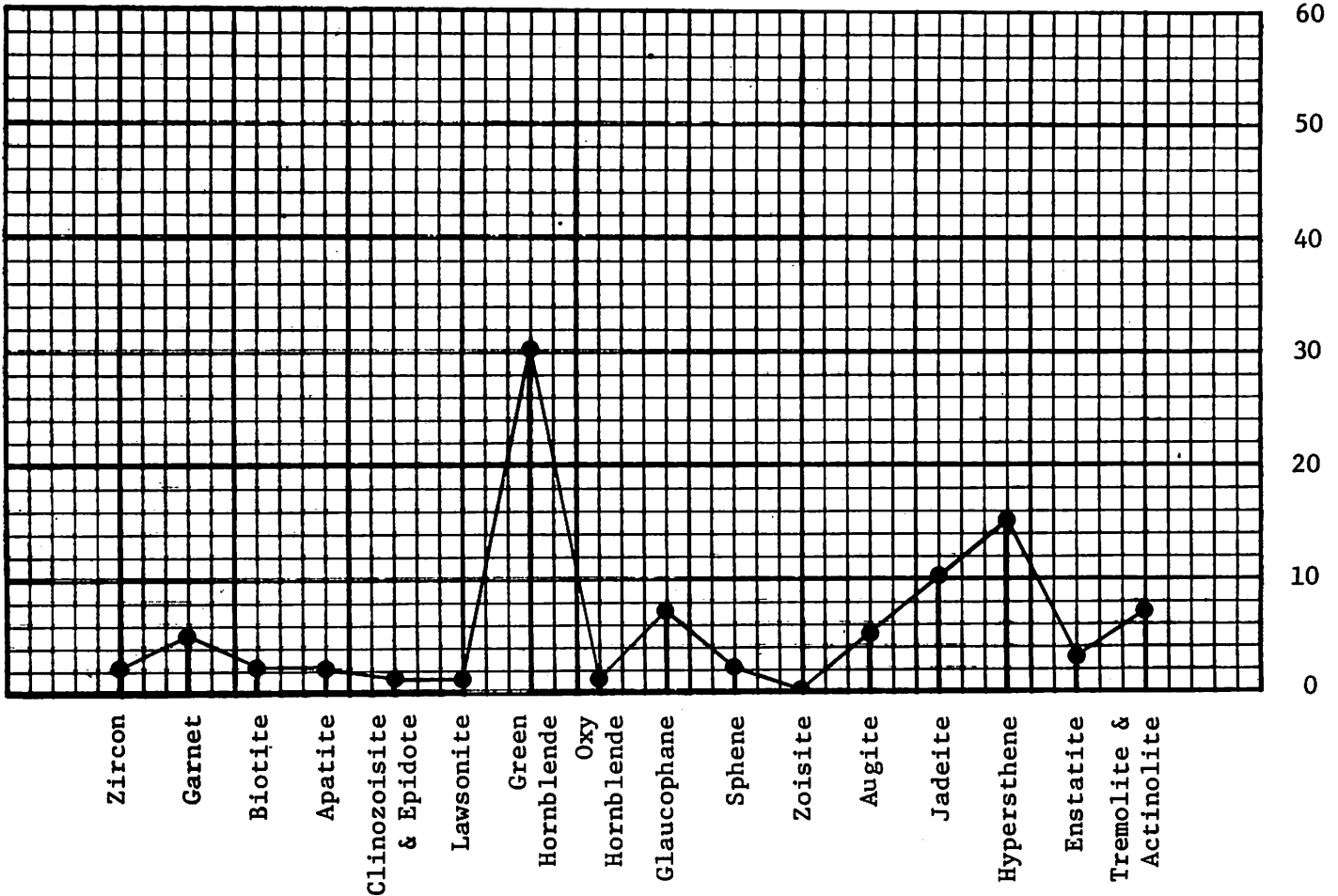
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	50
Picotite	30
Pyrite	1
Rock Frag.	2

Analyst T. Yancey

SAMPLE 2023

Location 37°54'28"N 122°40'52"W Wt. % of SF/Total Sample 15.2  
 Depth mean tide meters                      fathoms Wt. % of HM/SF 0.38  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 327  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 37.5  
 % Opaques 12.3  
 % Alterites and Unknowns 50.2



Other Transparent Minerals

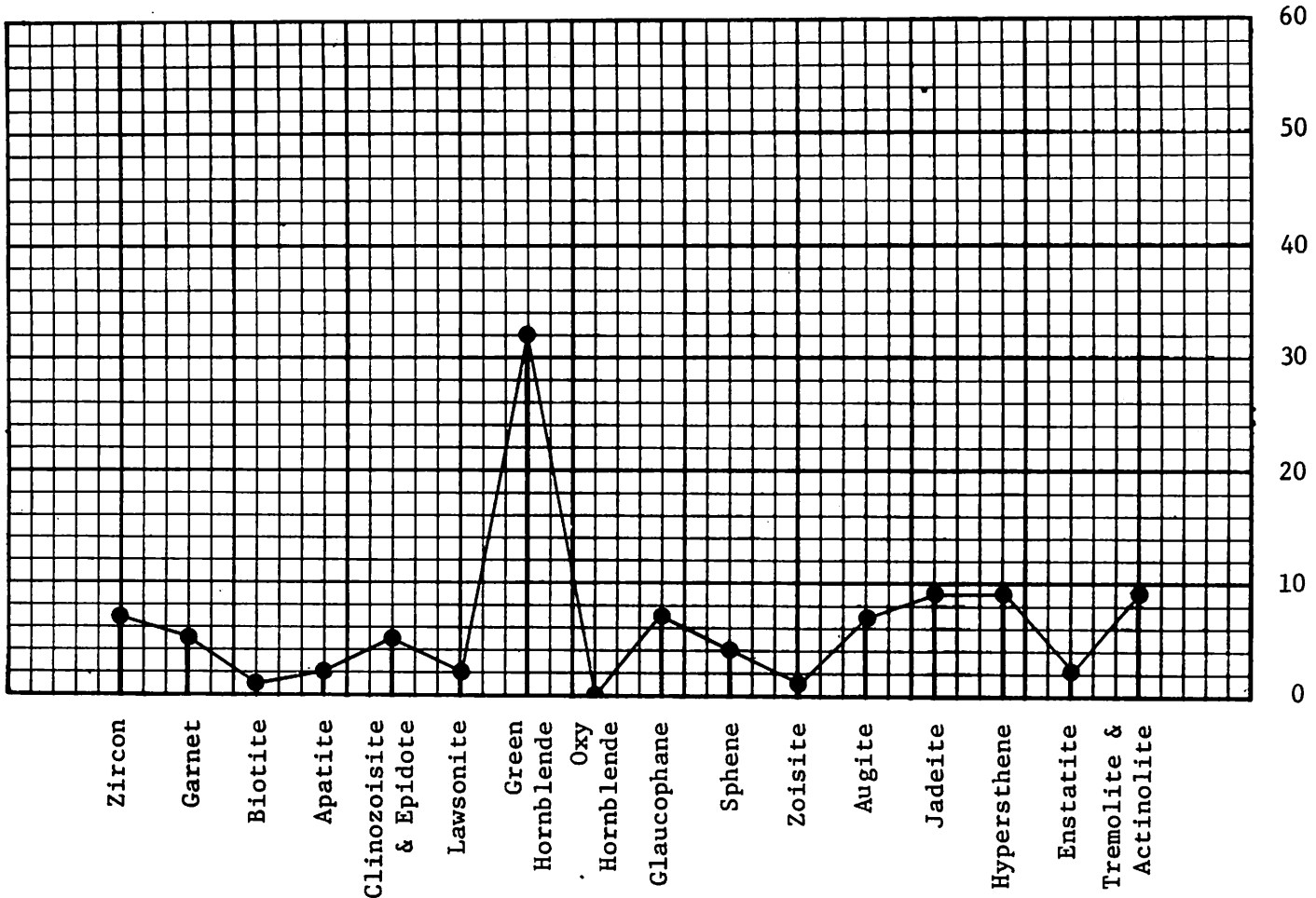
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	2
Carbonate	6

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	22
Magnetite	4
Pyrite	1
Rock Frag.	13

Analyst C. Isselhardt

Location 37°54'28"N 122°40'52"W Wt. % of SF/Total Sample 1.14  
 Depth mean tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 6.42  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 302  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 40.9  
 % Opaques 16.8  
 % Alterites and Unknowns 42.3



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1

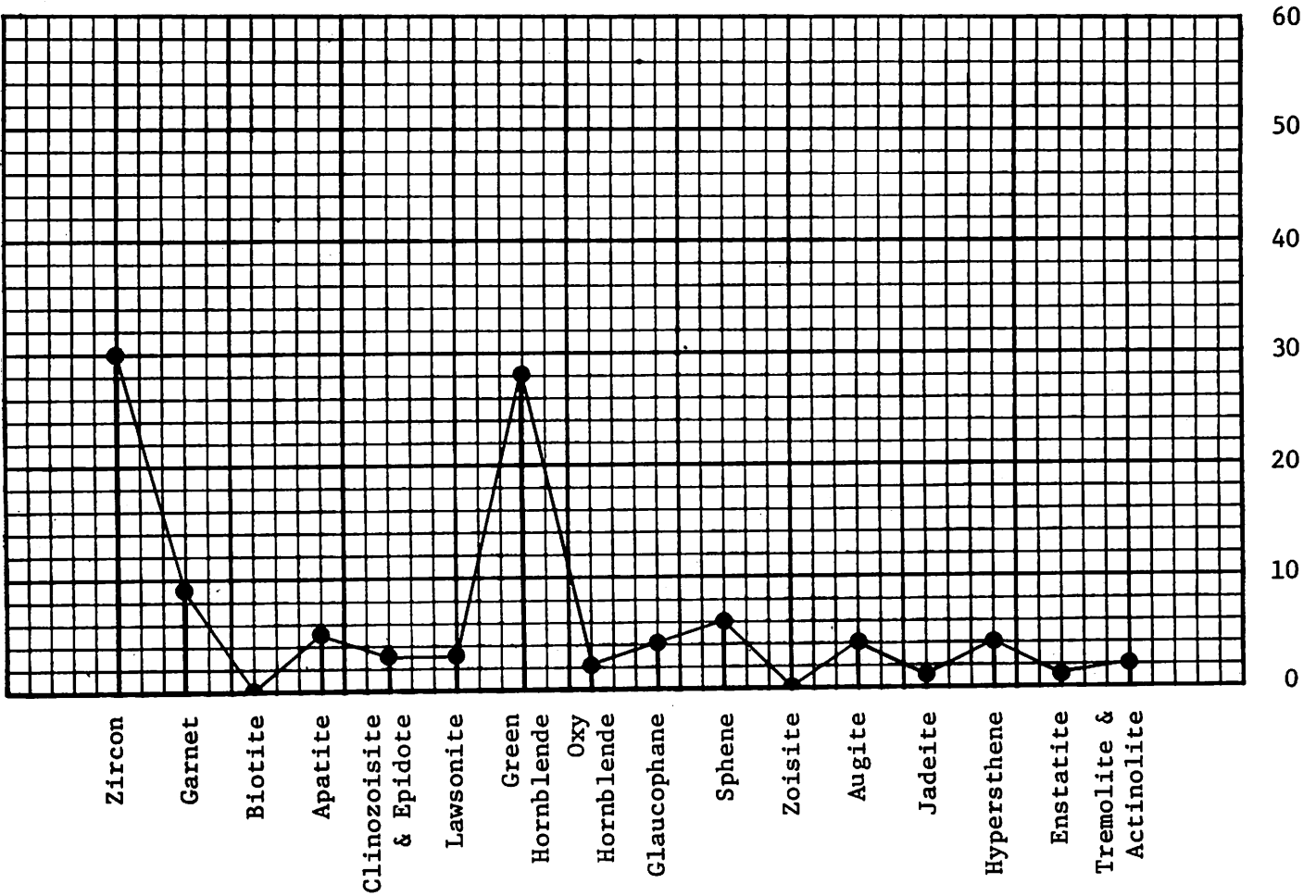
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	11
Magnetite	16
Picotite	10
Rock Frag.	14

Analyst C. Isselhardt

SAMPLE 2023

Location 37°54'28"N 122°40'52"W Wt. % of SF/Total Sample 0.031  
 Depth mean tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 37.5  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 222  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 5.13  
 % Opaques 37  
 % Alterites and Unknowns 11.7



Other Transparent Minerals

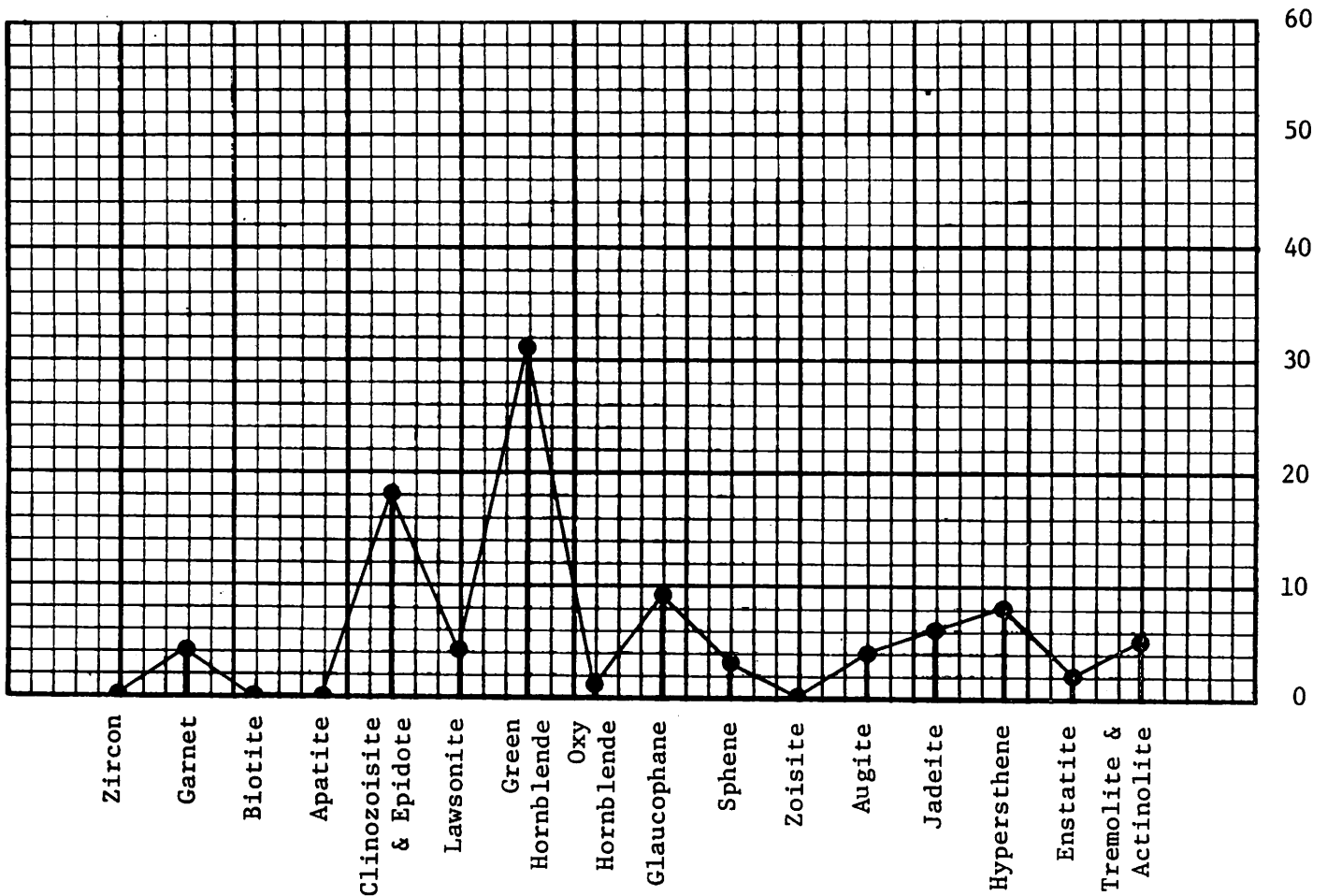
<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	3
Magnetite	47
Picotite	19
Gold	2
Rock Frag.	11
_____	_____
_____	_____



Location 37°54'27"N 122°40'49"W Wt. % of SF/Total Sample 22.50  
 Depth low tide level meters          fathoms Wt. % of HM/SF 1.56  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 243  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 41  
 % Opaques 12  
 % Alterites and Unknowns 47



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	4
Pumpellyite	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	14
Magnetite	3
Picotite	2
Rock Frag.	9

Analyst L. Osuch

SAMPLE 2024

Location 37°54'27"N 122°40'49"W Wt. % of SF/Total Sample 2.04

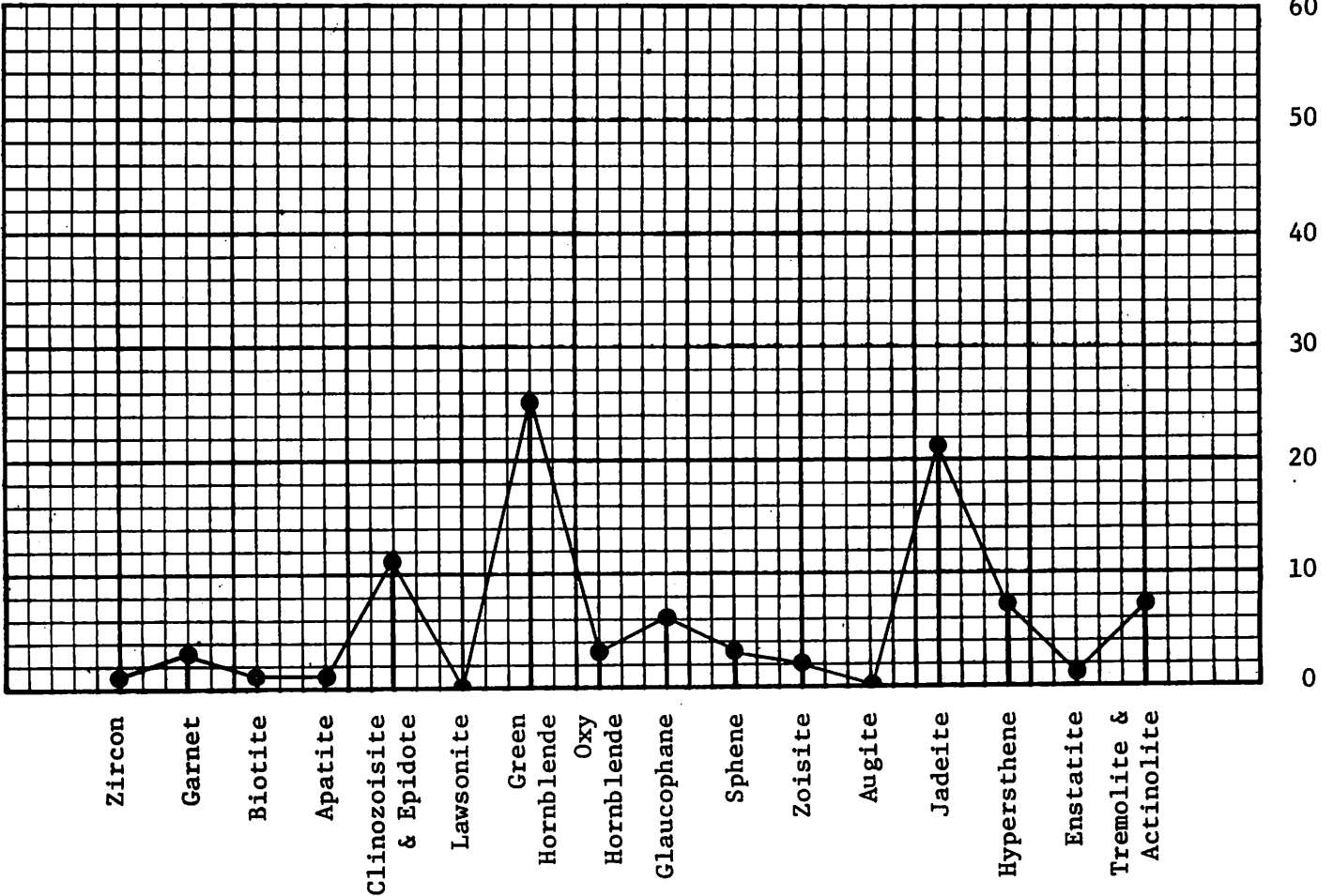
Depth low tide level meters          fathoms Wt. % of HM/SF 11.35

Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 232

Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 43

% Opaques 13

% Alterites and Unknowns 44



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	7
Pumpellyite	1

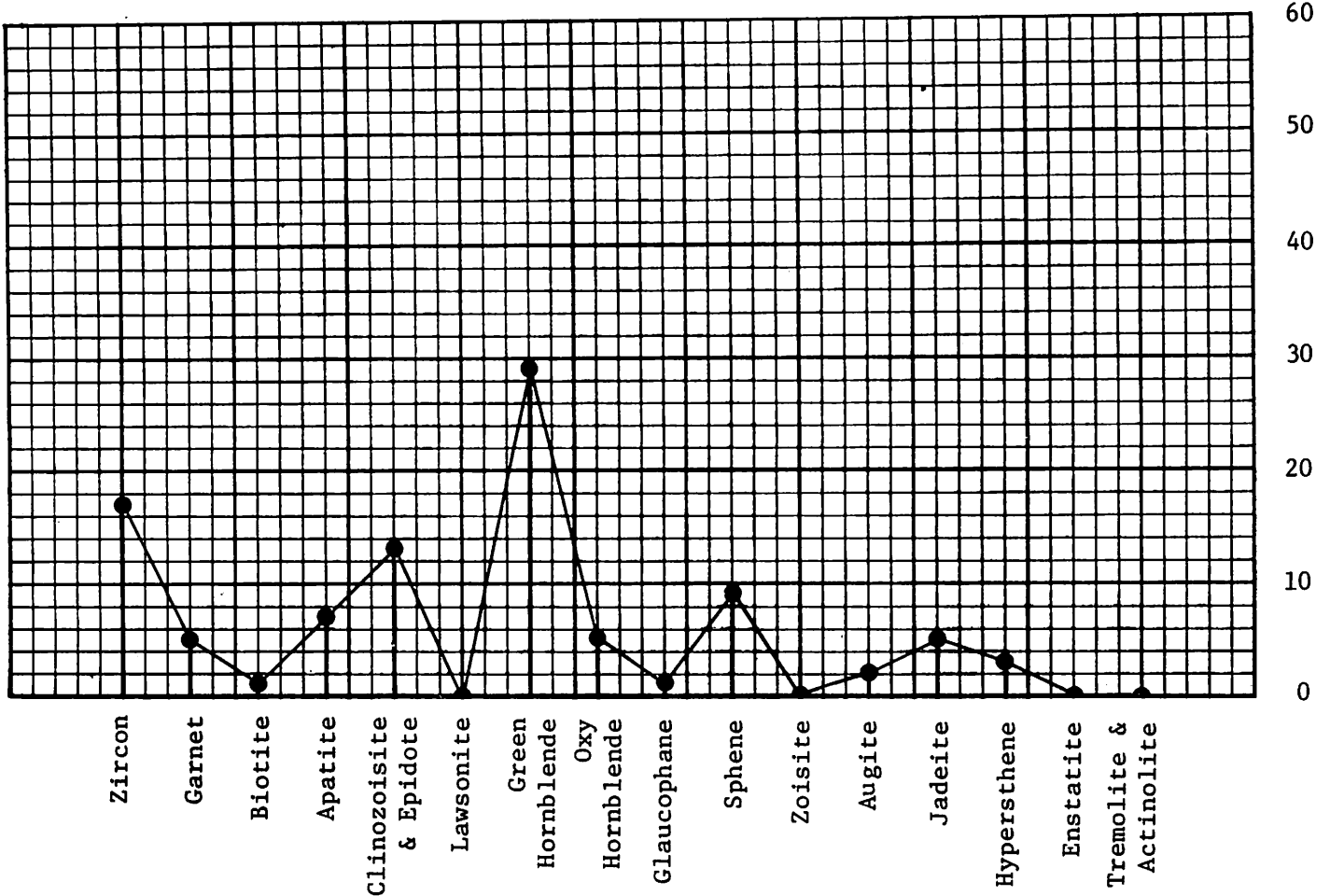
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	13
Picotite	4
Rock Frag.	11

Analyst L. Osuch

SAMPLE 2024

Location 37°54'27"N 122°40'49"W Wt. % of SF/Total Sample 0.10  
 Depth low tide level meters          fathoms Wt. % of HM/SF 57.70  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 251  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 40  
 % Opaques 41  
 % Alterites and Unknowns 19



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Carbonate	2

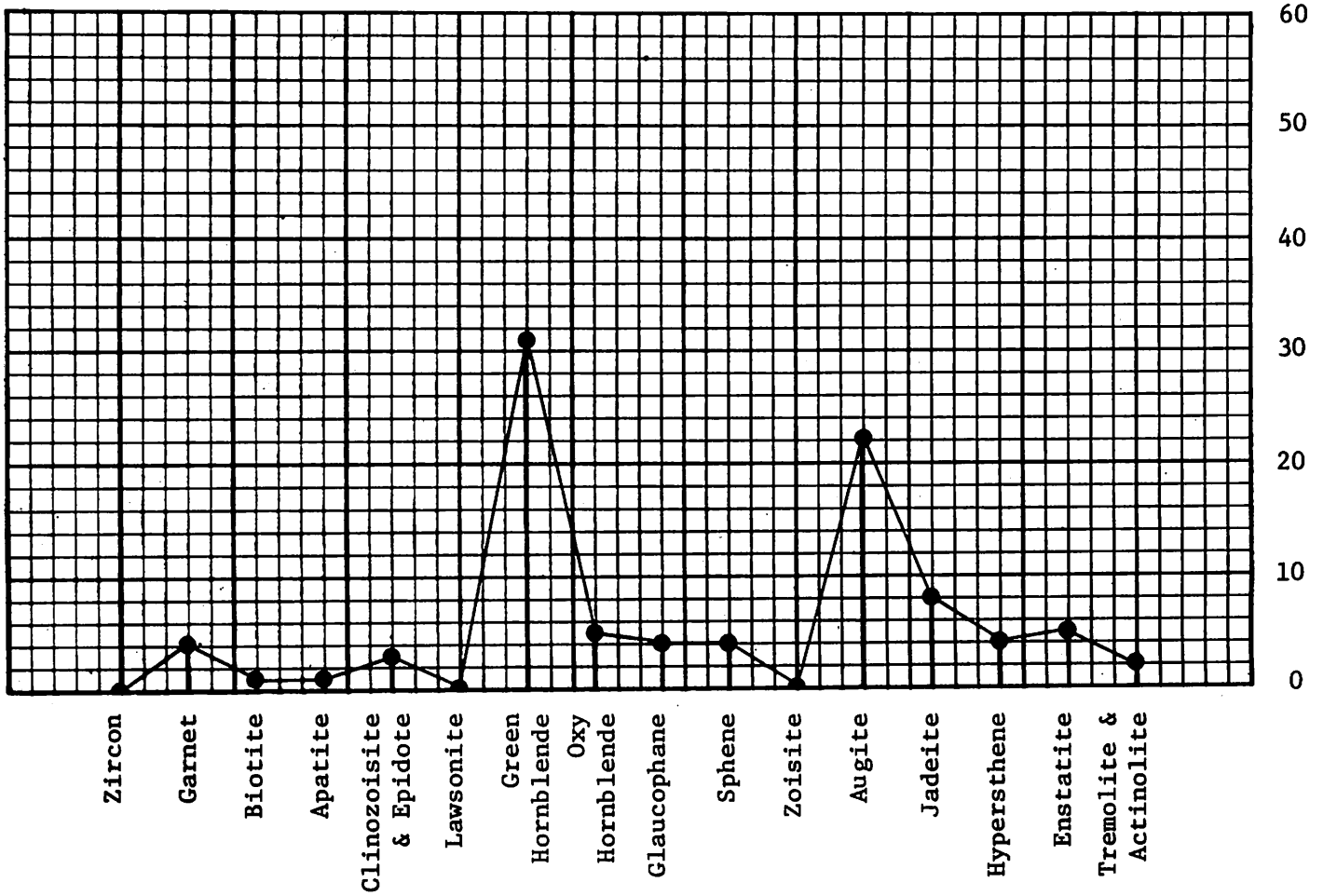
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	2
Magnetite	66
Picotite	18
Pyrite	1
Rock Frag.	16

Analyst L. Osuch

SAMPLE 2025

Location 37°54'23"N 122°40'55"W Wt. % of SF/Total Sample 16.95  
 Depth mean tide meters fathoms Wt. % of HM/SF 0.60  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 320  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 31.3  
 % Opaques 8.7  
 % Alterites and Unknowns 60.0



Other Transparent Minerals

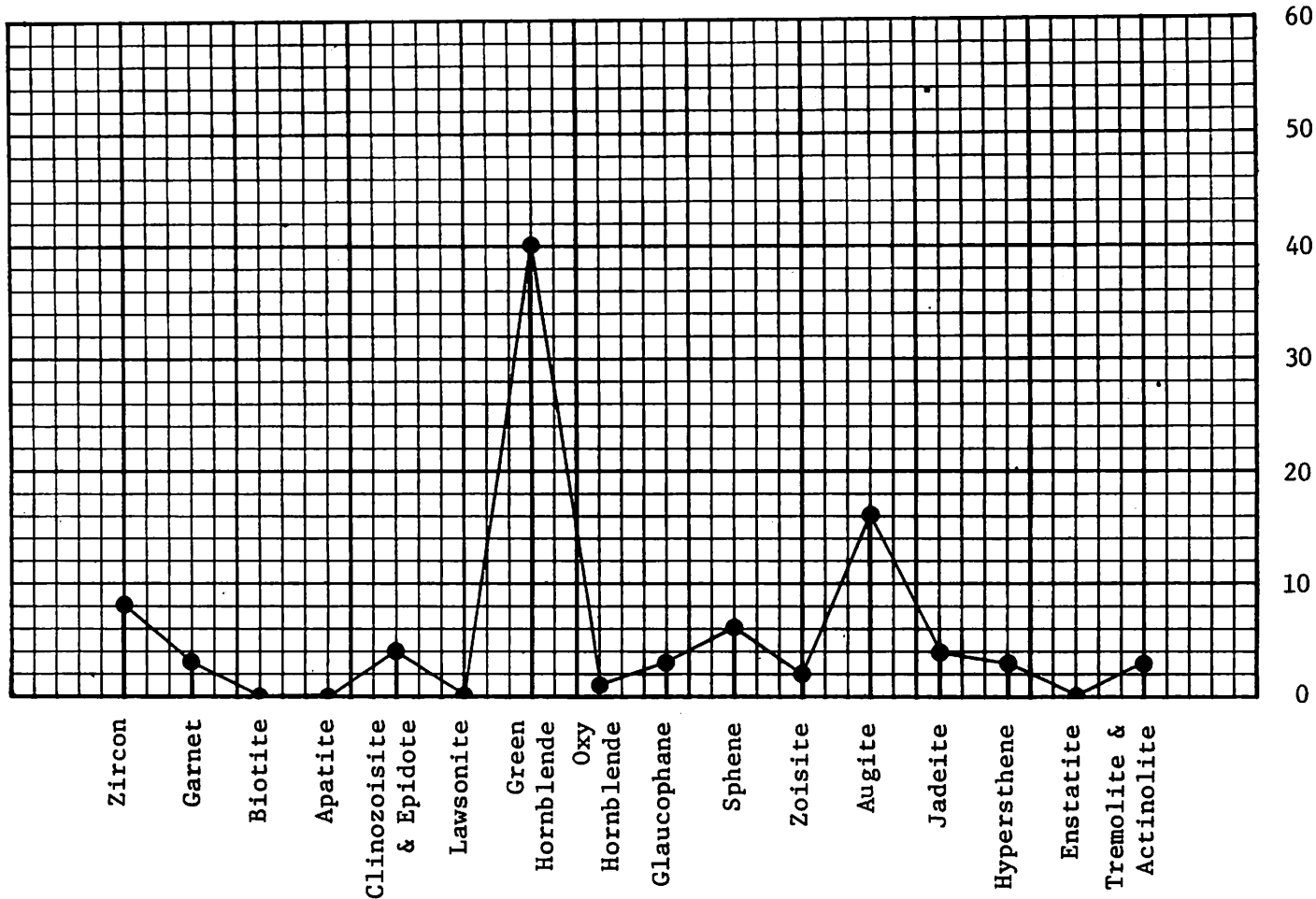
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	1
Chlorite	1
Carbonate	3
Tourmaline	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	17
Magnetite	4
Pyrite	1
Rock Frag.	5
Collophane	1

Analyst T. Yancey

Location 37°54'23"N 122°40'55"W Wt. % of SF/Total Sample 1.09  
 Depth mean tide meters                      fathoms Wt. % of HM/SF 7.07  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 260  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 36.5  
 % Opaques 14.2  
 % Alterites and Unknowns 49.3



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	3
Pumpellite	2

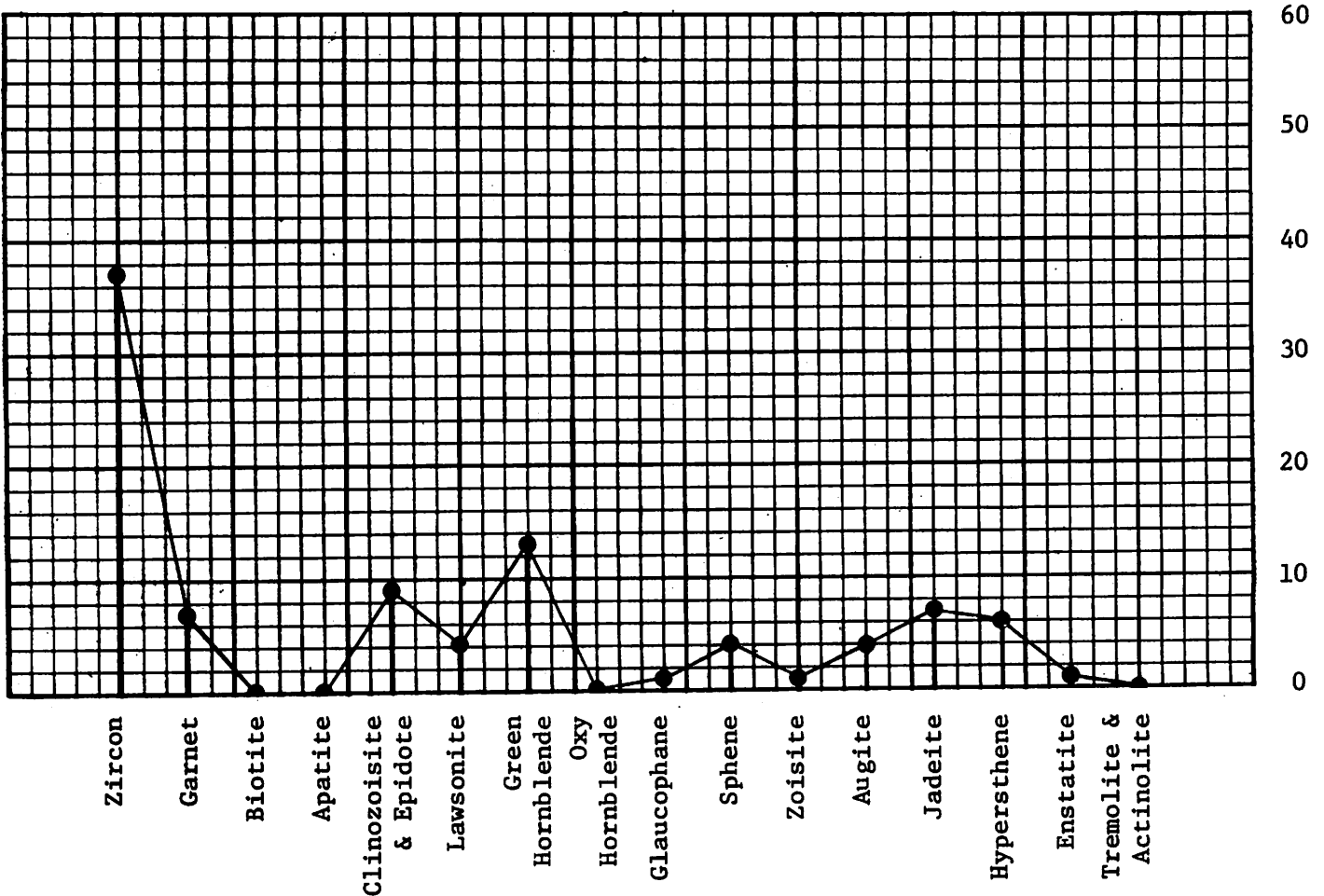
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	17
Picotite	6
Pyrite	5
Rock Frag.	5

Analyst T. Yancey

SAMPLE 2025

Location 37°54'23"N 122°40'55"W Wt. % of SF/Total Sample 0.03  
 Depth mean tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 58.2  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 224  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 31.3  
 % Opaques 47.3  
 % Alterites and Unknowns 21.4



Other Transparent Minerals

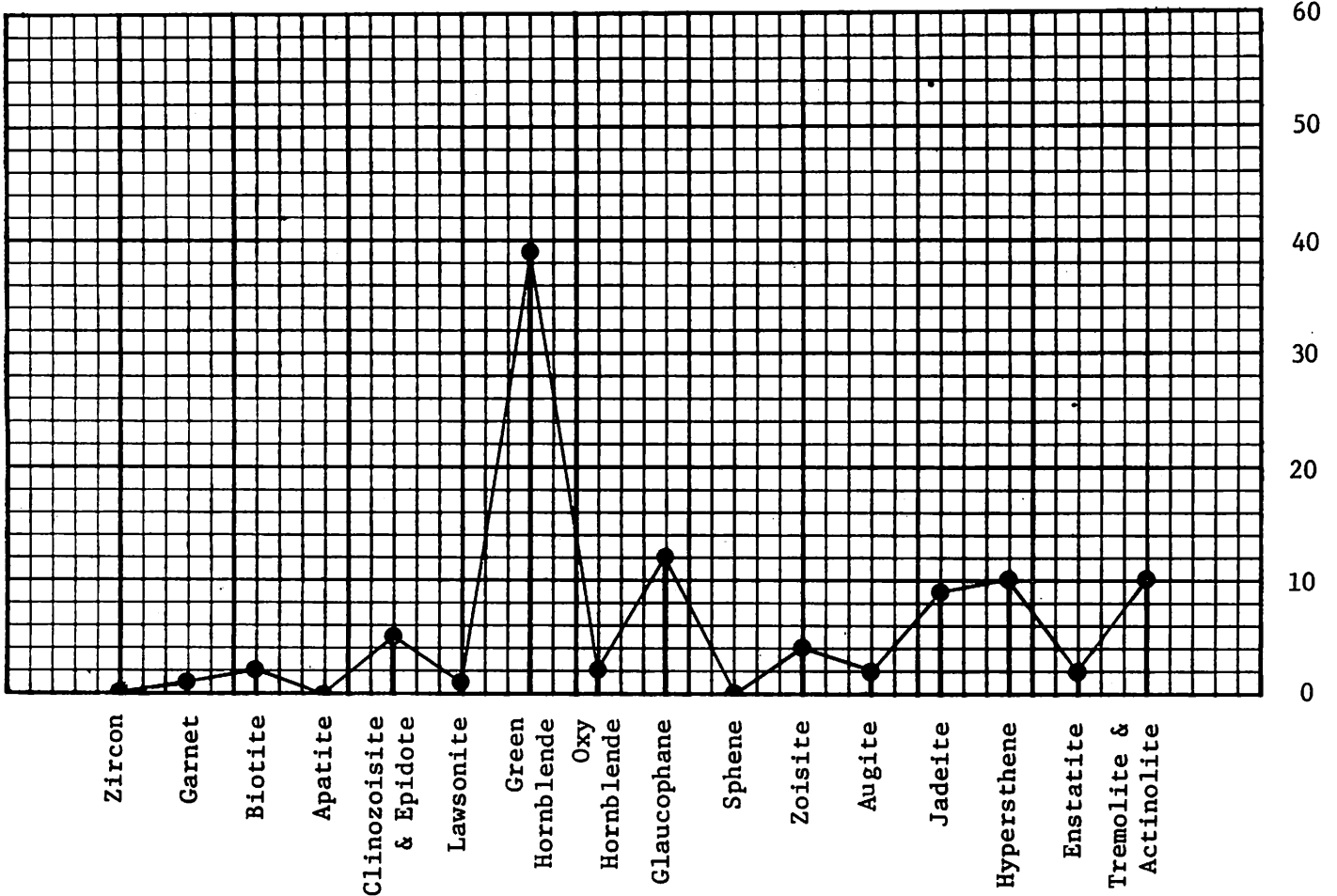
<u>Mineral</u>	<u>No. Grains Counted</u>
Rutile	2
Tourmaline	1

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	64
Picotite	30
Pyrite	4
Rock Frag.	3

Analyst T. Yancey

Location 37°54'17"N 122°41'3"W Wt. % of SF/Total Sample 32.99  
 Depth mean tide meters                      fathoms Wt. % of HM/SF 0.40  
 Size Fraction (SF) 0.175 - 0.124 mm Total Grains Counted 311  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 34  
 % Opaques 15.4  
 % Alterites and Unknowns 50.4



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Carbonate	2

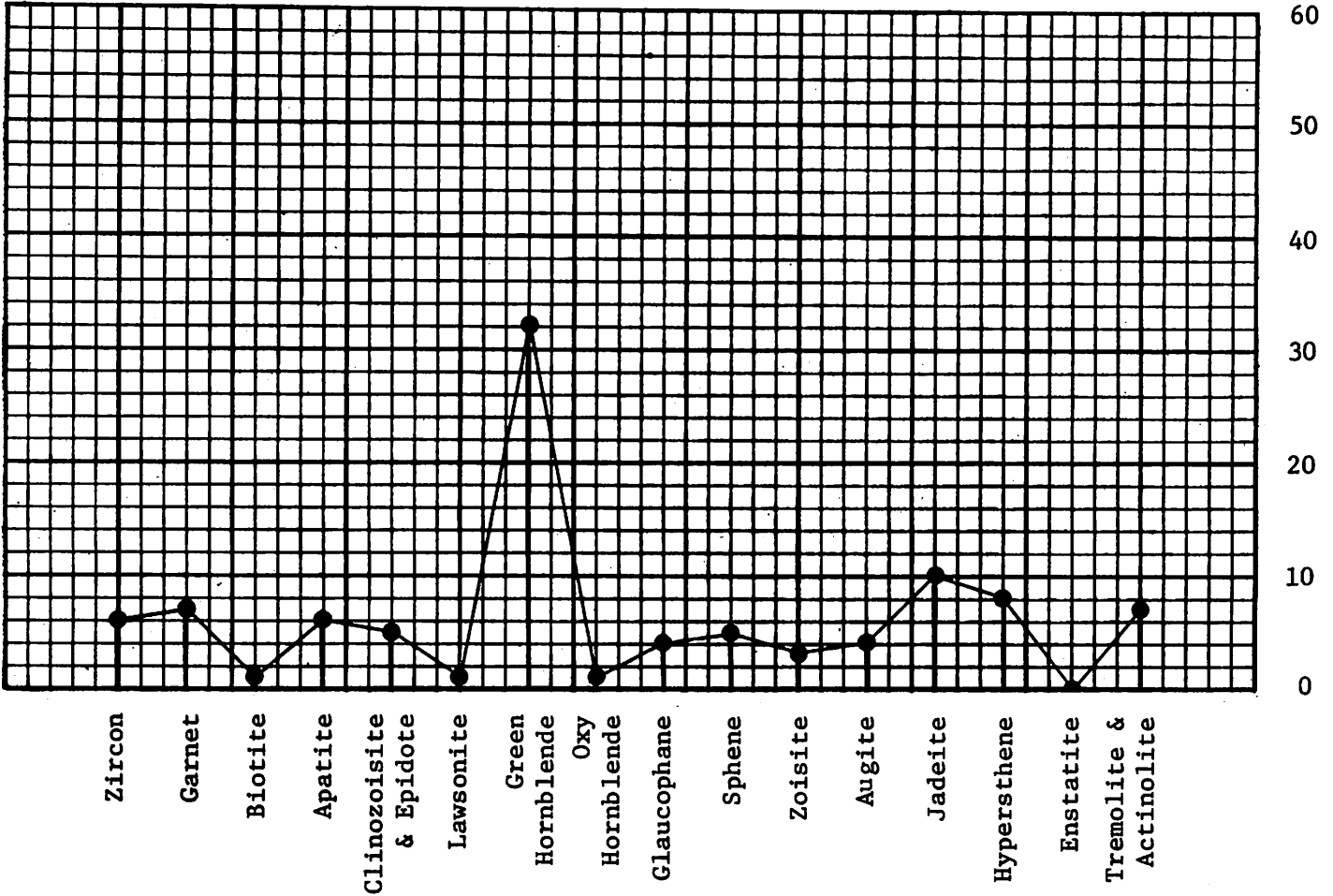
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	23
Magnetite	5
Picotite	1
Pyrite	3
Gold	2
Rock Frag.	14

Analyst C. Isselhardt

SAMPLE 2026

Location 37°54'17"N 122°41'3"W Wt. % of SF/Total Sample 2.80  
 Depth mean tide meters \_\_\_\_\_ fathoms Wt. % of HM/SF 5.05  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 240  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 45.0  
 % Opaques 12.1  
 % Alterites and Unknowns 42.9



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

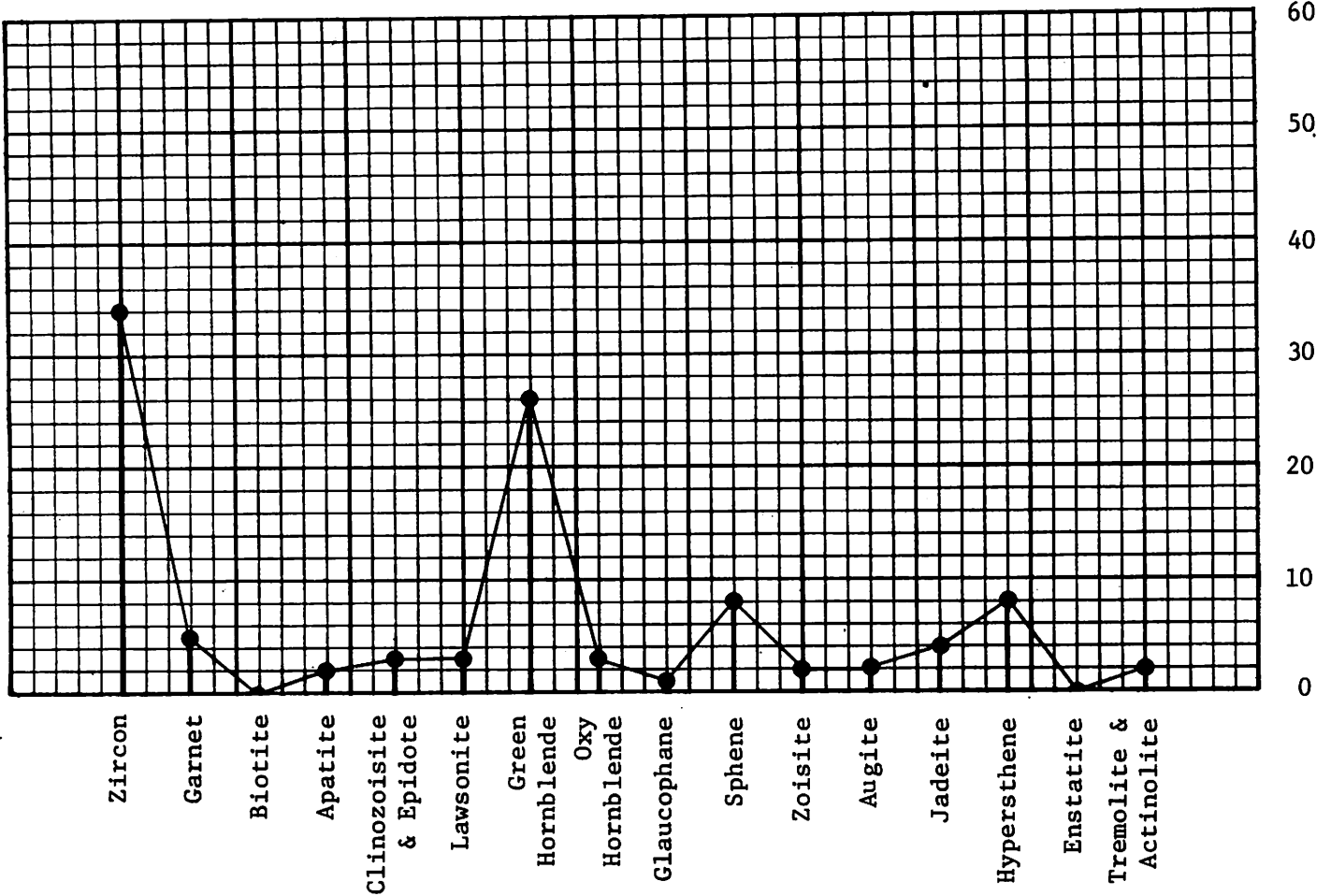
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	5
Magnetite	8
Picotite	5
Pyrite	1
Rock Frag.	10
_____	_____

Analyst C. Isselhardt



Location 37°54'17"N 122°41'3"W Wt. % of SF/Total Sample 0.114  
 Depth mean tide meters          fathoms Wt. % of HM/SF 31.4  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 236  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 50.4  
 % Opaques 35.2  
 % Alterites and Unknowns 14.4



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

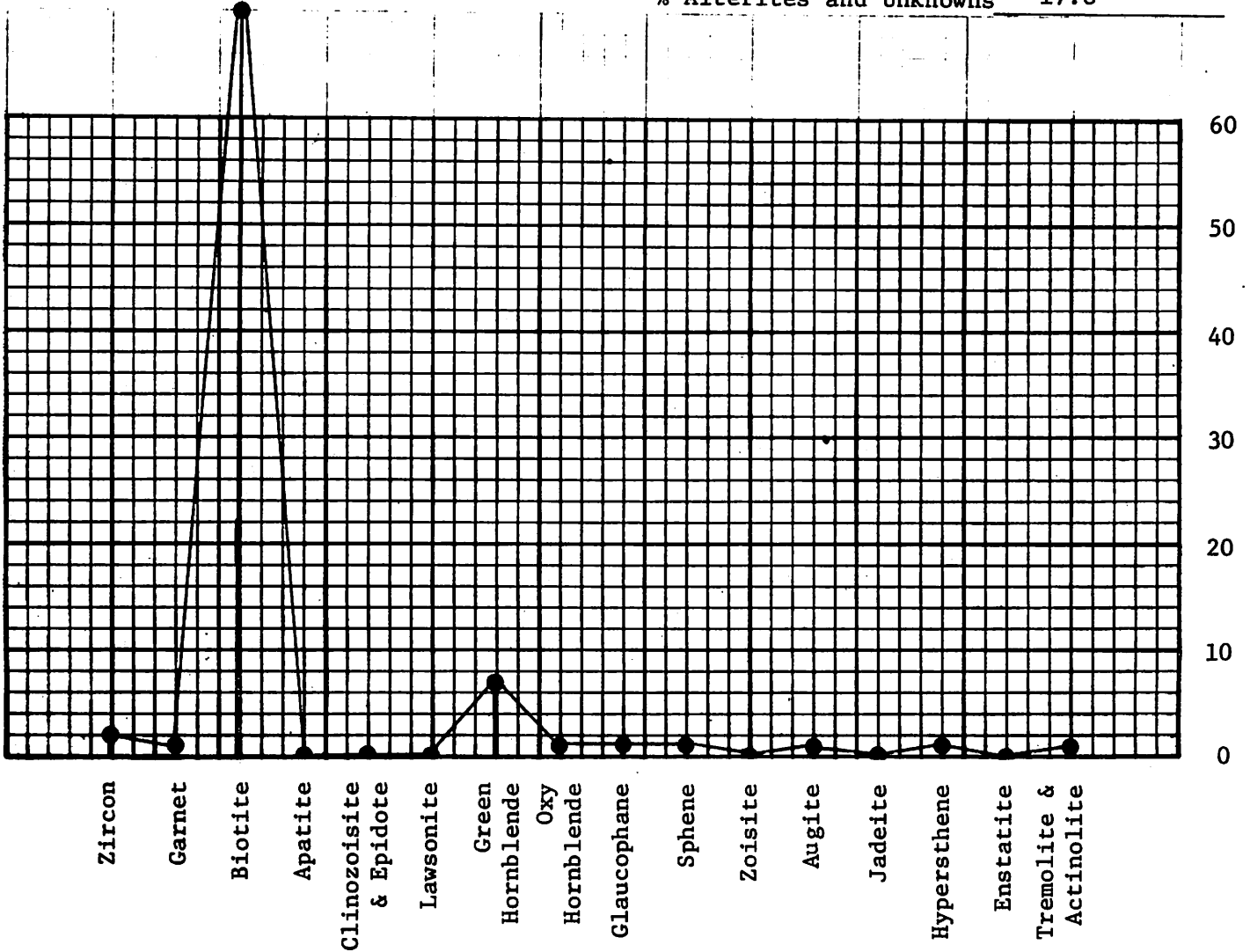
Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	4
Magnetite	48
Picotite	22
Rock Frag.	9
_____	_____
_____	_____

Analyst C. Isselhardt

SAMPLE 2030

Location 37°54'30"N 122°40'53"W Wt. % of SF/Total Sample 12.3  
 Depth cliff meters \_\_\_\_\_ fathoms Wt. % of HM/SF 1.45  
 Size Fraction (SF) 0.124 - 0.088 mm Total Grains Counted 129  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 77.5  
 % Opaques 4.7  
 % Alterites and Unknowns 17.8



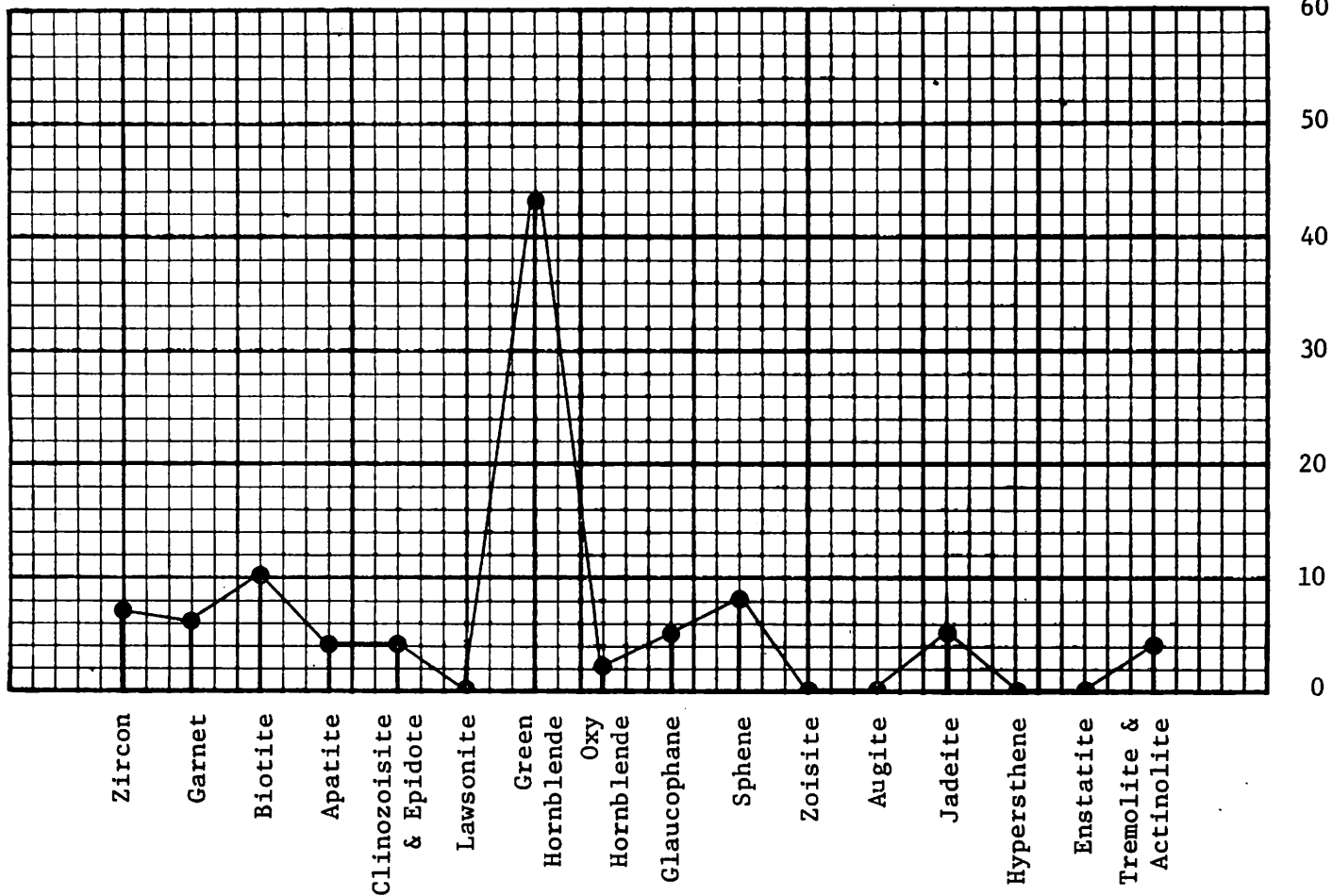
Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	14

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Hematite	1
Magnetite	4
Pyrite	1

Location 37°54'30"N 122°40'53"W Wt. % of SF/Total Sample 29.6  
 Depth cliff meters                      fathoms Wt. % of HM/SF 2.72  
 Size Fraction (SF) 0.088 - 0.061 mm Total Grains Counted 147  
 Graph % =  $\frac{\text{Total \% of Each Mineral}}{\text{Total \% of Transparent Grains}}$  % Transparent Grains 68  
 % Opaques 8.8  
 % Alterites and Unknowns 23.2



Other Transparent Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Chlorite	2

Other Opaque Minerals

<u>Mineral</u>	<u>No. Grains Counted</u>
Magnetite	7
Picotite	2
Pyrite	1
Rock Frag.	3

Analyst C. Isselhardt