Reference 13

HEL-2-22

RECENT SEDIMENTS OF BOLINAS BAY CALIFORNIA

PART B. MINERALOGICAL DATA

by

C. ISSELHARDT
L. OSUCH
T. YANCEY
P. WILDE

HYDRAULIC ENGINEERING LABORATORY
COLLEGE OF ENGINEERING

UNIVERSITY OF CALIFORNIA
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RECENT MARINE SEDIMENTS OF BOLINAS BAY, CALIFORNIA

Part B: Mineralogical Data

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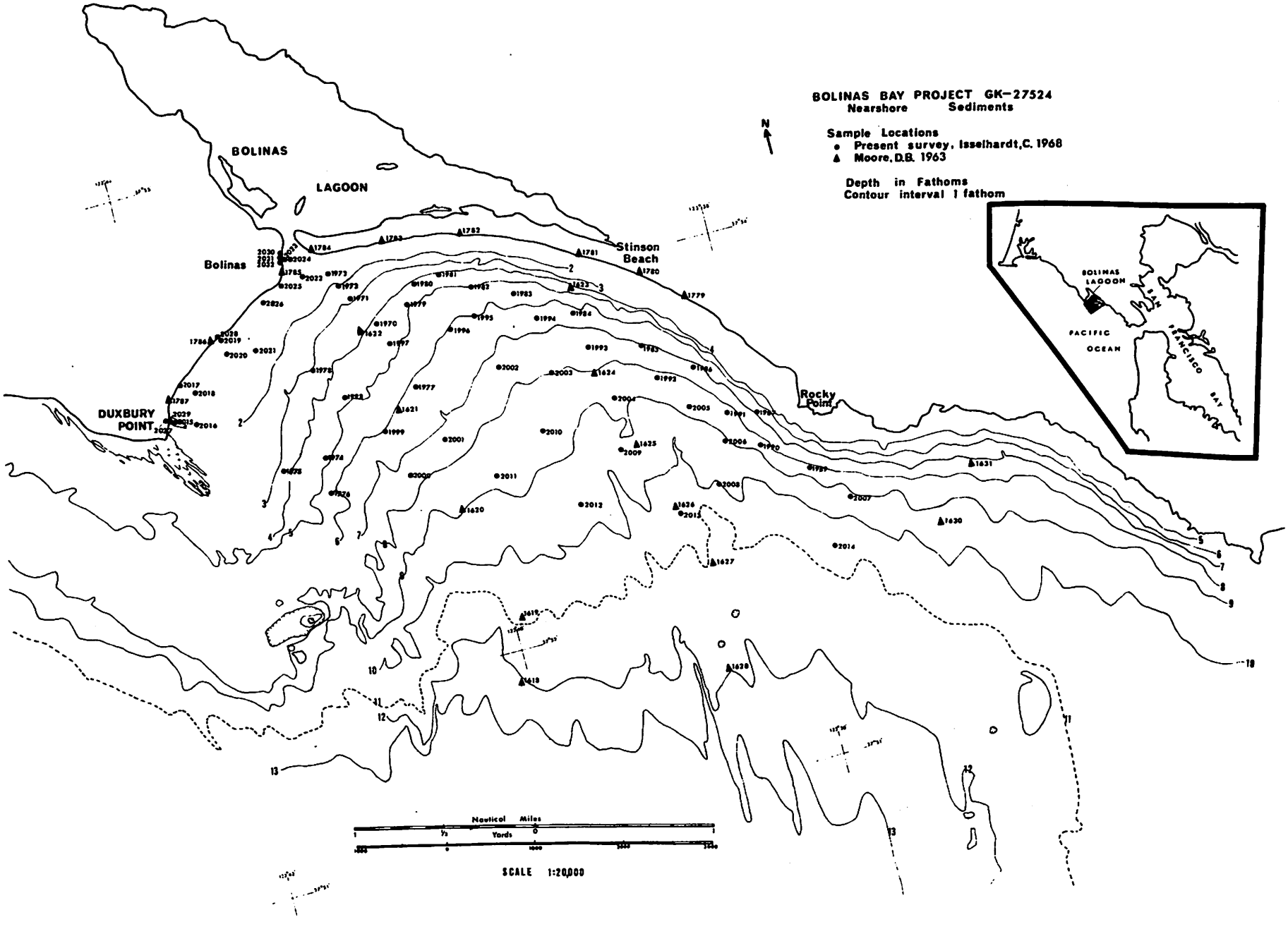
Berkeley, California

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).


BOLINAS BAY PROJECT GK-27524
Nearshore Sediments
Sample Locations
• Present survey, Isselhardt,C. 1968
▲ Moore, D.B. 1963
Depth in Fathoms
Contour interval 1 fathom
N
BOLINAS
LAGOON
Bolinas
Stinson Beach
DUXBURY POINT
Rocky Point
PACIFIC OCEAN
SAN FRANCISCO BAY
Nautical Miles
Yards
SCALE 1:20,000

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

Depth 7.62 meters 4.16 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 24.36

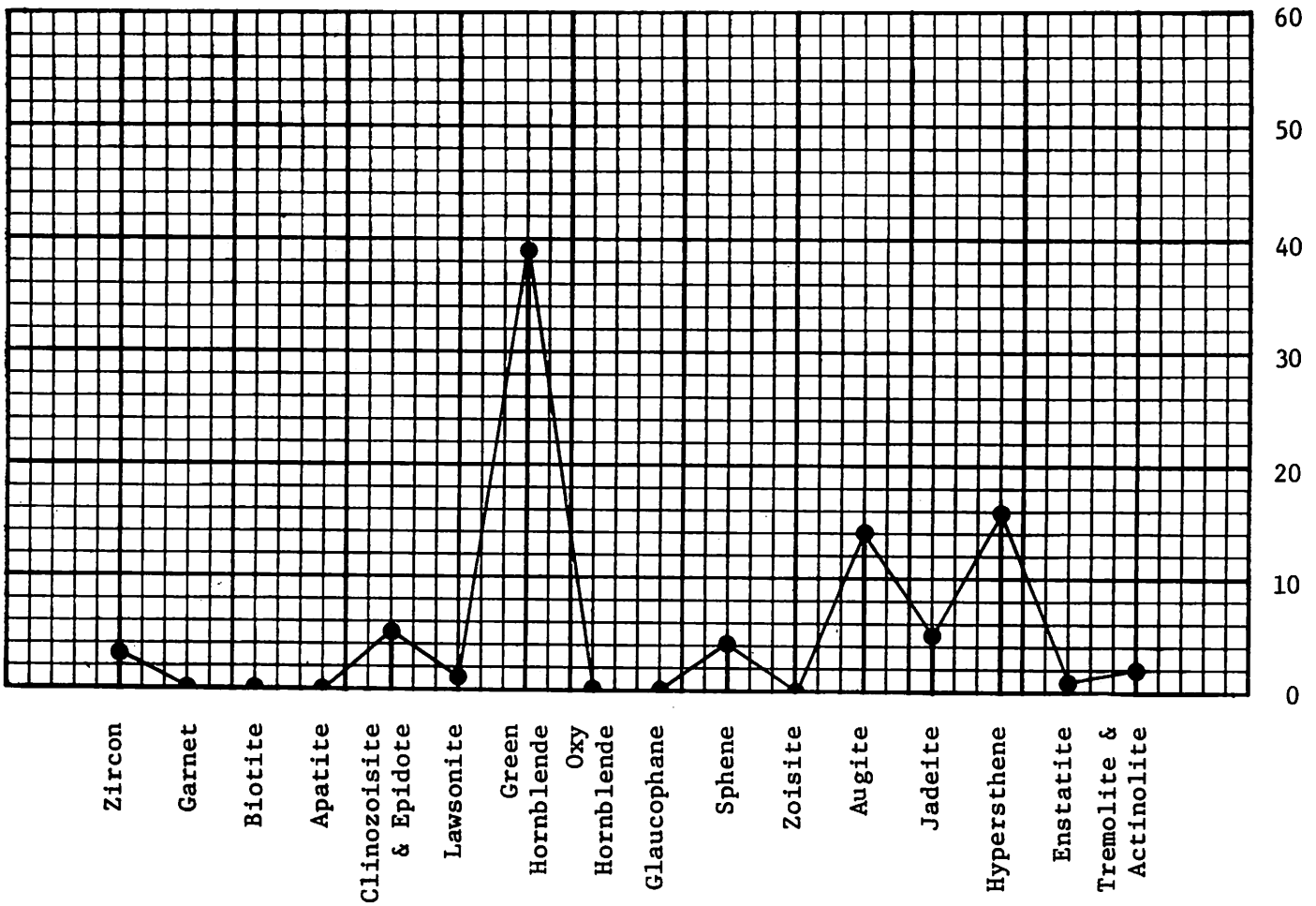
Wt. % of HM/SF 0.37

Total Grains Counted 303

% Transparent Grains 32.0

% Opaques 17.5

% Alterites and Unknowns 50.5



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Chlorite	1
Carbonate	7

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	27
Magnetite	18
Picotite	3
Rock Frag.	3

Analyst T. Yancey

SAMPLE 1970

Location 37°53'53"N 122°40'27"W

Depth 7.62 meters 4.16 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 50.00

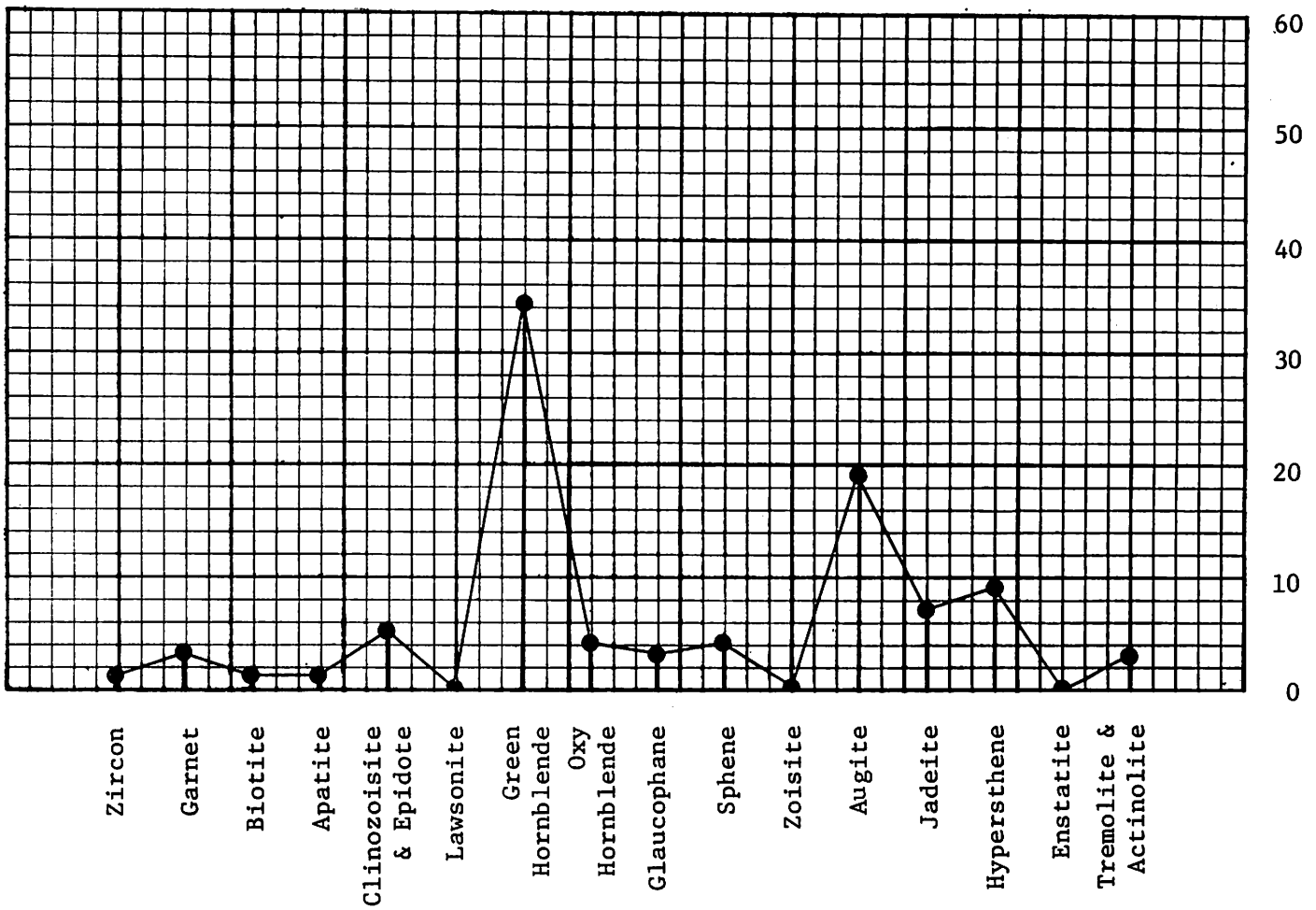
Wt. % of HM/SF 1.76

Total Grains Counted 298

% Transparent Grains 33.2

% Opaques 15.8

% Alterites and Unknowns 51.0



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	3
Tourmaline	1

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth 7.62 meters 4.16 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 8.93

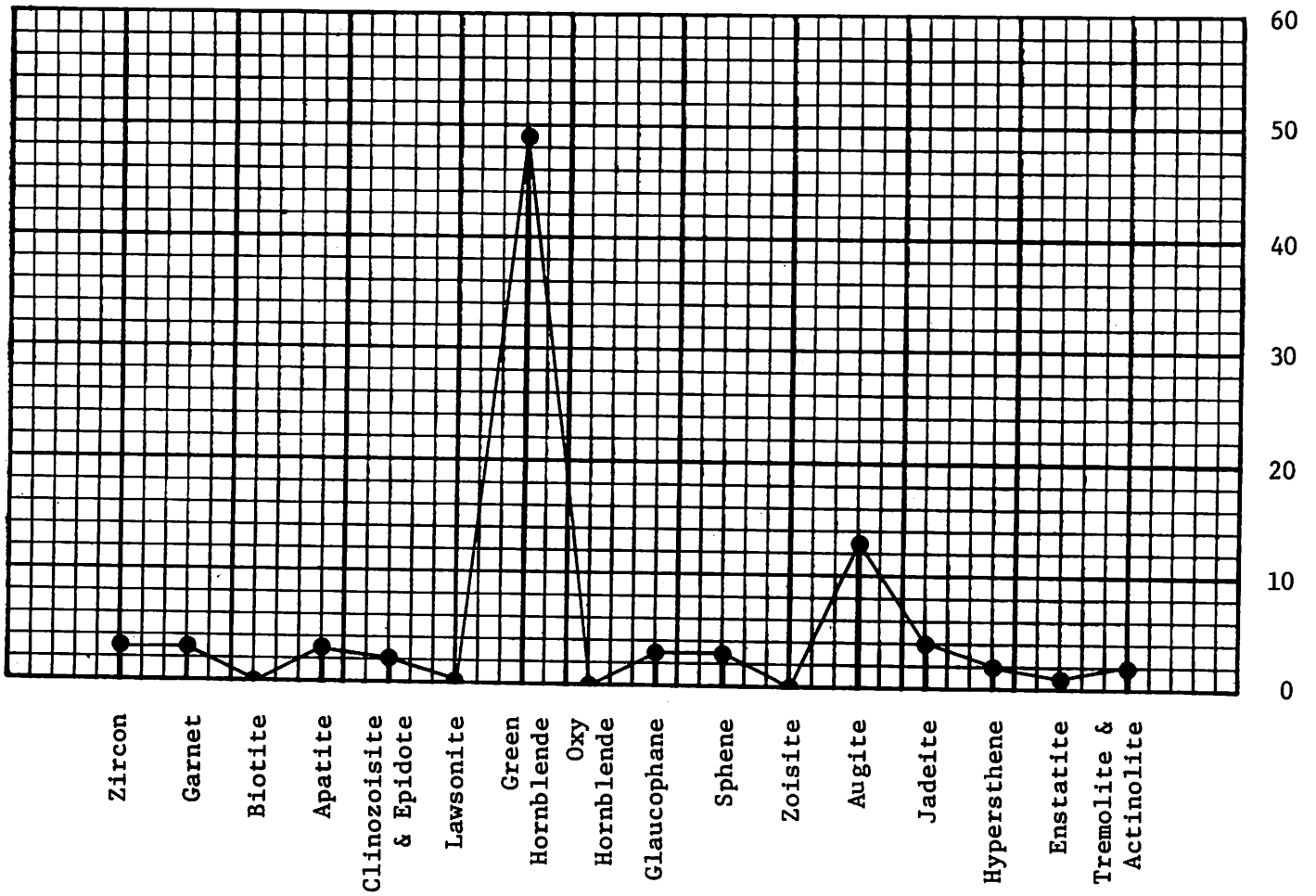
Wt. % of HM/SF 10.54

Total Grains Counted 293

% 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

Depth 5.28 meters 2.83 fathoms

Size Fraction (SF) 0.124 - 0.175mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 35.30

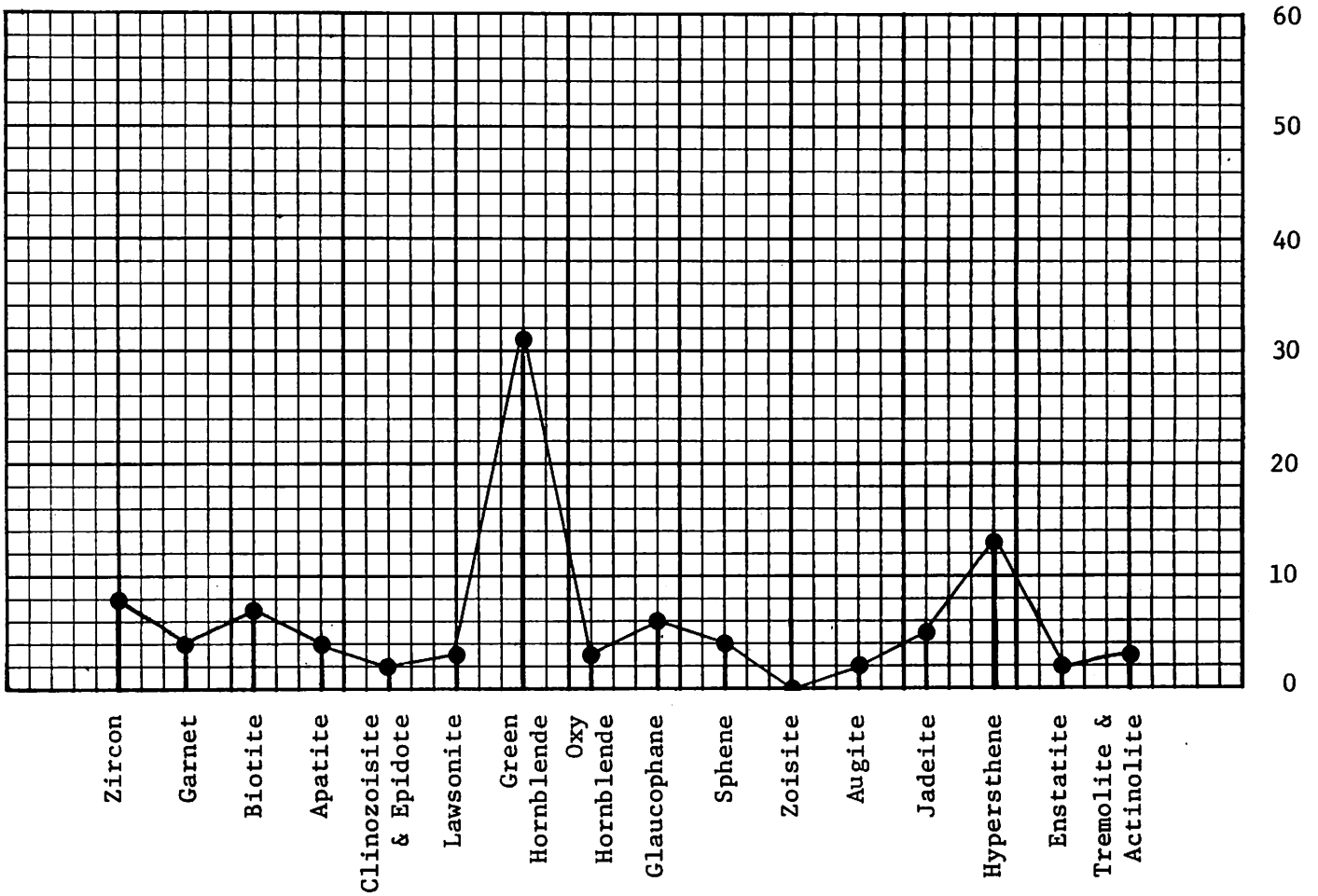
Wt. % of HM/SF 0.23

Total Grains Counted 205

% Transparent Grains 48.8

% Opaques 7.8

% Alterites and Unknowns 43.4



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	7
Magnetite	5
Rock Frag.	4

Analyst C. Isselhardt

SAMPLE 1971

Location 37°54'N 122°40'31"W

Depth 5.28 meters 2.83 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 41.80

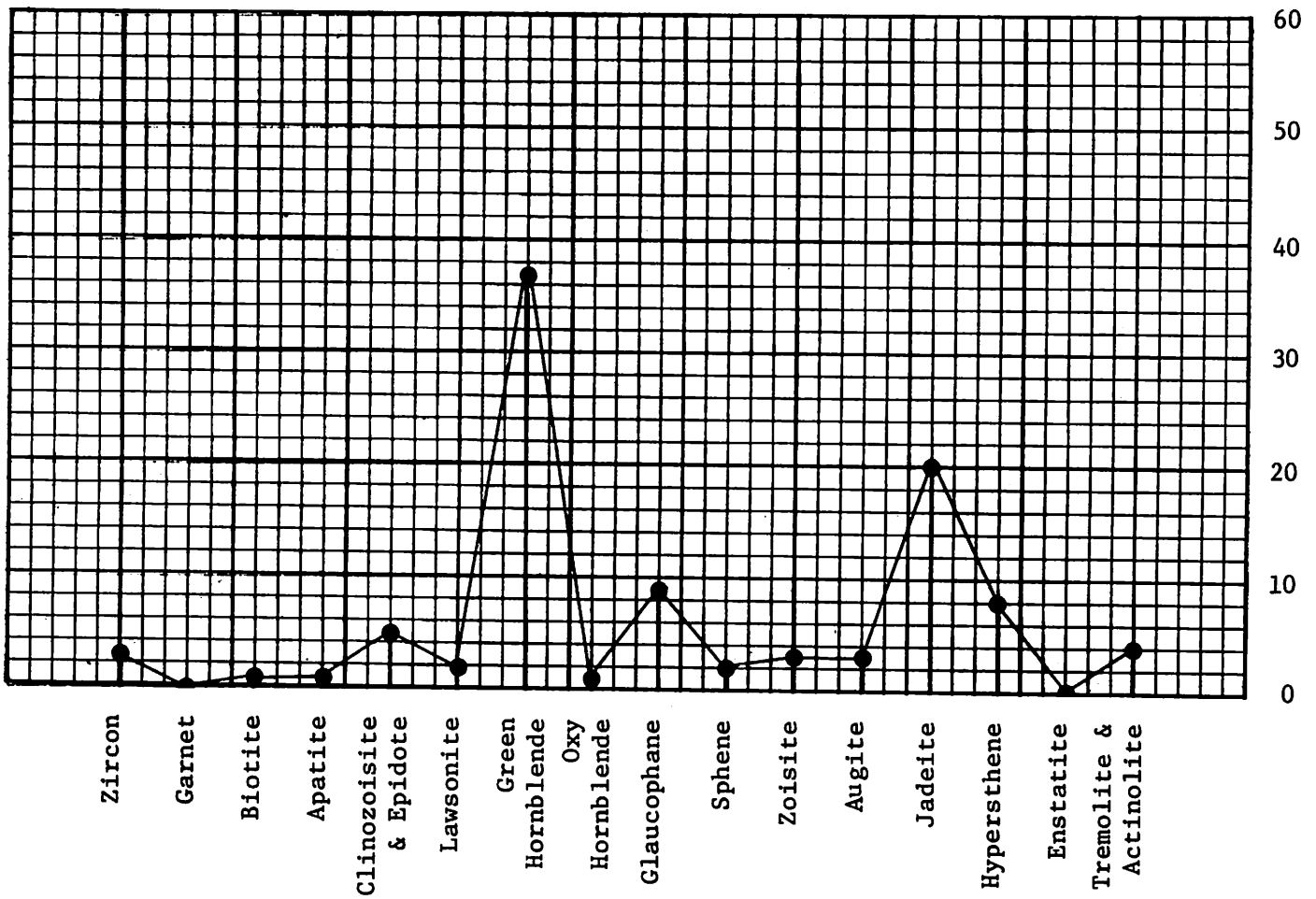
Wt. % of HM/SF 1.53

Total Grains Counted 180

% Transparent Grains 55.6

% Opaques 11.1

% Alterites and Unknowns 33.3



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	5
Picotite	2
Rock Frag.	9

Analyst C. Isselhardt

SAMPLE 1971

Location 37°54'N 122°40'31"W

Depth 5.28 meters 2.83 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 7.72

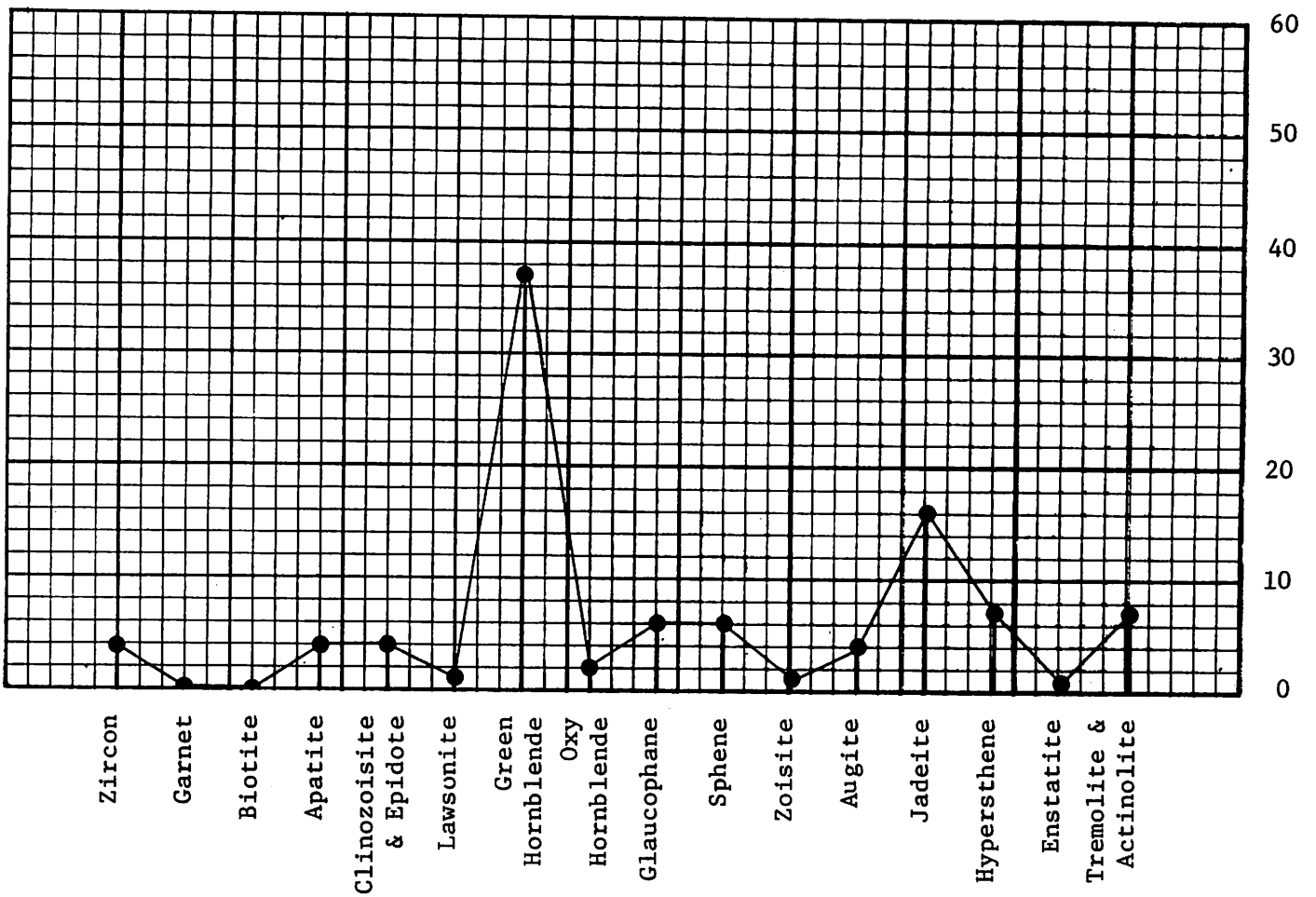
Wt. % of HM/SF 10.32

Total Grains Counted 147

% Transparent Grains 68.0

% Opaques 10.2

% Alterites and Unknowns 21.8



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	1
Picotite	3
Rock Frag.	7

Analyst C. Isselhardt

SAMPLE 1972

Location 37°54'6"N 122°40'34"W

Depth 4.27 meters 2.33 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 22.10

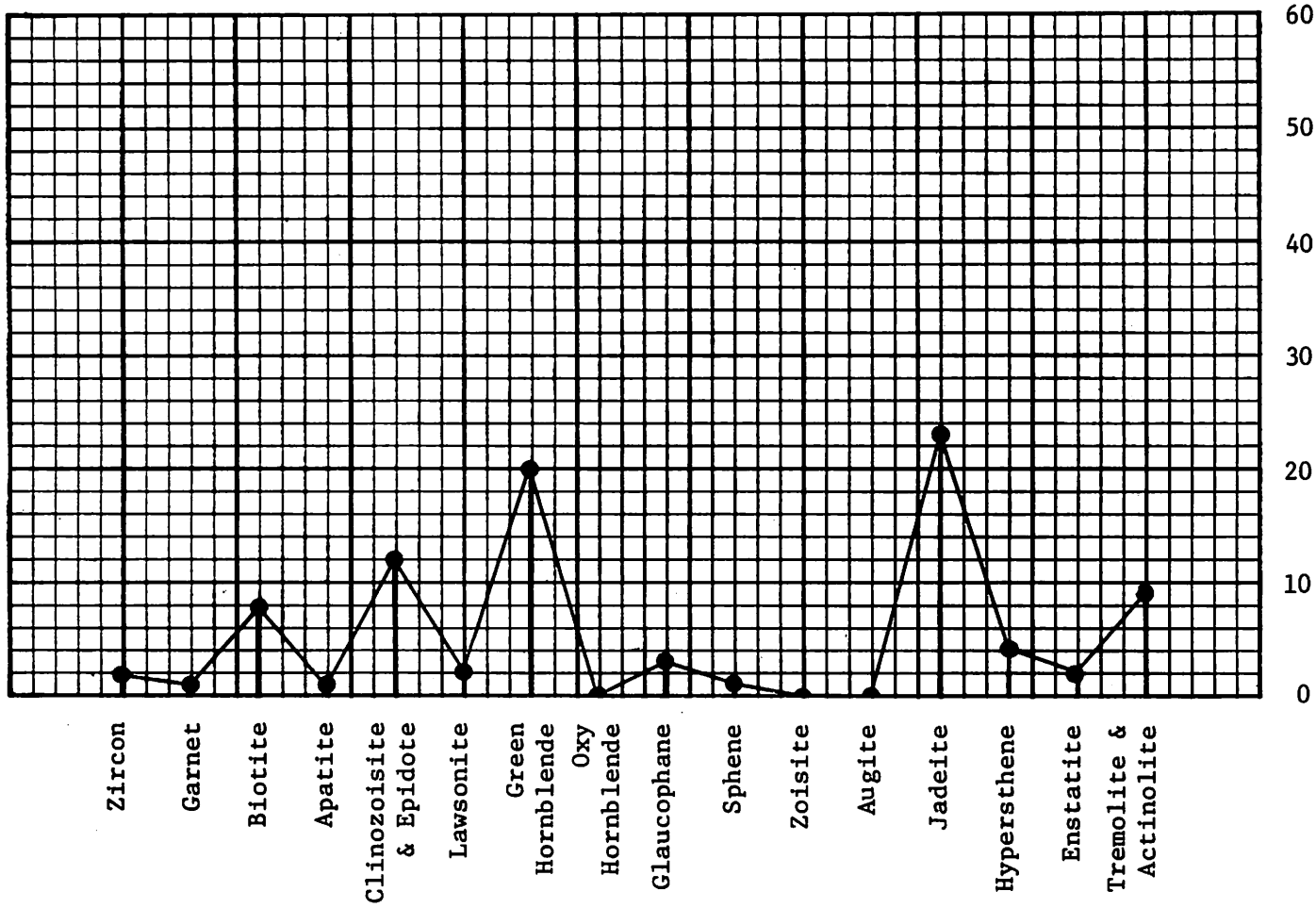
Wt. % of HM/SF 0.30

Total Grains Counted 259

% Transparent Grains 48

% Opaques 18

% Alterites and Unknowns 35



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	7
Carbonate	5
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	18
Magnetite	6
Picotite	4
Rock Frag.	20

Analyst L. Osuch

SAMPLE 1972

Location 37°54'6"N 122°40'34"W

Depth 4.27 meters 2.33 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 55.50

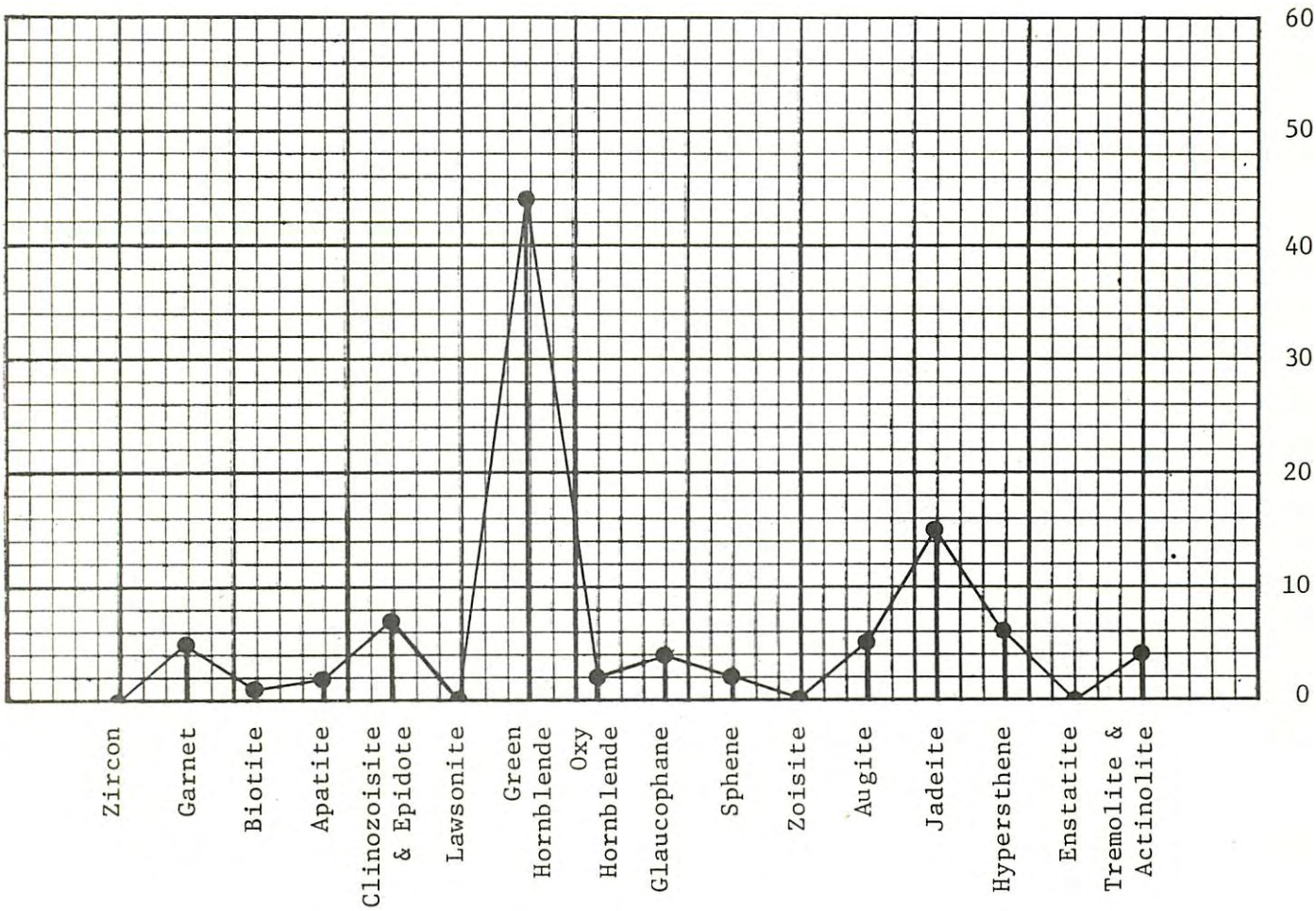
Wt. % of HM/SF 1.23

Total Grains Counted 192

% Transparent Grains 56

% Opaques 15

% Alterites and Unknowns 29



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	4
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	7
Rock Frag.	17

Analyst L. Osuch

SAMPLE 1972

Location 37°54'6"N 122°40'34"W

Depth 4.27 meters 2.33 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 5.43

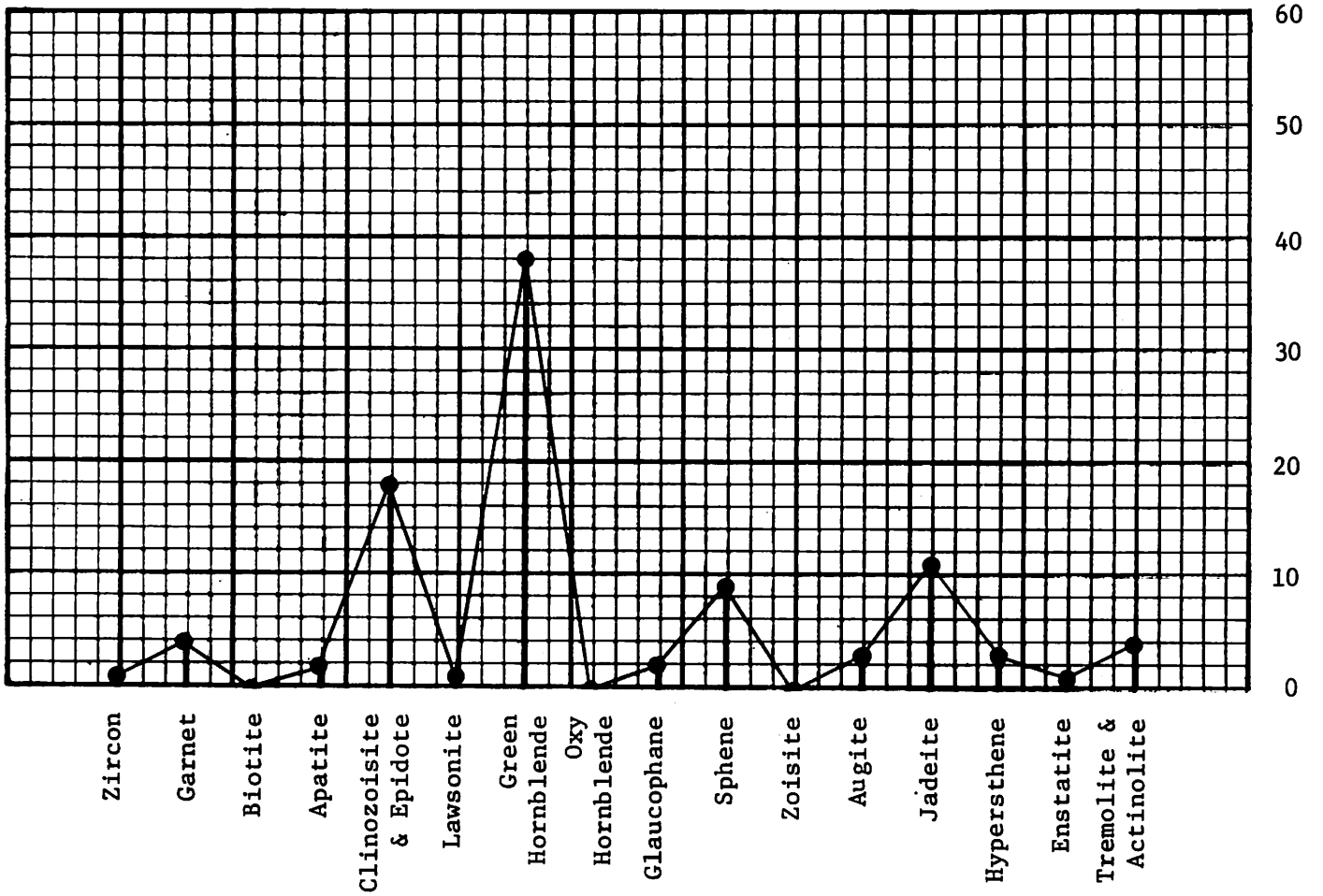
Wt. % of HM/SF 12.13

Total Grains Counted 189

% Transparent Grains 54

% Opaques 21

% Alterites and Unknowns 25



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	14
Picotite	1
Rock Frag.	21

Analyst L. Osuch

SAMPLE 1973

Location 37°54'11"N 122°40'38"W

Depth 3.66 meters 2.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 44.25

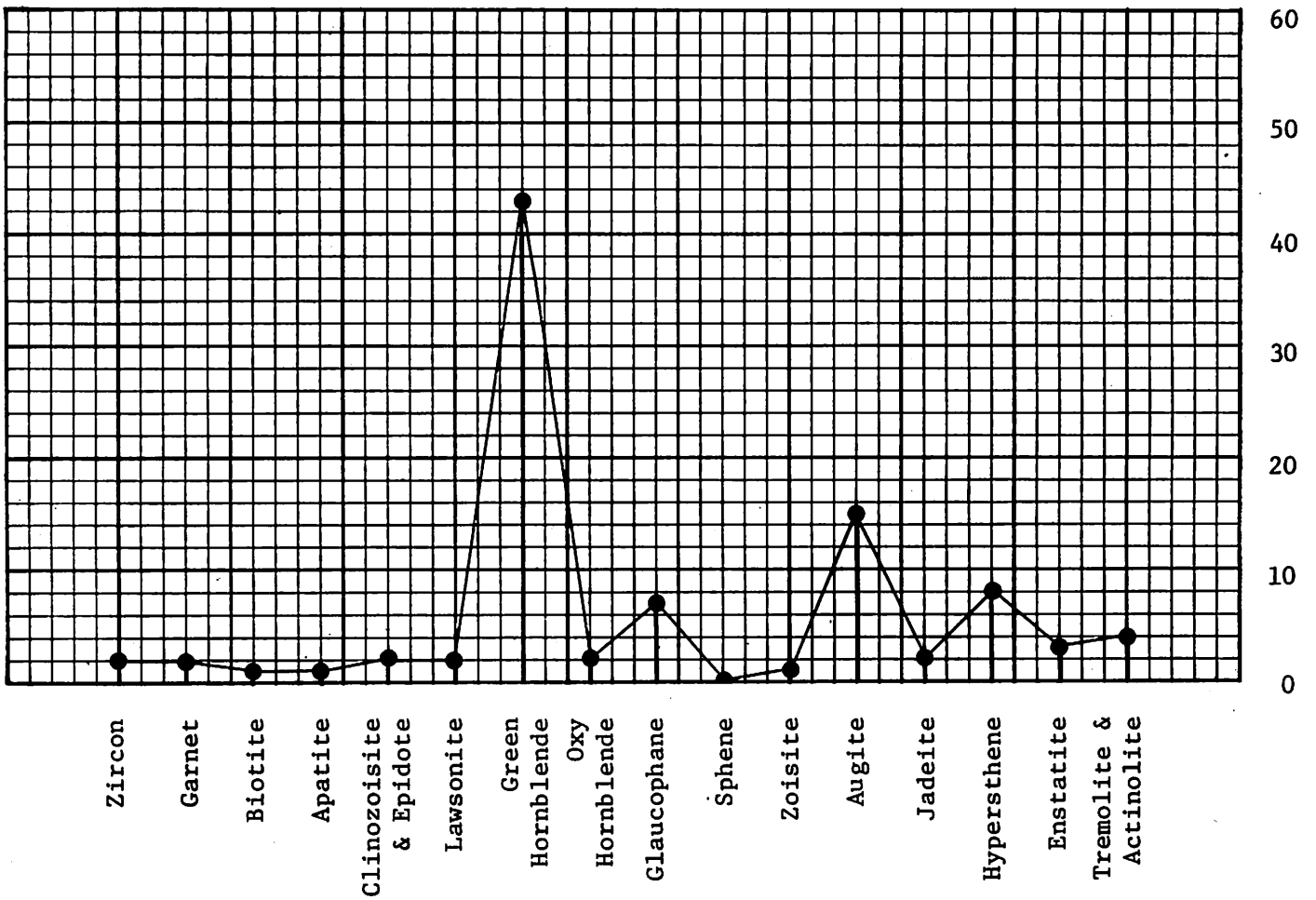
Wt. % of HM/SF 0.24

Total Grains Counted 331

% Transparent Grains 30.2

% Opaques 10.6

% Alterites and Unknowns 59.2



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	4

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	16
Magnetite	13
Picotite	2
Pyrite	2
Rock Frag.	2

Analyst T. Yancey

SAMPLE 1973

Location 37°54'11"N 122°40'38"W

Depth 3.66 meters 2.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 30.70

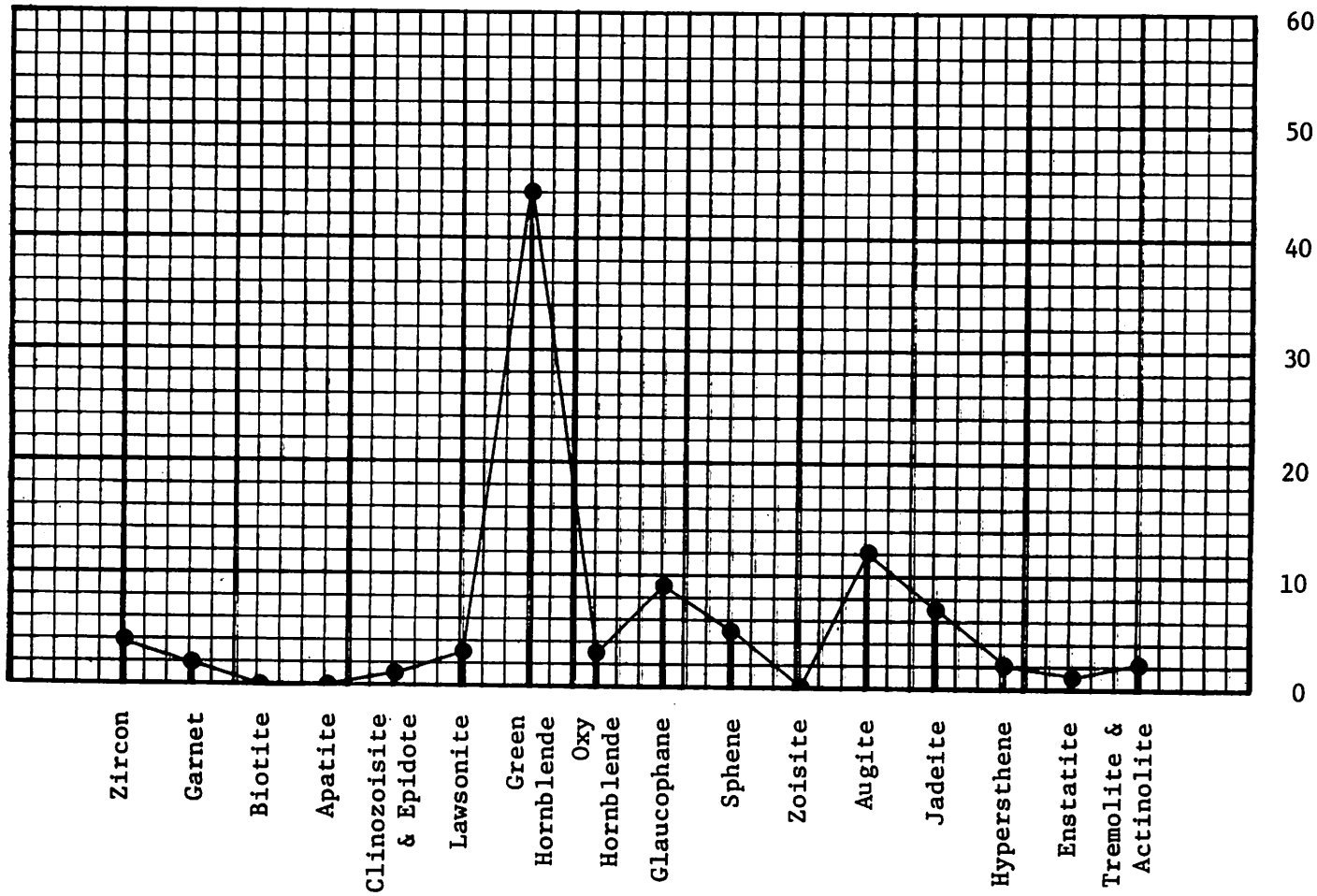
Wt. % of HM/SF 2.15

Total Grains Counted 275

% Transparent Grains 34.2

% Opaques 10.5

% Alterites and Unknowns 55.3



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	2
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	15
Picotite	7
Rock Frag.	5

Analyst T. Yancey

SAMPLE 1973

Location 37°54'11"N 122°40'38"W

Depth 3.66 meters 2.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 2.72

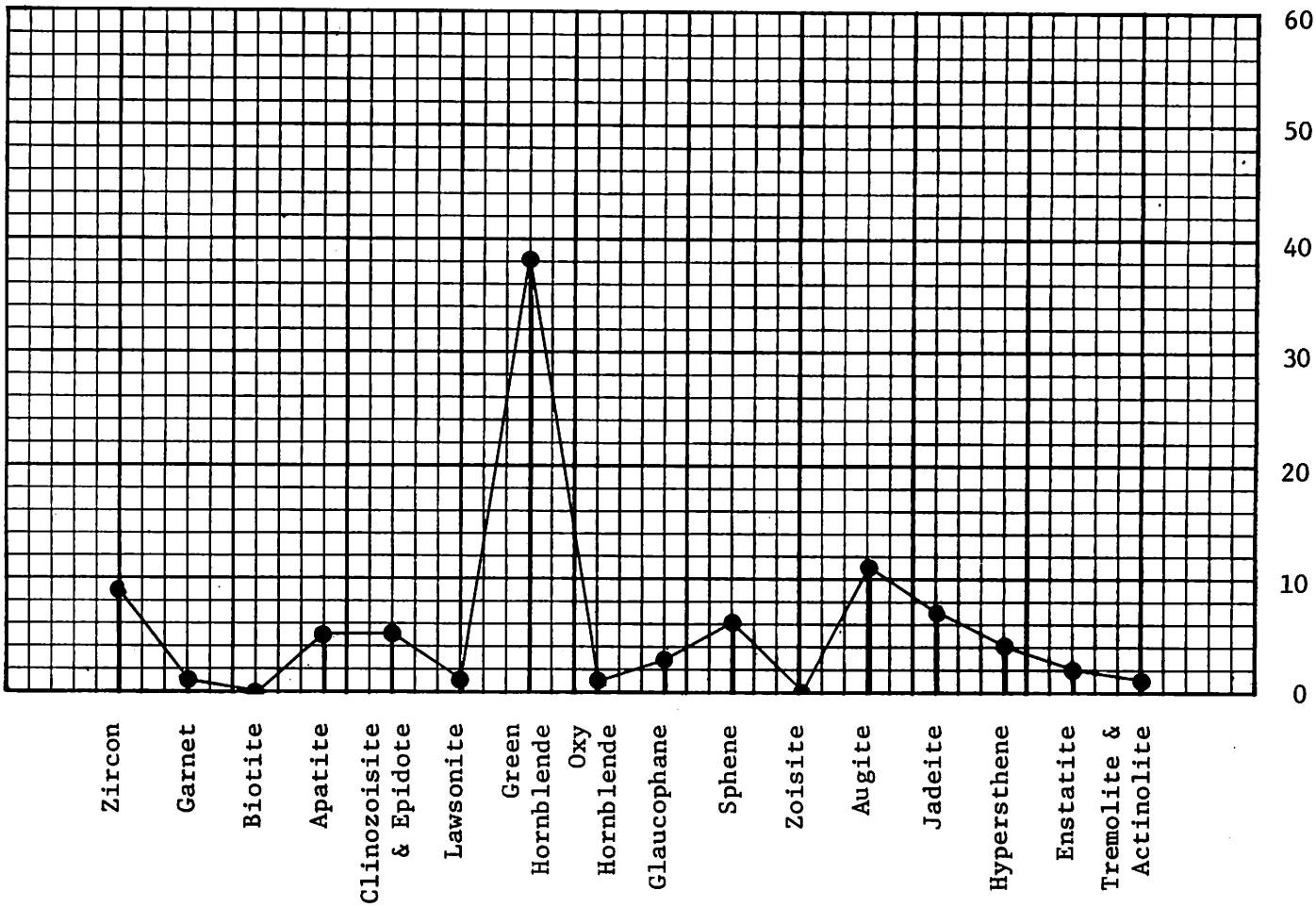
Wt. % of HM/SF 18.23

Total Grains Counted 199

% Transparent Grains 49.2

% Opaques 15.1

% Alterites and Unknowns 35.7



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	4

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	22
Picotite	2
Pyrite	1
Rock Frag.	2

Analyst T. Yancey

SAMPLE 1978

Location 37°53'45"N 122°40'55"W

Depth 5.79 meters 3.17 fathoms

Size Fraction (SF) 0.124 - 0.175 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 25.60

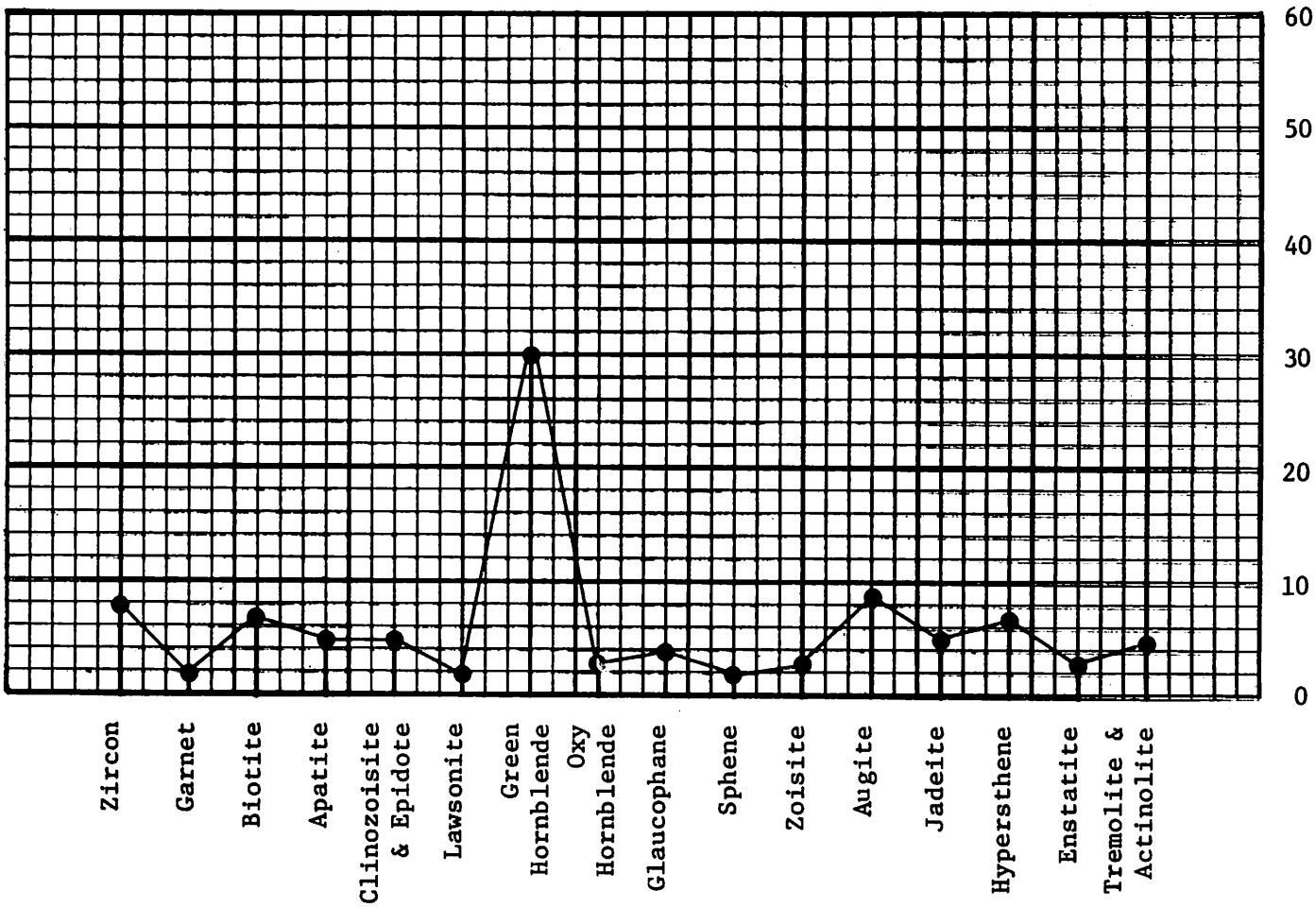
Wt. % of HM/SF 0.39

Total Grains Counted 240

% Transparent Grains 46.2

% Opaques 14.2

% Alterites and Unknowns 39.6



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	12
Magnetite	4
Picotite	1
Pyrite	1
Rock Frag.	13

Analyst C. Isselhardt

SAMPLE 1978

Location 37°53'45"N 122°40'55"W

Depth 5.79 meters 3.17 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 33.3

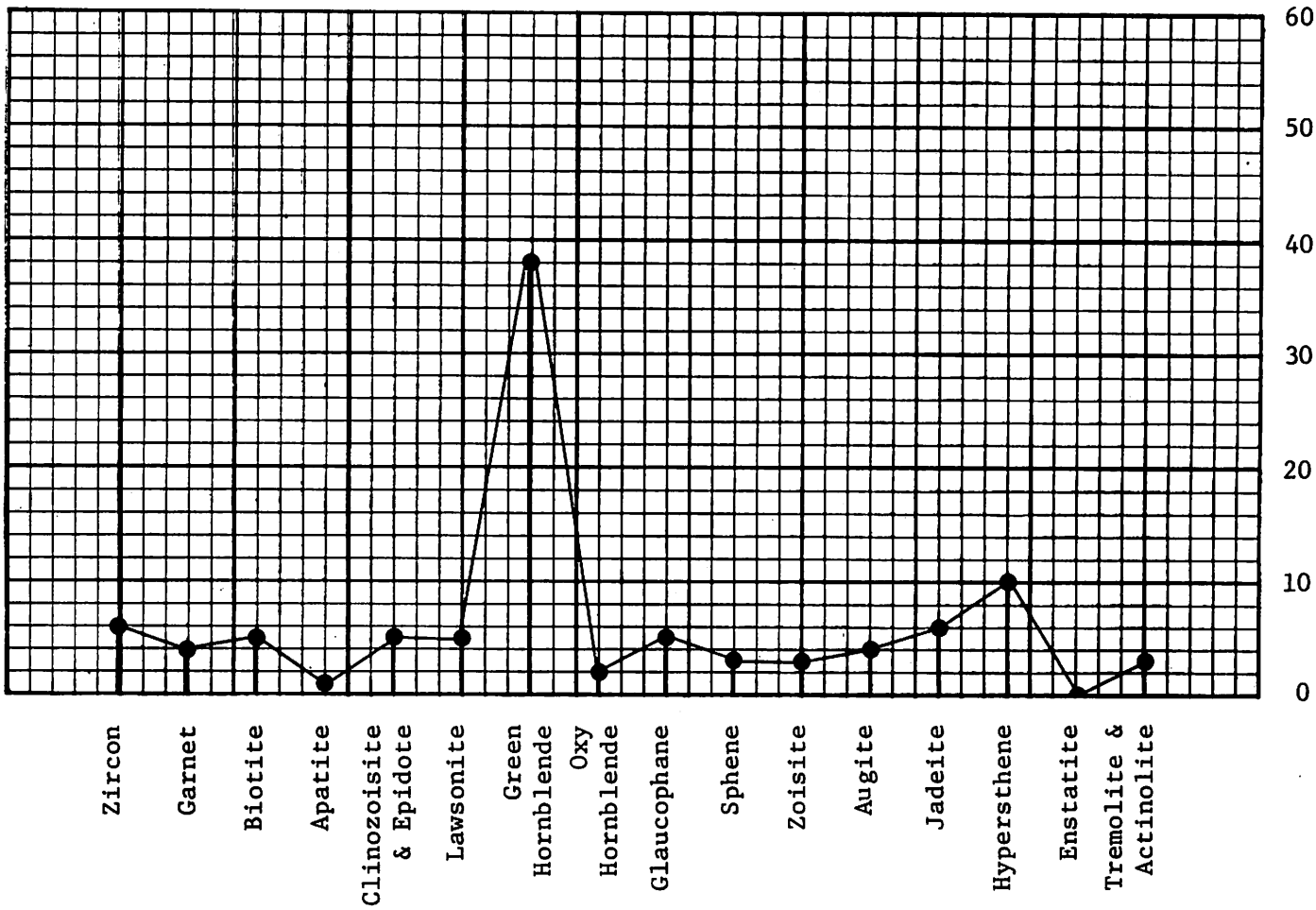
Wt. % of HM/SF 1.2

Total Grains Counted 208

% Transparent Grains 48.0

% Opaques 10.6

% Alterites and Unknowns 41.4



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	8
Magnetite	7
Picotite	1
Pyrite	1
Rock Frag.	5

Analyst C. Isselhardt

SAMPLE 1978

Location 37°53'45"N 122°40'55"W

Depth 5.79 meters 3.17 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 10.02

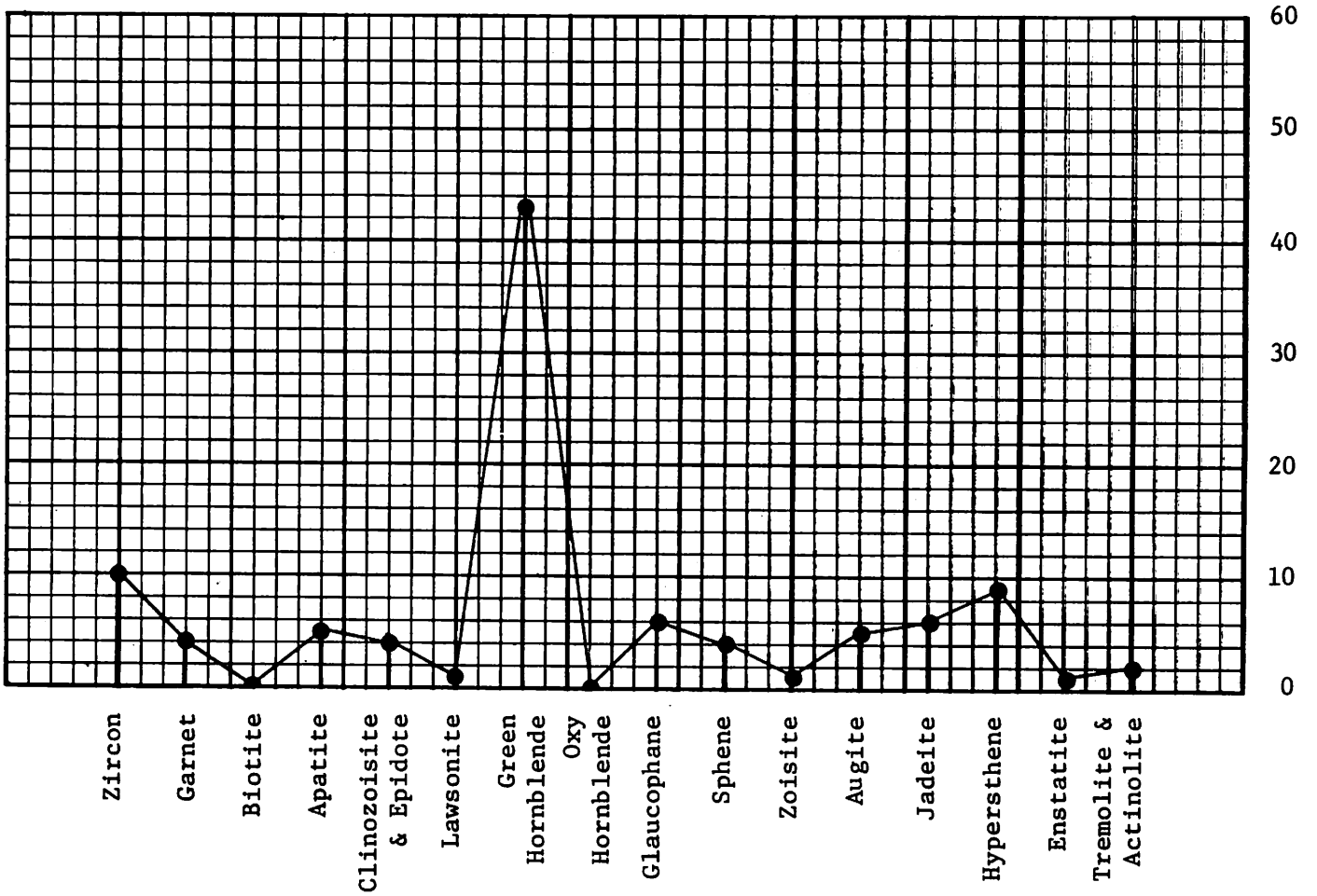
Wt. % of HM/SF 5.44

Total Grains Counted 229

% Transparent Grains 50.2

% Opaques 17.0

% Alterites and Unknowns 32.8



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Carbonate	2

Other Opaque Minerals

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

Analyst C. Isselhardt

SAMPLE 1979

Location 37°53'57" 122°40'9"W

Depth 6.00 meters 3.83 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 38.00

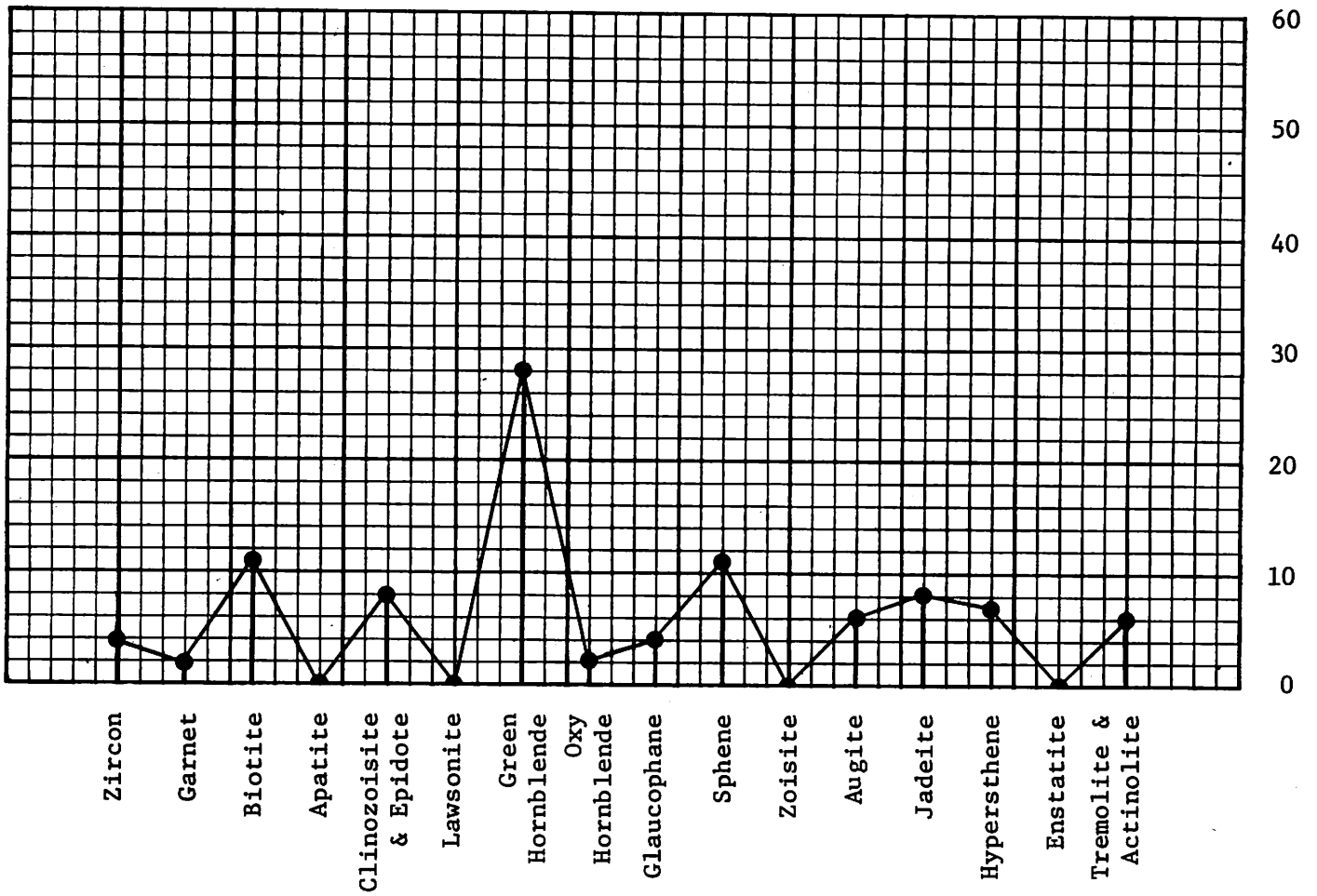
Wt. % of HM/SF 0.04

Total Grains Counted 261

% Transparent Grains 43

% Opaques 27

% Alterites and Unknowns 30



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	4
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	28
Magnetite	23
Rock Frag.	20

Analyst L. Osuch

SAMPLE 1979

Location 37°53'57"N 122°40'9"W

Depth 6.00 meters 3.83 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 43.60

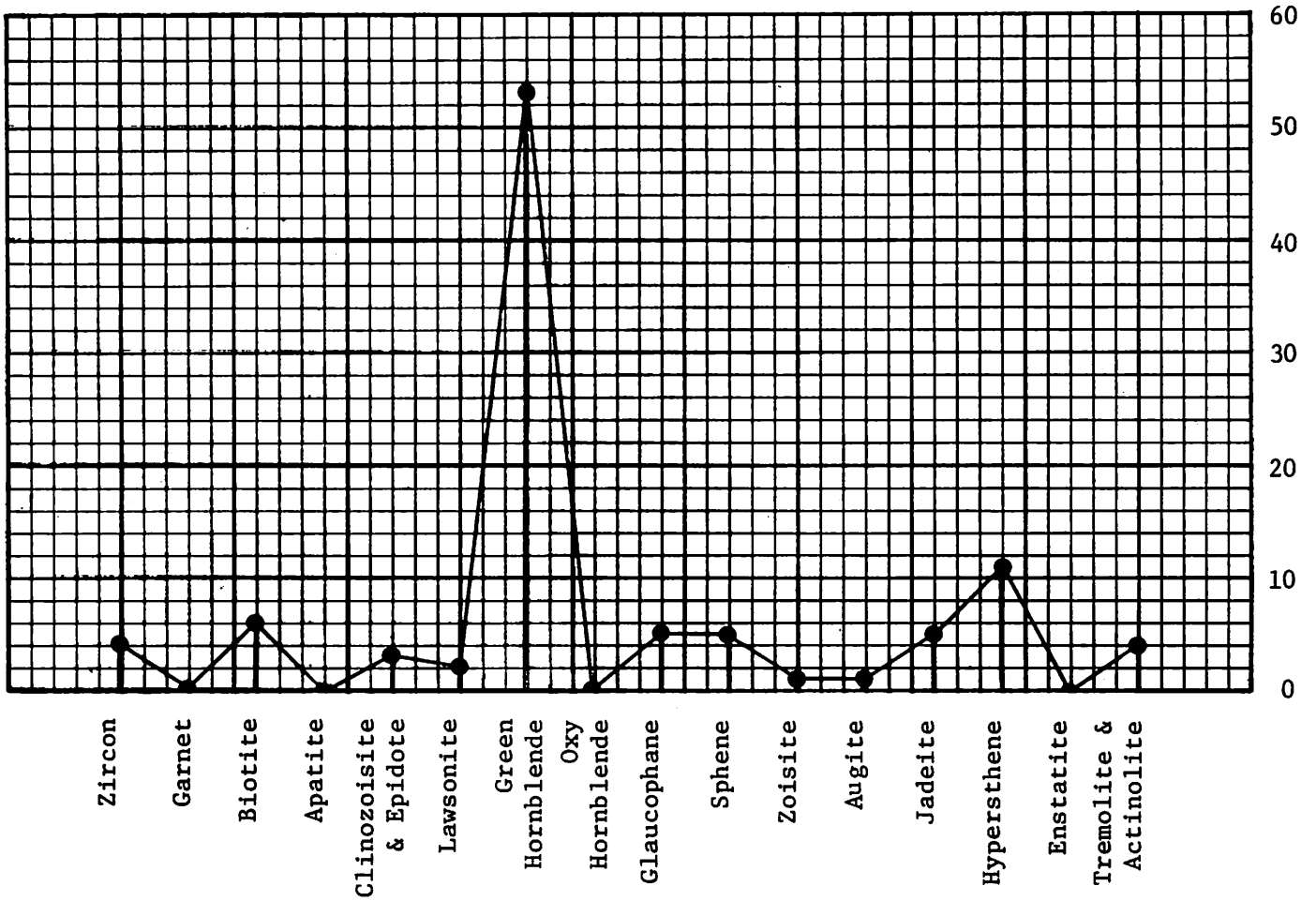
Wt. % of HM/SF 1.37

Total Grains Counted 285

% Transparent Grains 36

% Opaques 13

% Alterites and Unknowns 51



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	13
Magnetite	7
Picotite	3
Rock Frag.	15

Analyst L. Osuch

SAMPLE 1979

Location 37°53'57"N 122°40'9"

Depth 6.00 meters 3.83 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 6.63

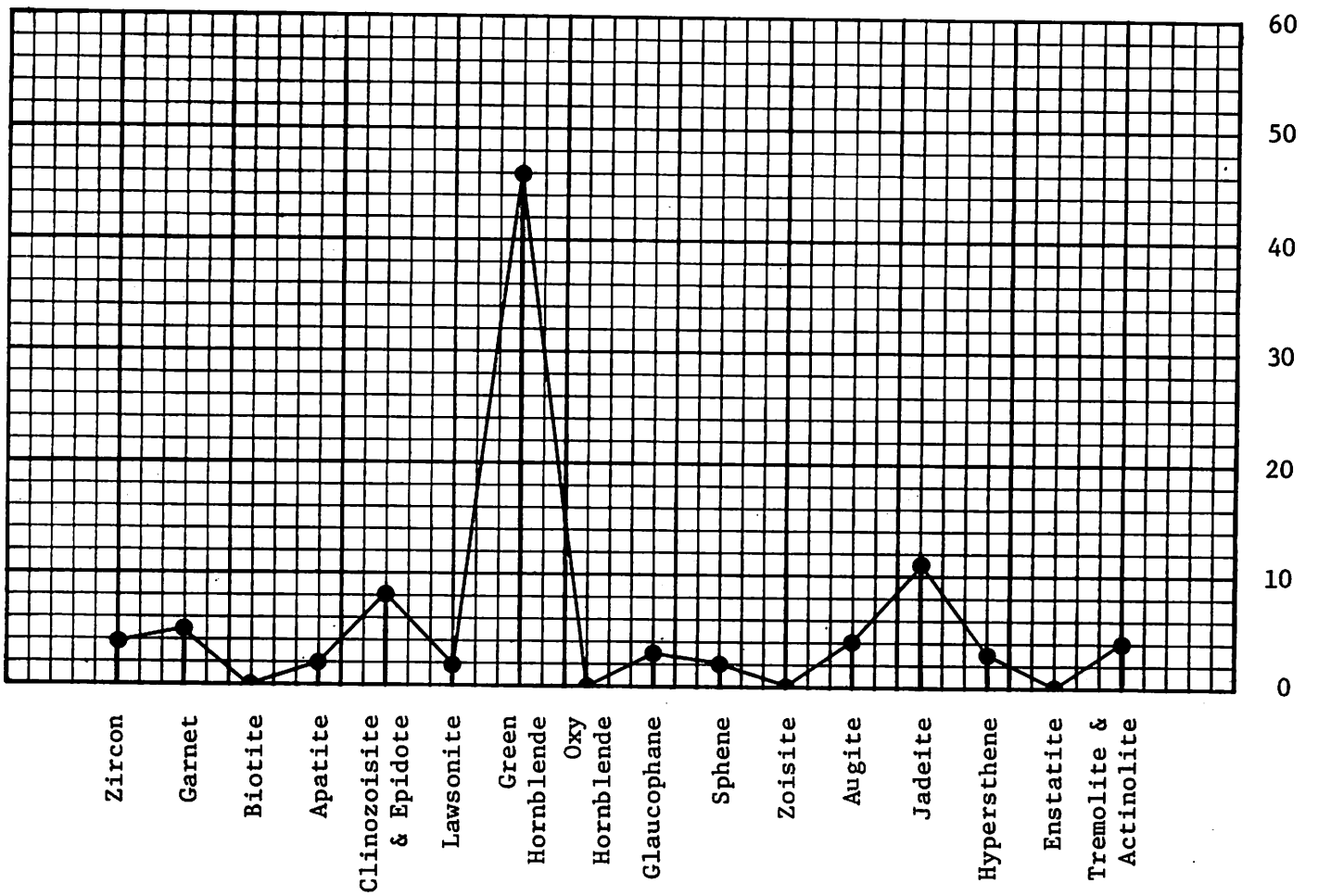
Wt. % of HM/SF 7.47

Total Grains Counted 183

% Transparent Grains 55

% Opaques 27

% Alterites and Unknowns 19



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	5

Other Opaque Minerals

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

Analyst L. Osuch

SAMPLE 1980

Location 37°54'02"N 122°40'06"W

Depth 6.71 meters 3.67 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 38.10

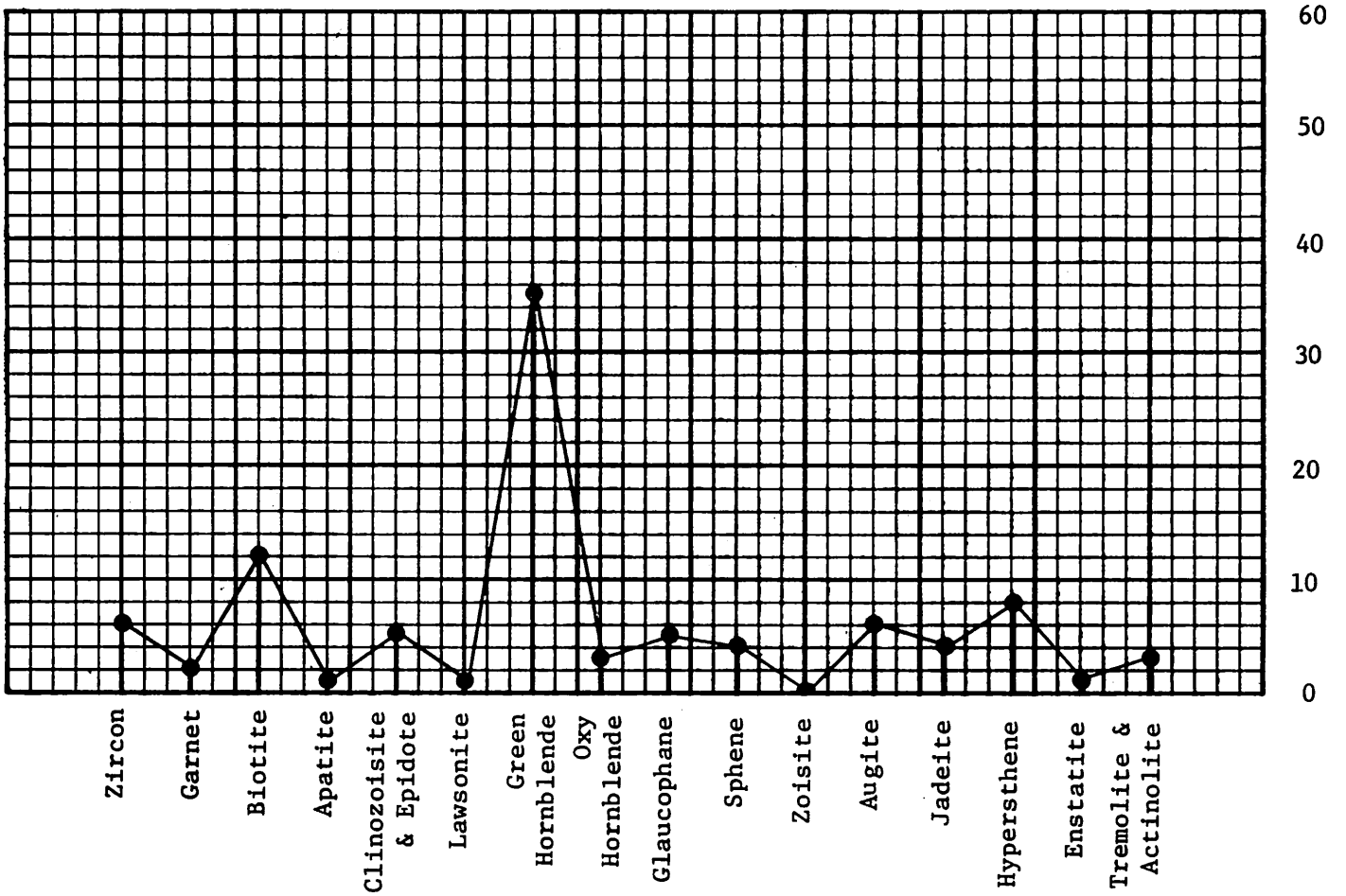
Wt. % of HM/SF 0.22

Total Grains Counted 211

% Transparent Grains 50

% Opaques 12

% Alterites and Unknowns 38



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	4
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted

Analyst C. Isselhardt, L. Osuch, T. Yancey

SAMPLE 1980

Location 37°54'02"N 122°40'06"W

Depth 6.71 meters 3.67 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 44.60

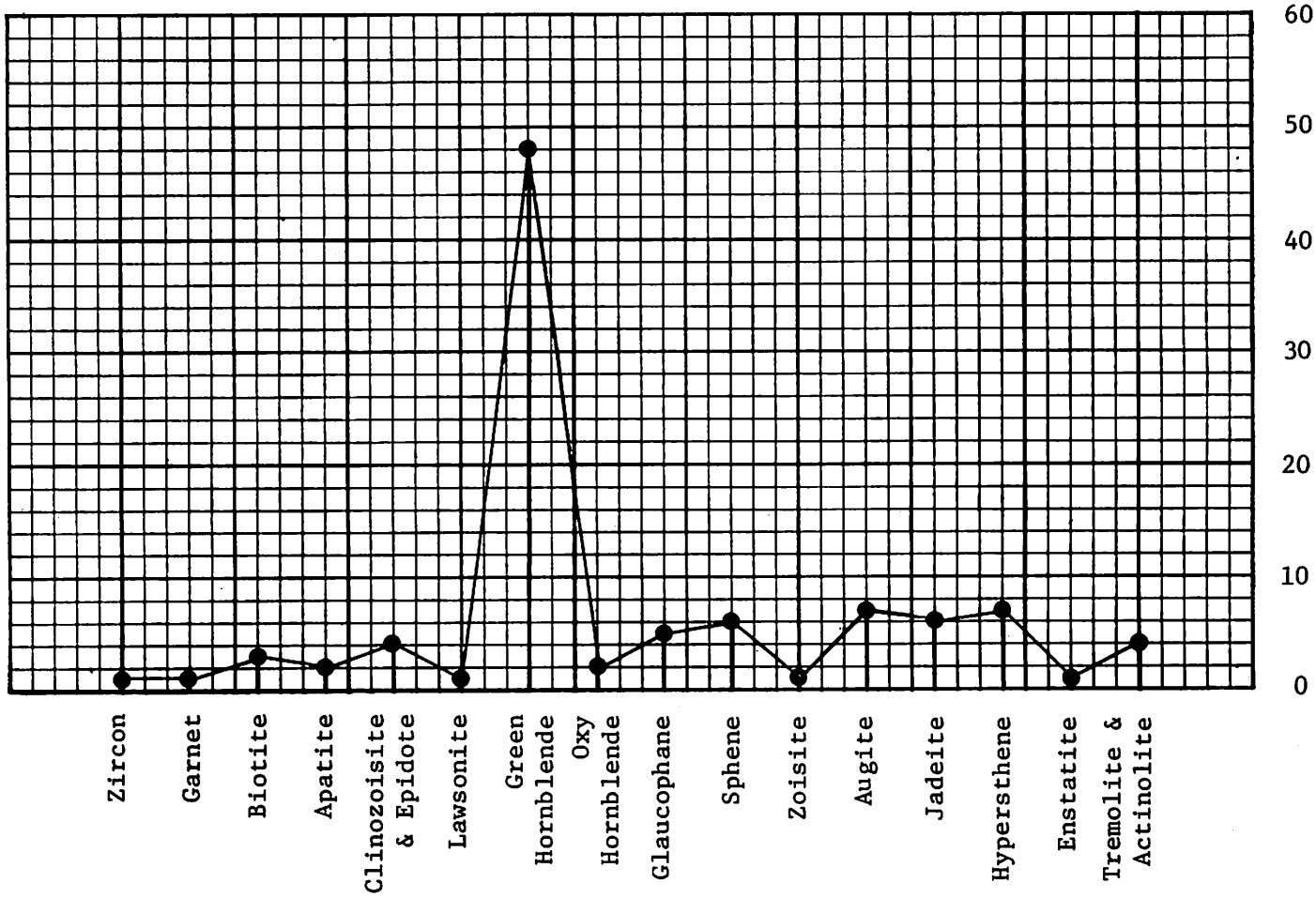
Wt. % of HM/SF 1.32

Total Grains Counted 204

% Transparent Grains 52

% Opaques 7

% Alterites and Unknowns 41



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted

Analyst T. Yancey, C. Isselhardt, L. Osuch

SAMPLE 1980

Location 37°54'02"N 122°40'06"W

Depth 6.71 meters 3.67 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 6.12

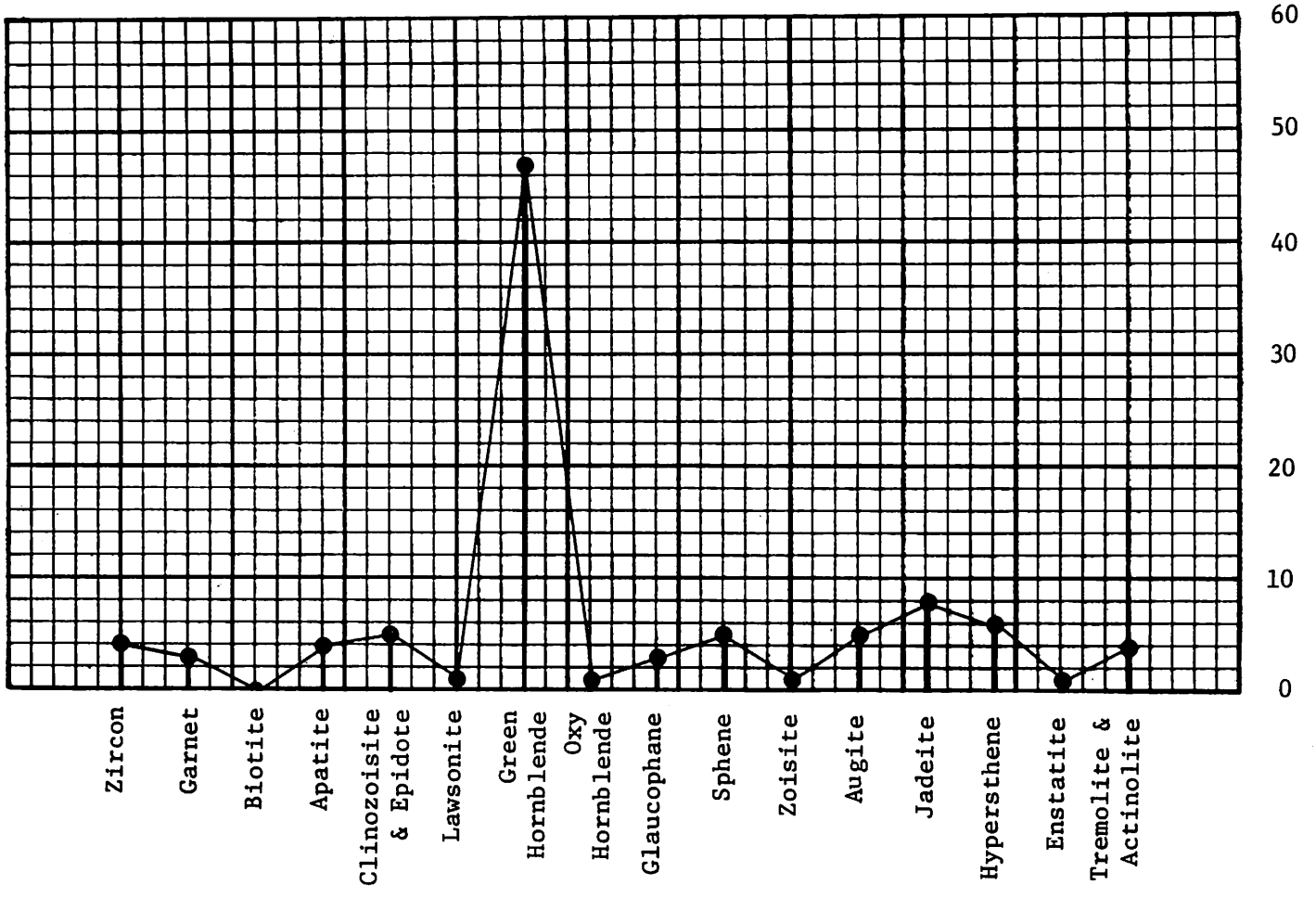
Wt. % of HM/SF 9.47

Total Grains Counted 171

% Transparent Grains 57

% Opaques 16

% Alterites and Unknowns 27



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted

Analyst T. Yancey, L. Osuch, C. Isselhardt

SAMPLE 1981

Location 37°54'7"N 122°39'56"W

Depth 7.62 meters 4.17 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 17.80

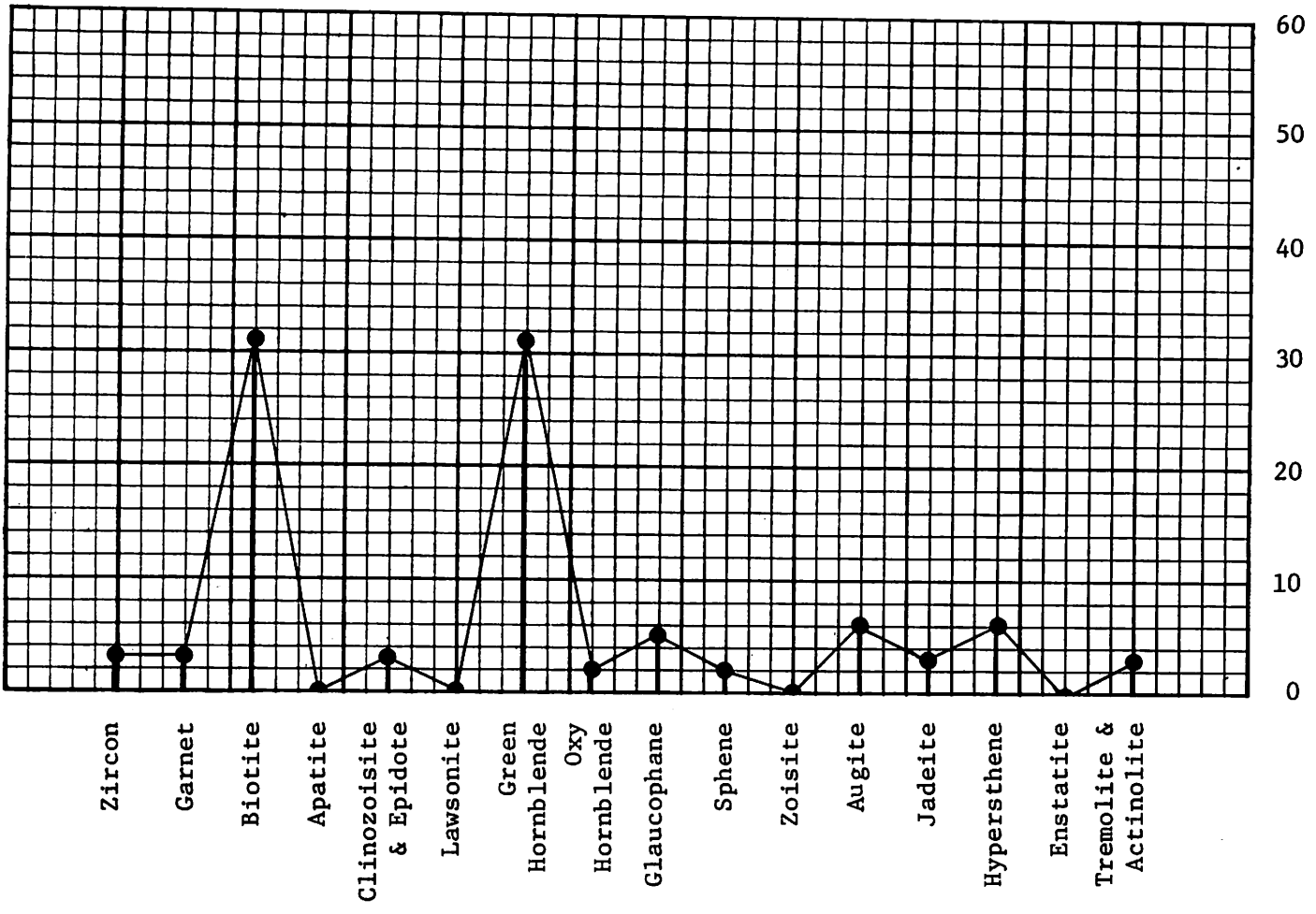
Wt. % of HM/SF 0.14

Total Grains Counted 210

% Transparent Grains 61

% Opaques 9.5

% Alterites and Unknowns 29.5



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Carbonate	4

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	9
Magnetite	6
Picotite	2
Rock Frag.	3

Analyst C. Isselhardt

SAMPLE 1981

Location 37°54'7"N 122°39'56"W

Depth 7.62 meters 4.17 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 53.15

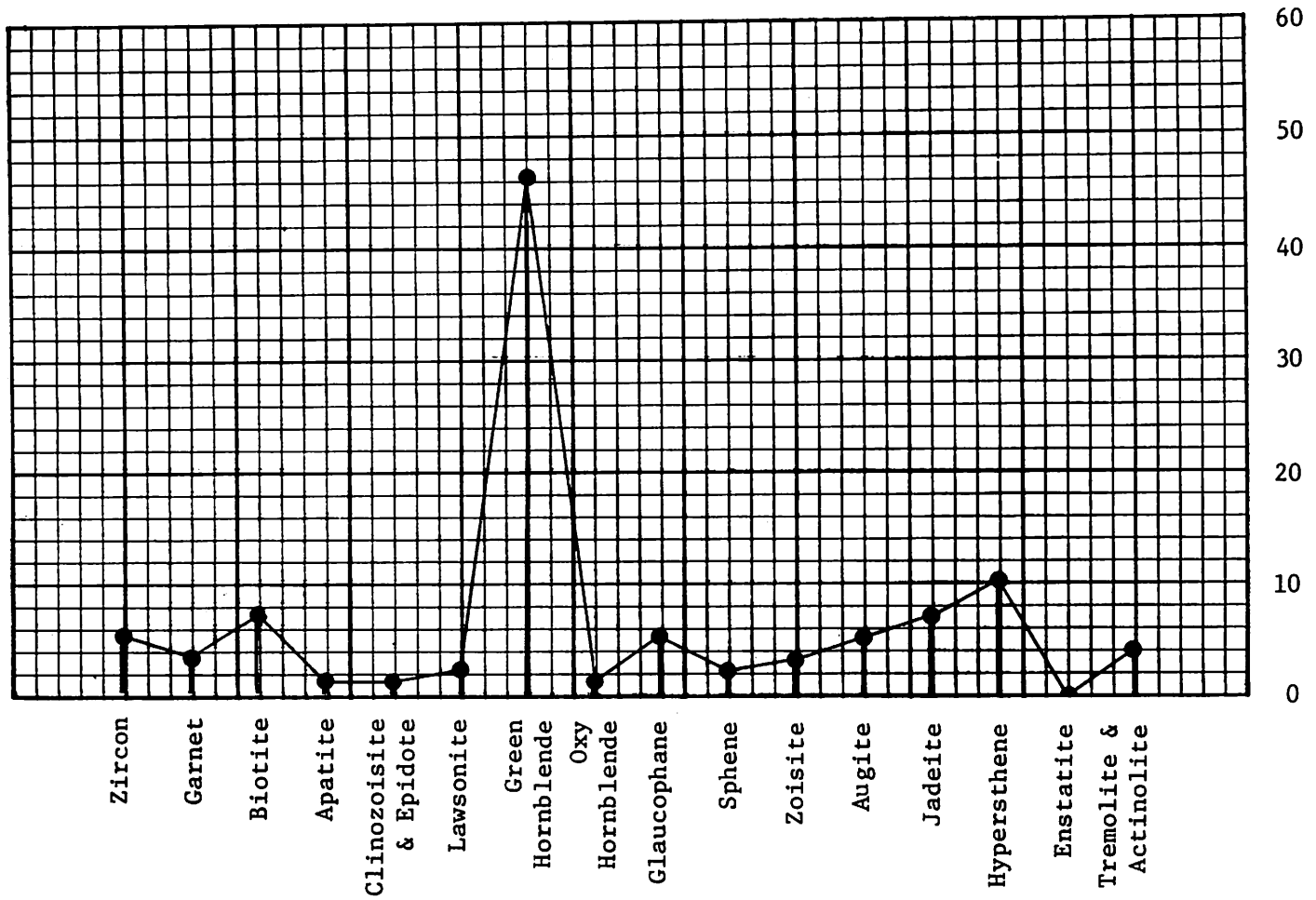
Wt. % of HM/SF 0.95

Total Grains Counted 209

% Transparent Grains 52.7

% Opaques 7.6

% Alterites and Unknowns 39.7



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	3
Picotite	3
Pyrite	2
Rock Frag.	5

Analyst C. Isselhardt

SAMPLE 1981

Location 37°54'7"N 122°39'56"W

Depth 7.62 meters 4.17 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 18.90

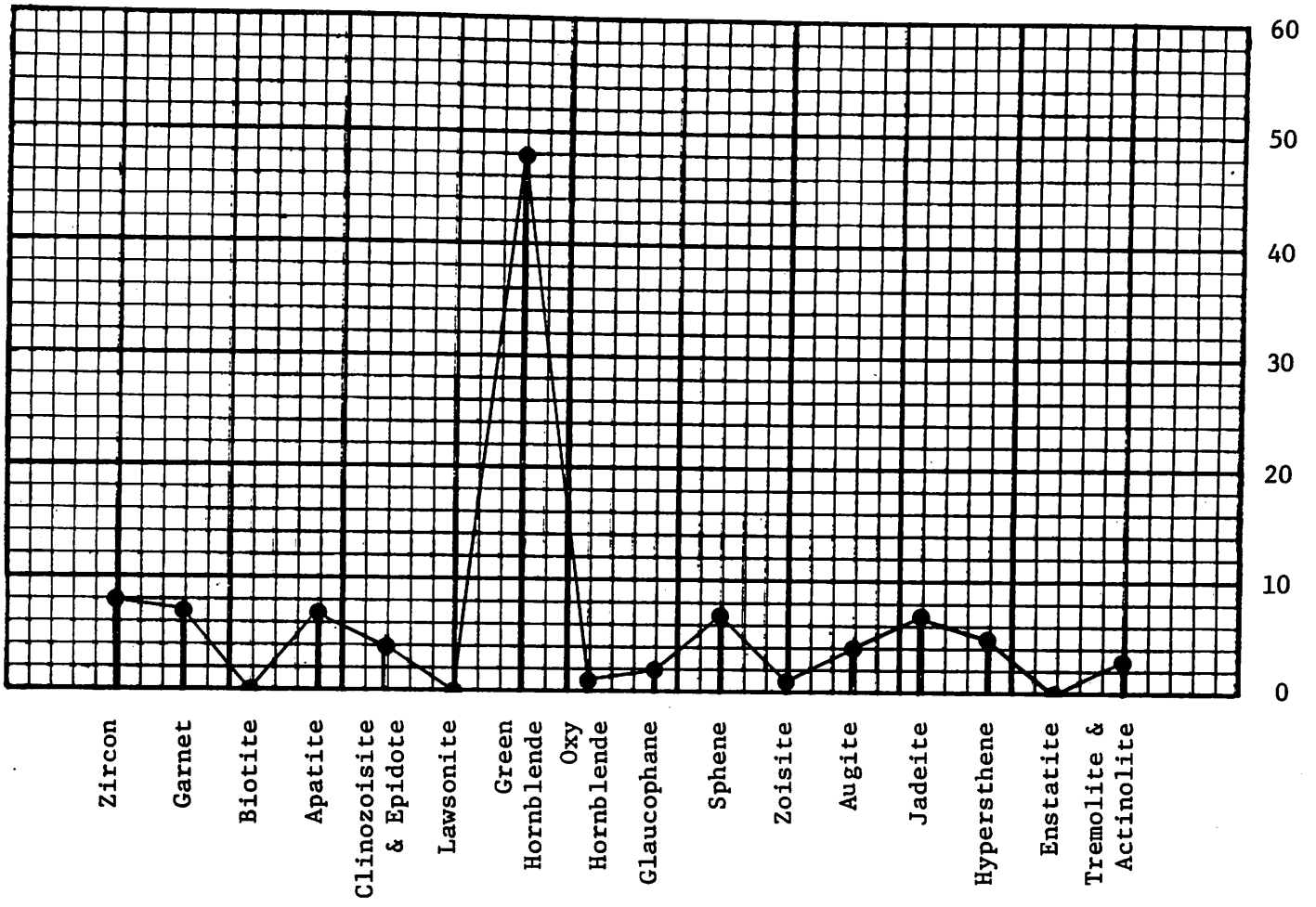
Wt. % of HM/SF 3.81

Total Grains Counted 215

% Transparent Grains 50.2

% Opaques 13.0

% Alterites and Unknowns 36.8



Other Transparent Minerals		Other Opaque Minerals	
Mineral	No. Grains Counted	Mineral	No. Grains Counted
		Hematite	3
		Magnetite	12
		Picotite	7
		Rock Frag.	6

Analyst C. Isselhardt

SAMPLE 1982

Location 37°54'N 122°39'43"W

Depth 8.84 meters 4.83 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 17.80

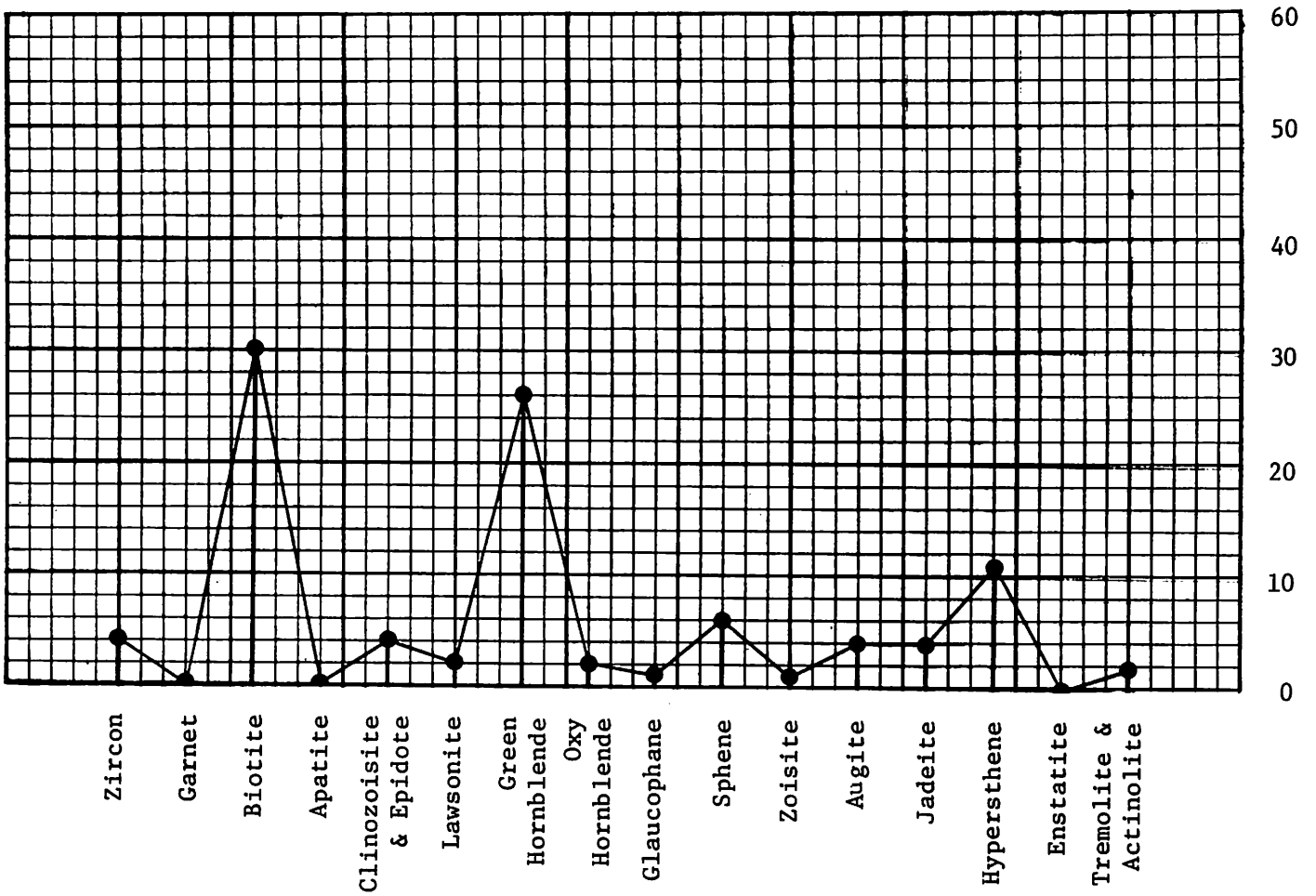
Wt. % of HM/SF 0.53

Total Grains Counted 236

% Transparent Grains 58

% Opaques 16

% Alterites and Unknowns 26



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	2
Pumpellyte	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	23
Magnetite	3
Picotite	5
Rock Frag.	8

Analyst L. Osuch

SAMPLE 1982

Location 37°54'N 122°39'43"W.

Depth 8.84 meters 4.83 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 53.15

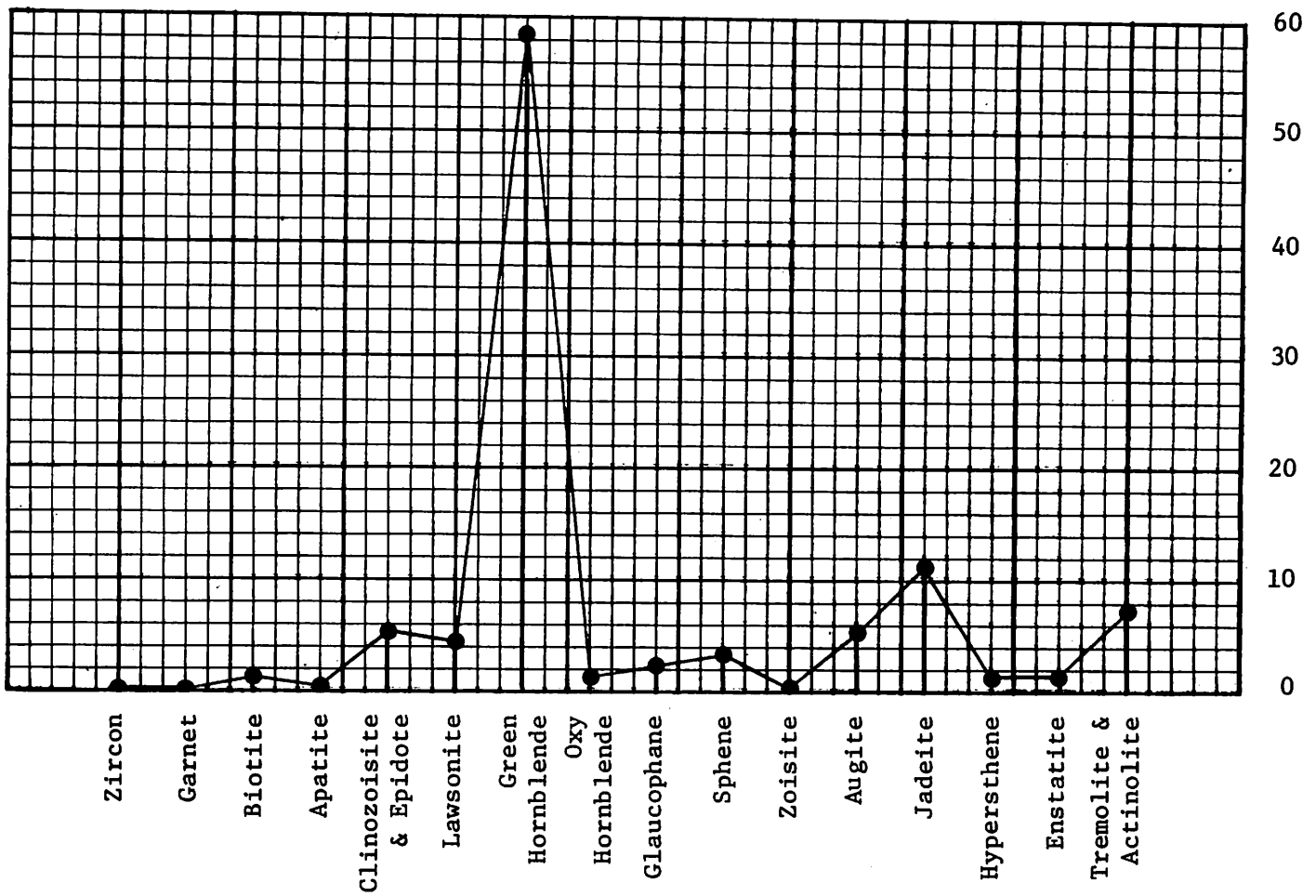
Wt. % of HM/SF 1.10

Total Grains Counted 194

% Transparent Grains 53

% Opaques 9

% Alterites and Unknowns 38



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	7
Magnetite	3
Picotite	1
Rock Frag.	7

Analyst L. Osuch

SAMPLE 1982

Location 37°54'N 122°39'43"W

Depth 8.84 meters 4.83 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 18.90

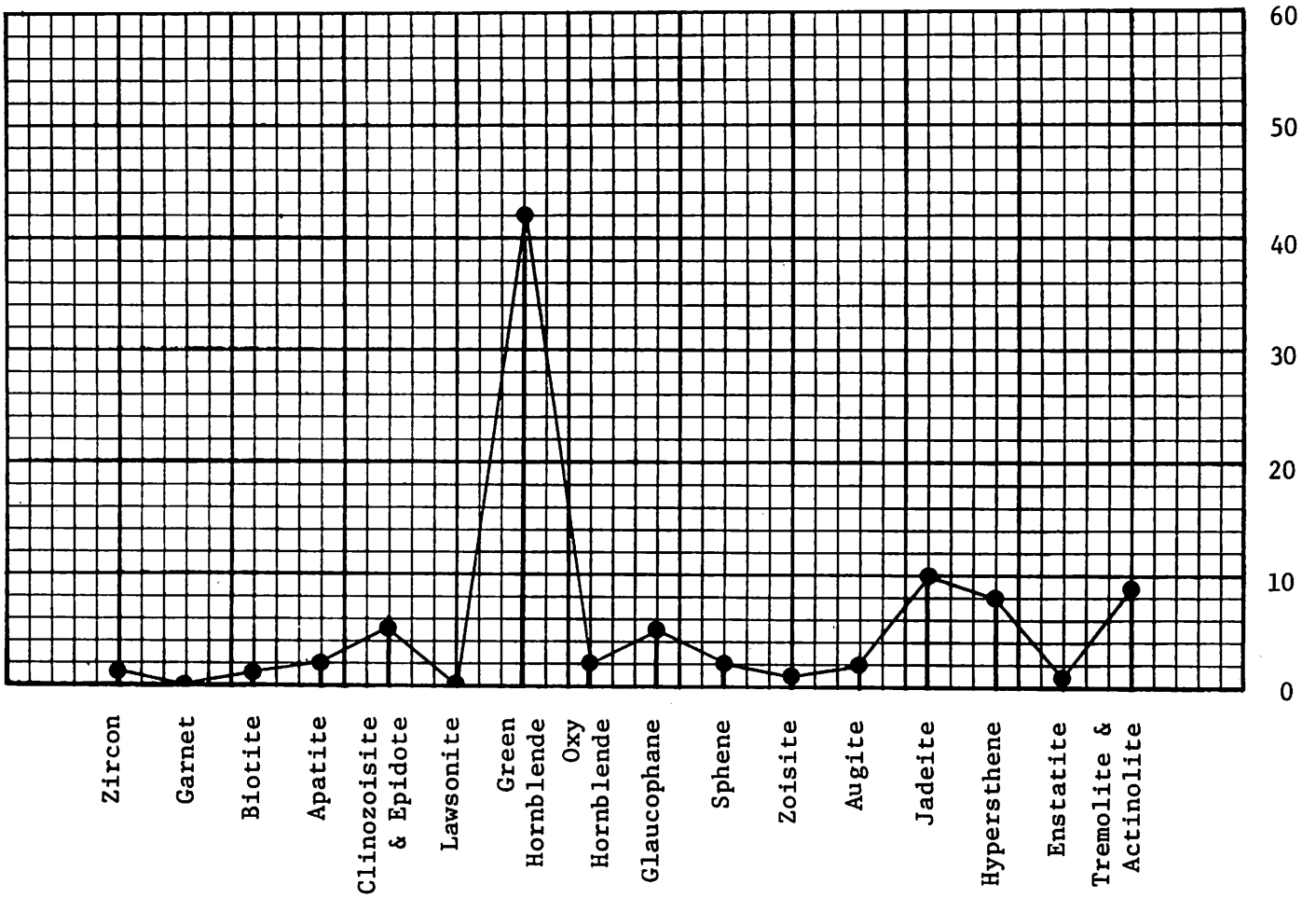
Wt. % of HM/SF 2.20

Total Grains Counted 159

% Transparent Grains 66

% Opaques 15

% Alterites and Unknowns 19



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	3
Carbonate	9

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth 9.75 meters 5.33 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 10.67

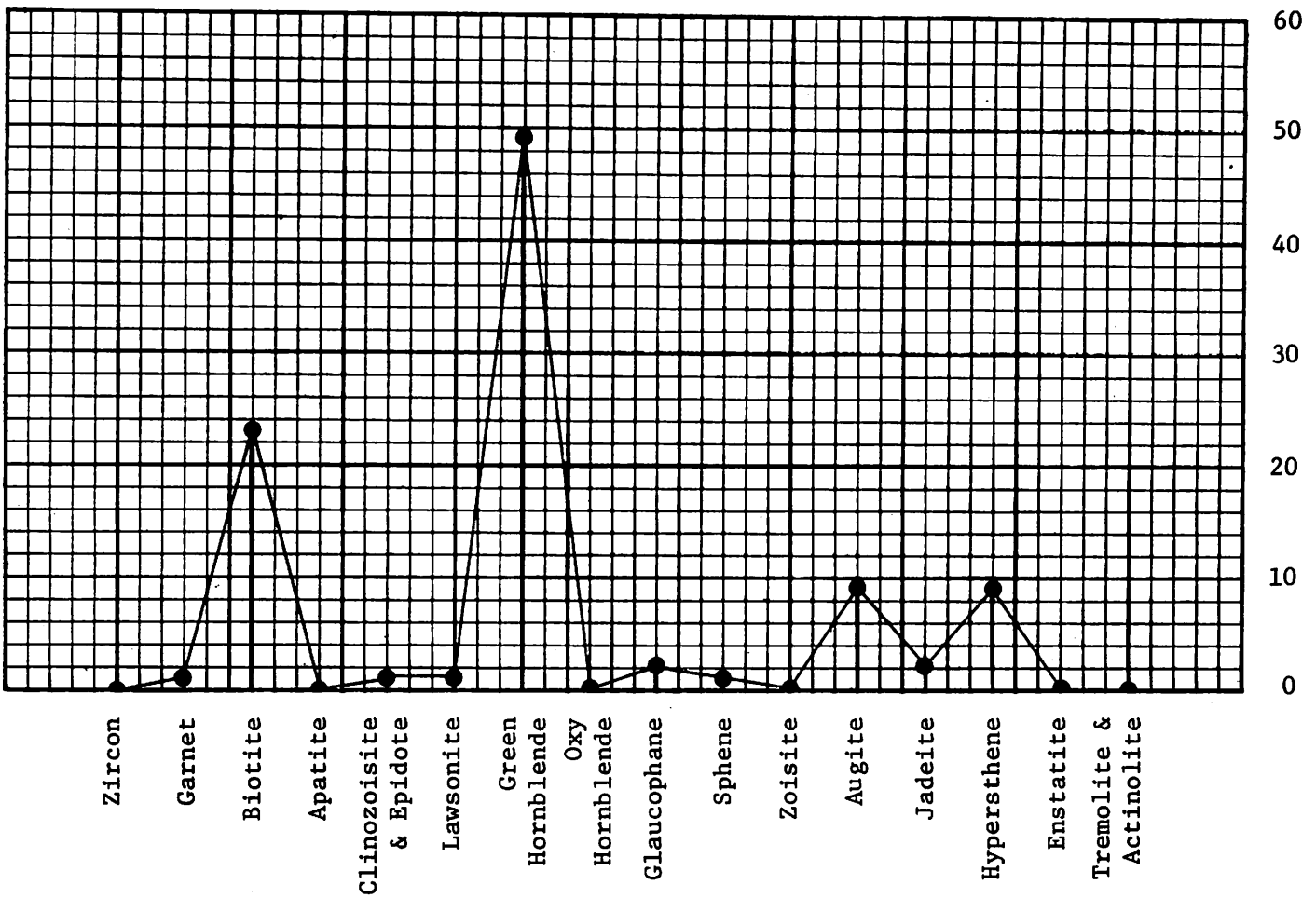
Wt. % of HM/SF 0.50

Total Grains Counted 199

% Transparent Grains 64.8

% Opaques 7.0

% Alterites and Unknowns 28.2



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	5
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	10
Magnetite	4

Analyst T. Yancey

SAMPLE 1983

Location 37°53'51"N 122°39'25"W

Depth 9.75 meters 5.33 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 55.01

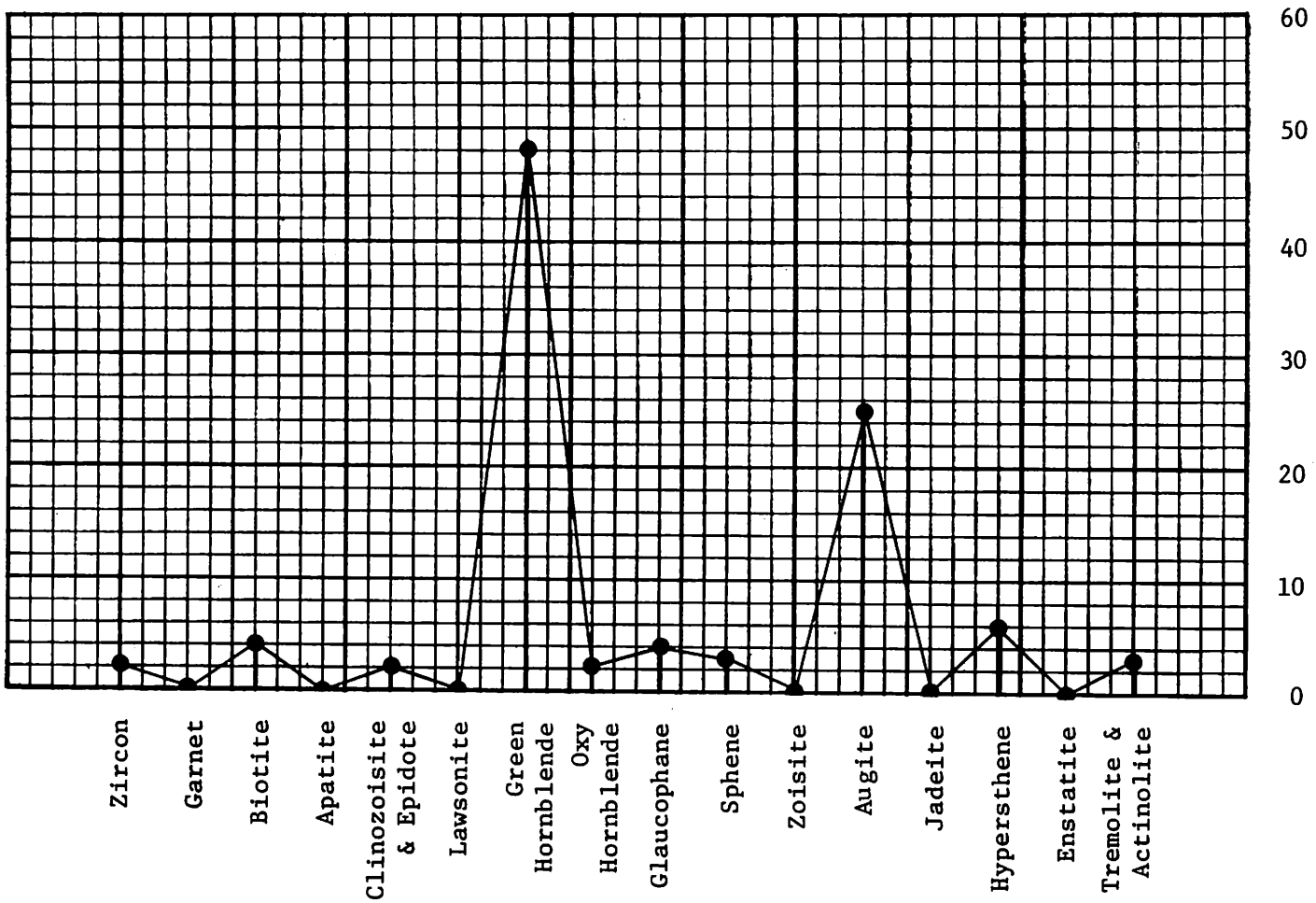
Wt. % of HM/SF 1.22

Total Grains Counted 194

% Transparent Grains 52.1

% Opaques 8.2

% Alterites and Unknowns 39.7



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	10
Picotite	3

Analyst T. Yancey

SAMPLE 1983

Location 37°53'51"N 122°39'25"W

Depth 9.75 meters 5.33 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 24.99

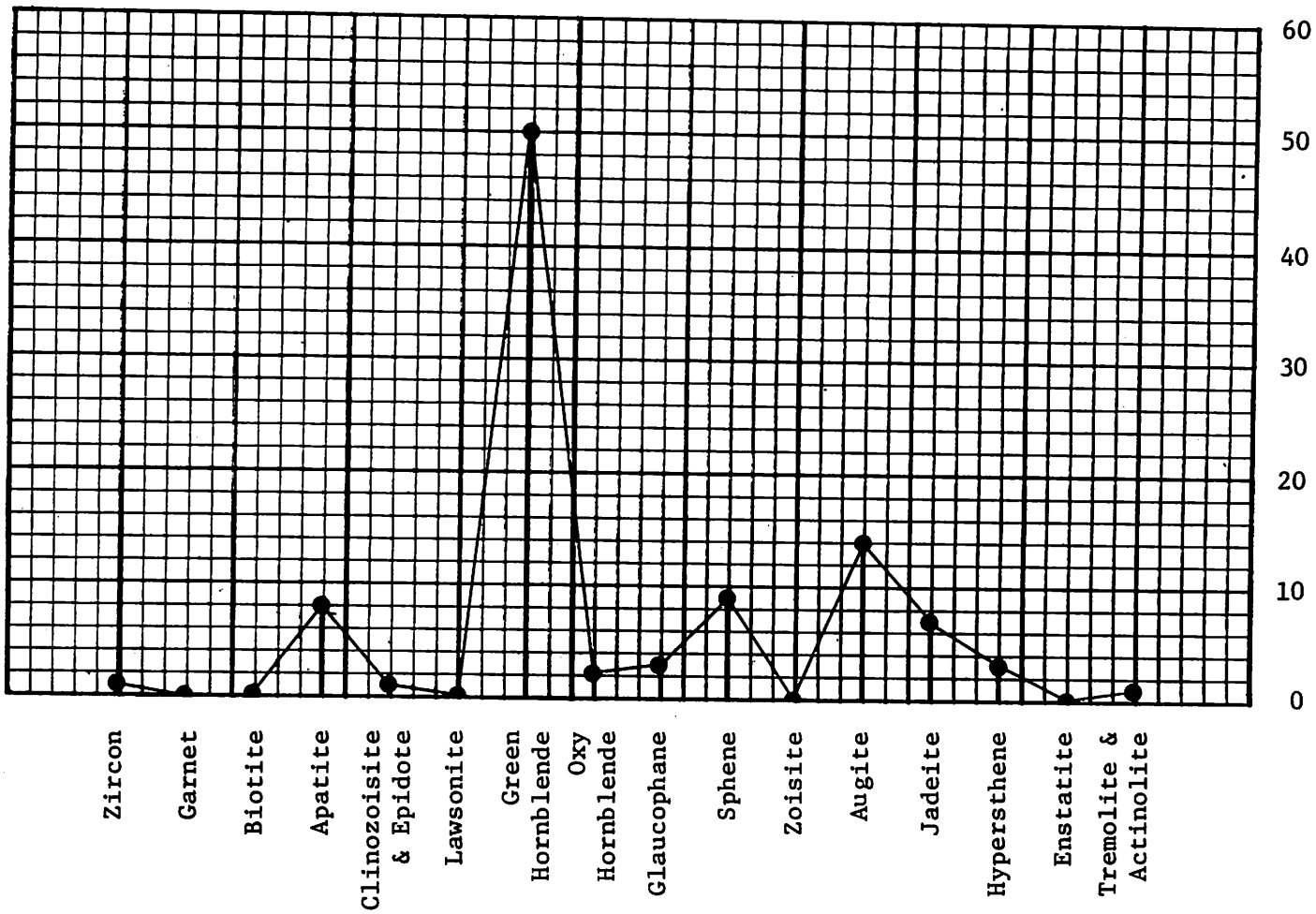
Wt. % of HM/SF 3.13

Total Grains Counted 212

% Transparent Grains 43.9

% Opaques 18.4

% Alterites and Unknowns 37.7



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	29
Picotite	7

Analyst T. Yancey

SAMPLE 1984

Location 37°53'42"N 122°39'3"W

Depth 11.58 meters 6.33 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 11.05

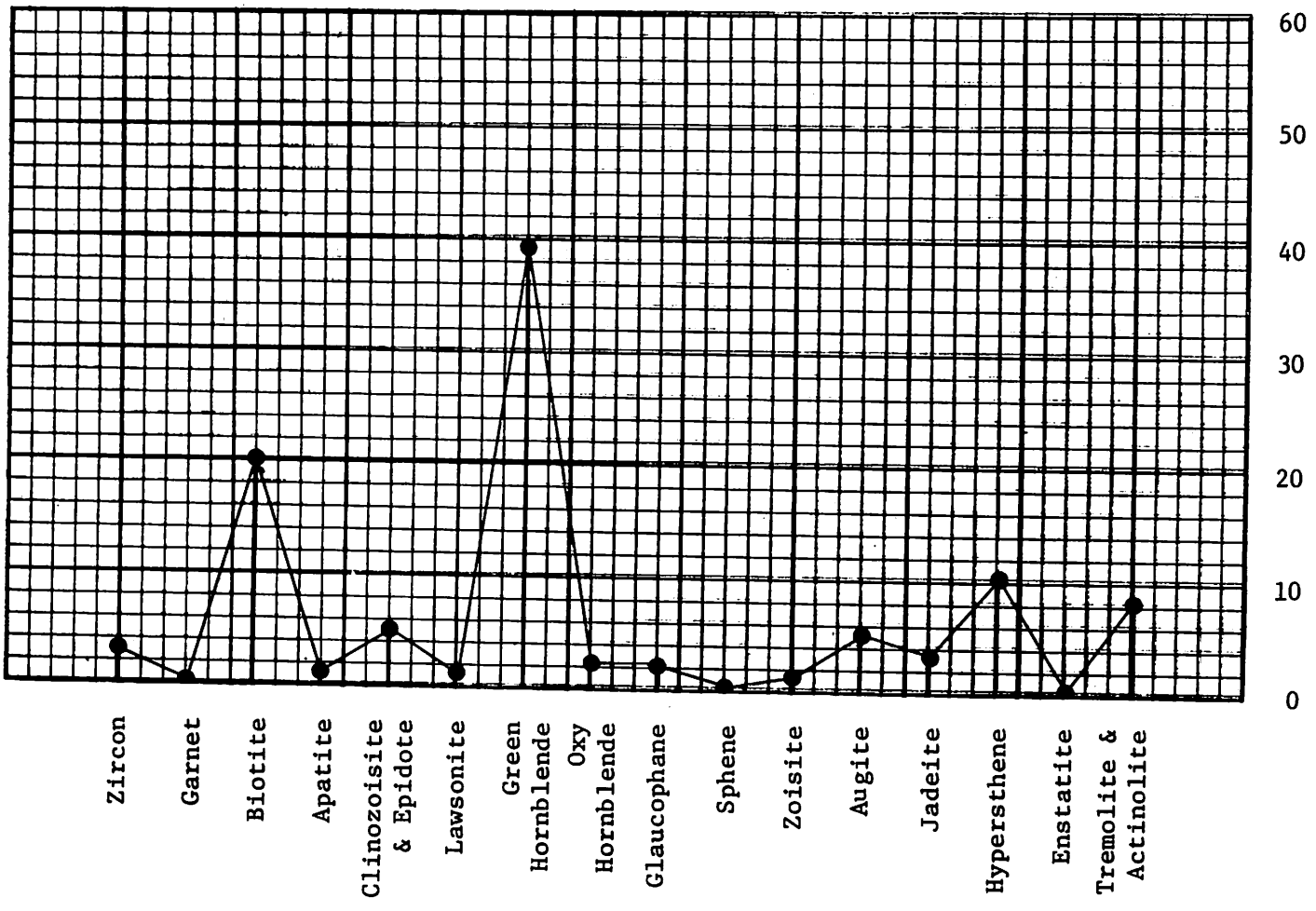
Wt. % of HM/SF 0.24

Total Grains Counted 220

% Transparent Grains 59.6

% Opaques 4.5

% Alterites and Unknowns 35.9



Other Transparent Minerals

Mineral	No. Grains Counted
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	3
Rock Frag.	6

Analyst C. Isselhardt

SAMPLE 1984

Location 37°53'42"N 122°39'3"W

Depth 11.58 meters 6.33 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 58.99

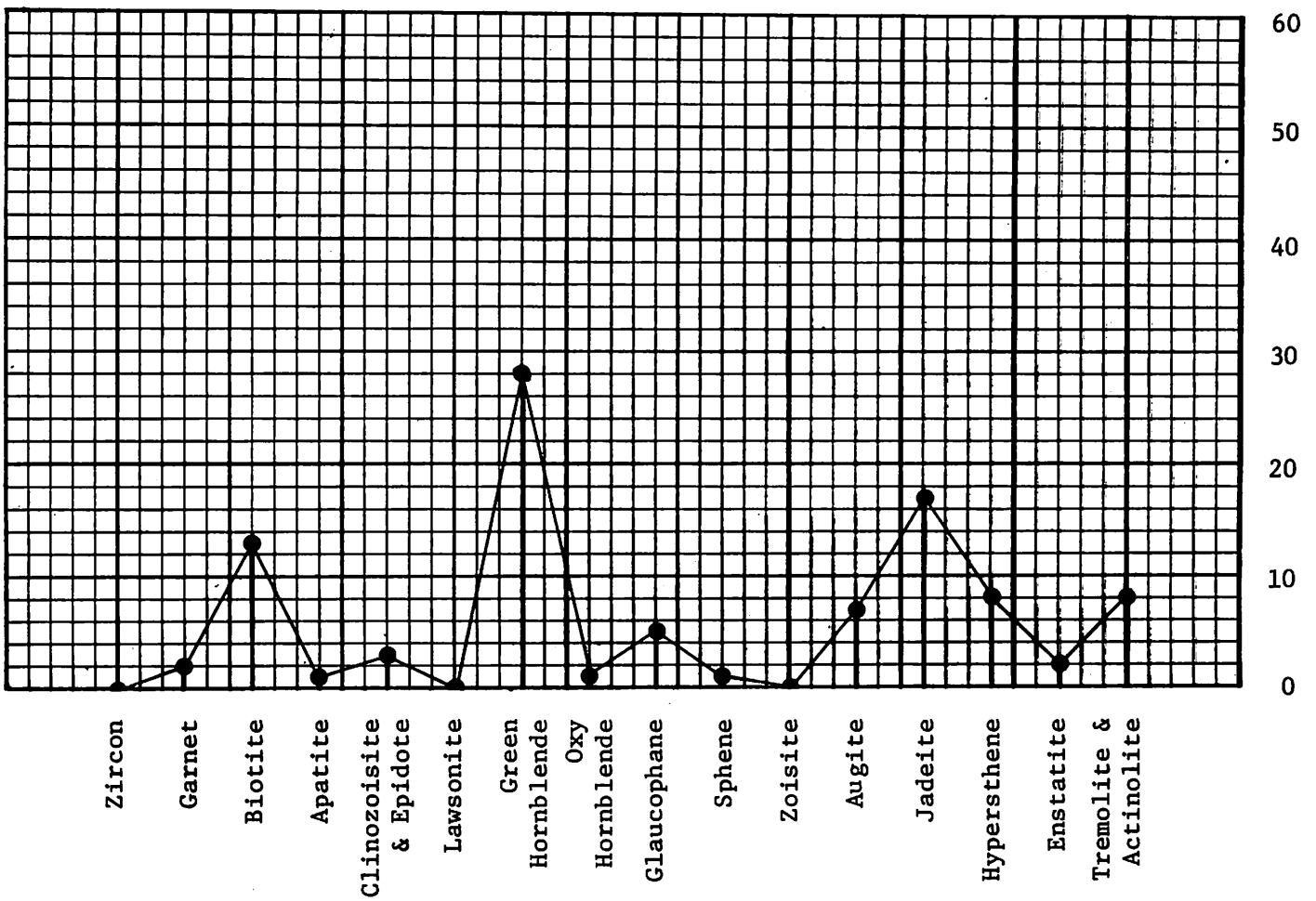
Wt. % of HM/SF 0.79

Total Grains Counted 172

% Transparent Grains 63.9

% Opaques 4.7

% Alterites and Unknowns 31.4



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	2
Carbonate	2
Pumpellyite	1

Other Opaque Minerals

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

Analyst C. Isselhardt

SAMPLE 1984

Location 37°53'42"N 122°39'3"W

Depth 11.58 meters 6.33 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 19.47

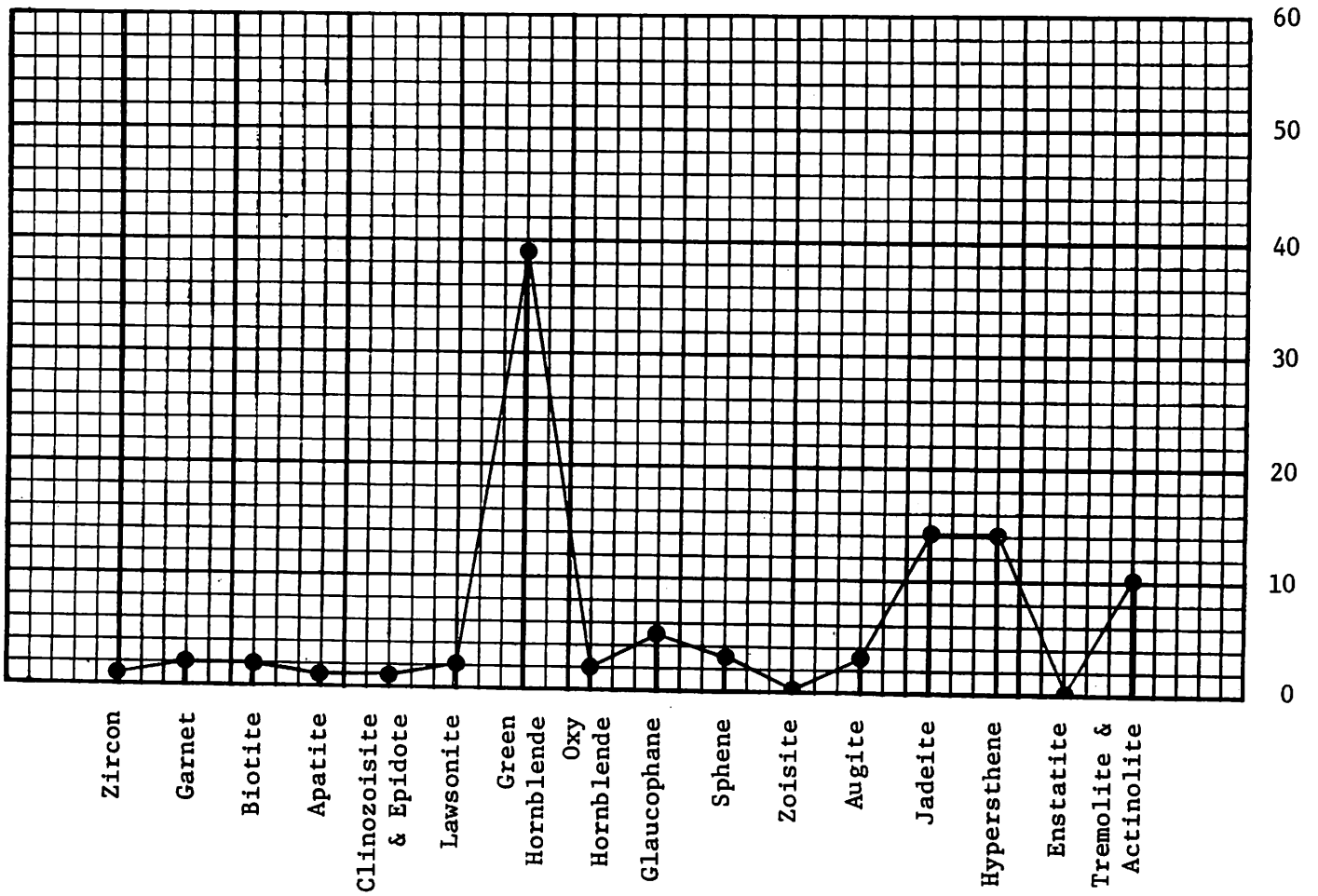
Wt. % of HM/SF 2.22

Total Grains Counted 184

% Transparent Grains 57.1

% Opaques 11.4

% Alterites and Unknowns 31.5



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	7
Rock Frag.	11

Analyst C. Isselhardt

SAMPLE 1985

Location 37°53'25"N 122°38'44"W

Depth 12.80 meters 7.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 8.36

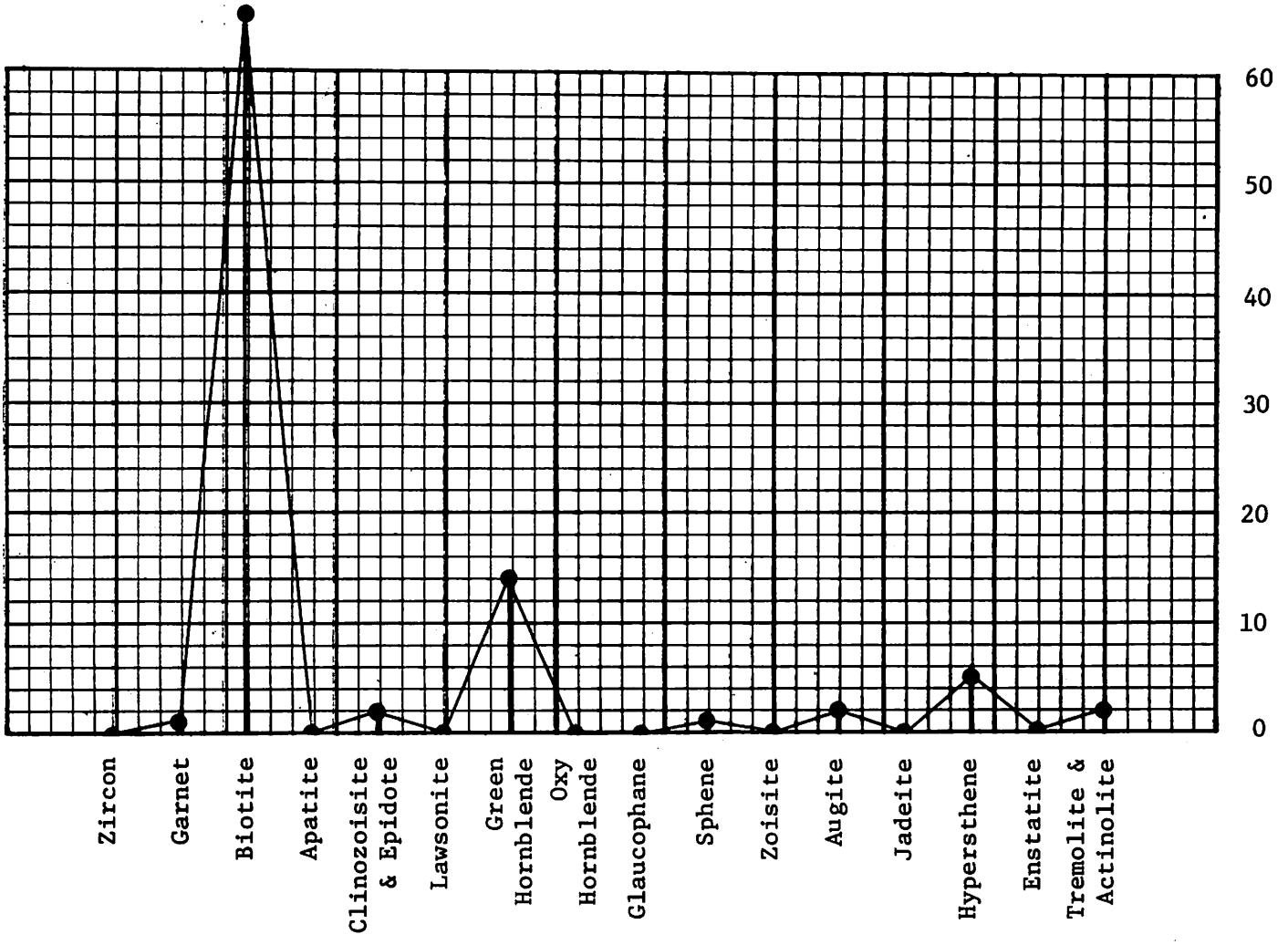
Wt. % of HM/SF 0.51

Total Grains Counted 203

% Transparent Grains 62

% Opaques 9

% Alterites and Unknowns 29



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	7
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	4
Rock Frag.	12

Analyst L. Osuch

SAMPLE 1985

Location 37°53'25"N 122°38'44"W

Depth 12.80 meters 7.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 48.10

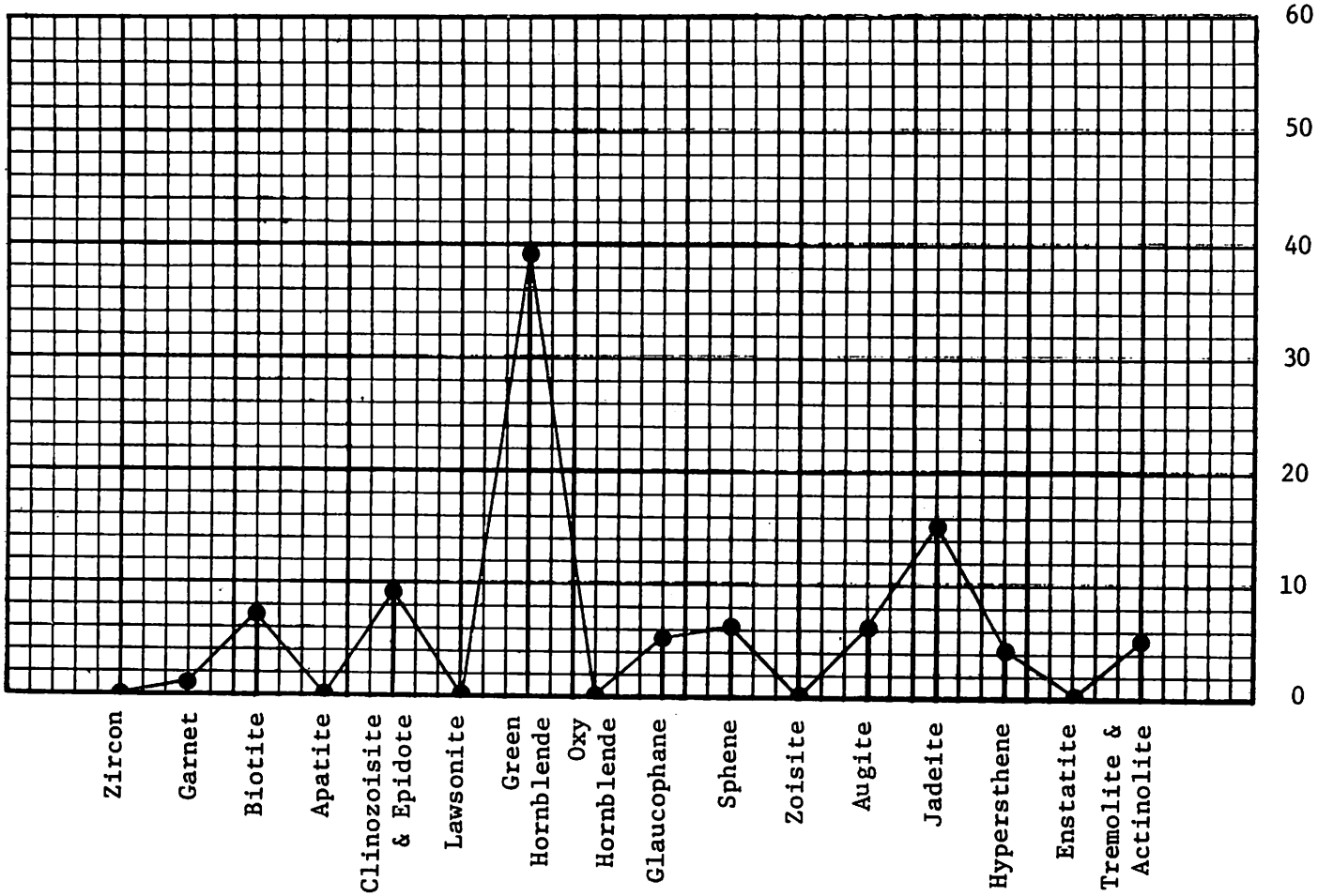
Wt. % of HM/SF 0.38

Total Grains Counted 170

% Transparent Grains 64

% Opaques 13

% Alterites and Unknowns 24



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	5
Picotite	1
Rock Frag.	13

Analyst L. Osuch

SAMPLE 1985

Location 37°53'25"N 122°38'44"W

Depth 12.80 meters 7.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 26.41

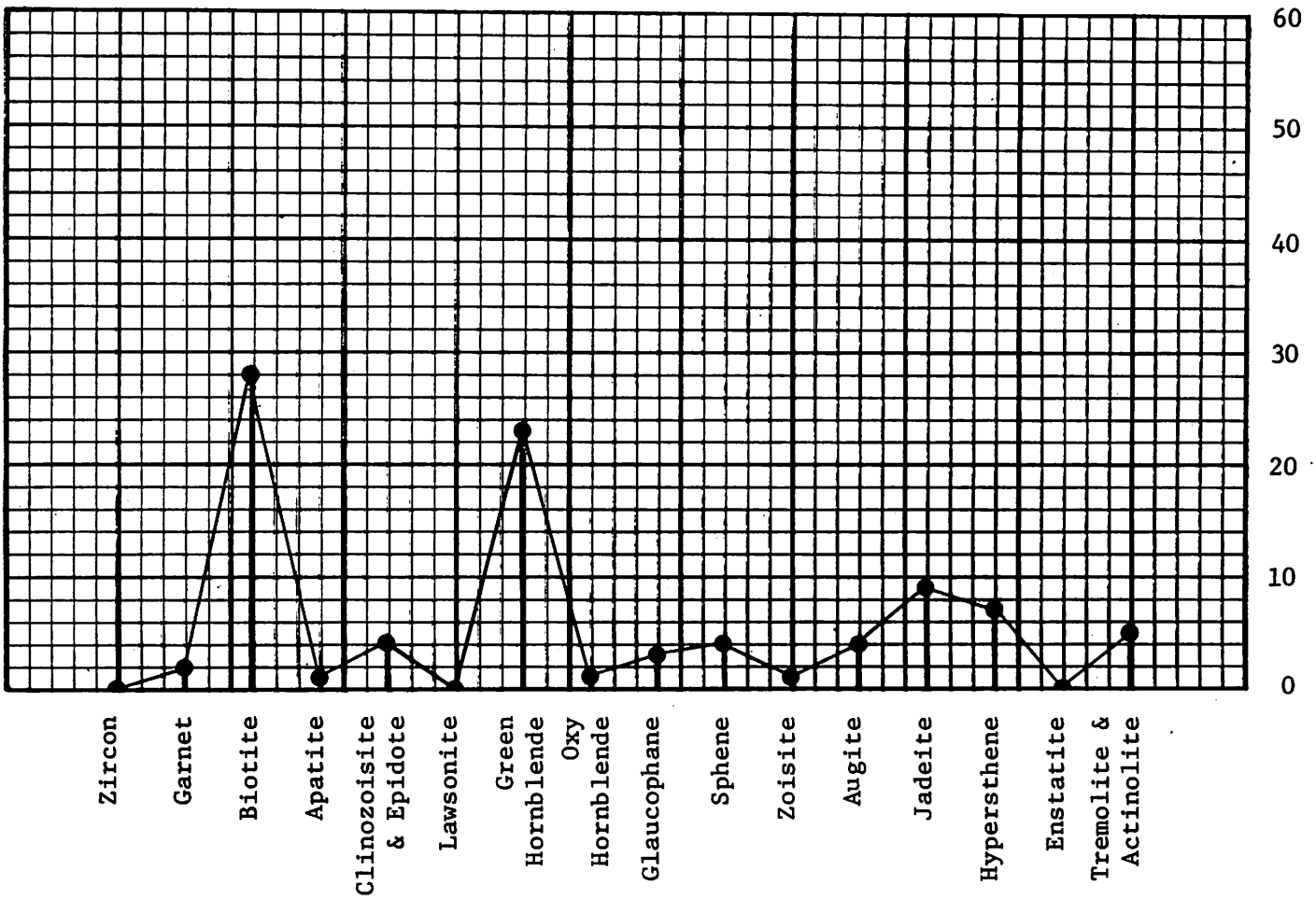
Wt. % of HM/SF 4.77

Total Grains Counted 351

% Transparent Grains 39

% Opaques 8

% Alterites and Unknowns 53



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	5
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	6
Magnetite	13
Picotite	2
Rock Frag.	6

Analyst L. Osuch

SAMPLE 1986

Location 37°53'10"N 122°38'13"W

Depth 12.80 meters 7.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 16.08

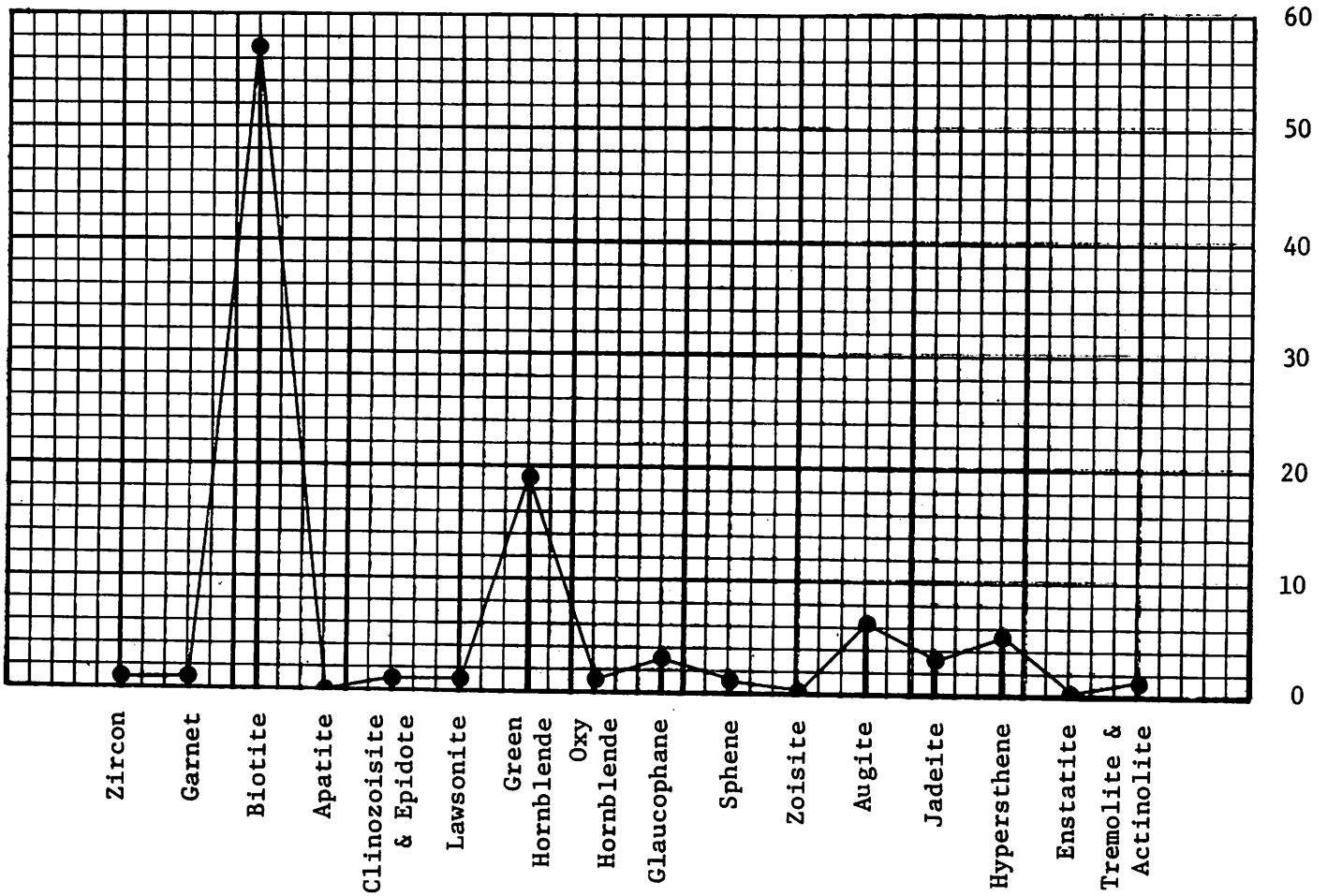
Wt. % of HM/SF 0.23

Total Grains Counted 508

% Transparent Grains 46.3

% Opaques 7.3

% Alterites and Unknowns 46.4



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	5

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	18
Magnetite	8
Pyrite	2
Rock Frag.	5

Analyst T. Yancey

SAMPLE 1986

Location 37°53'10"N 122°38'13"W

Depth 12.80 meters 7.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 61.00

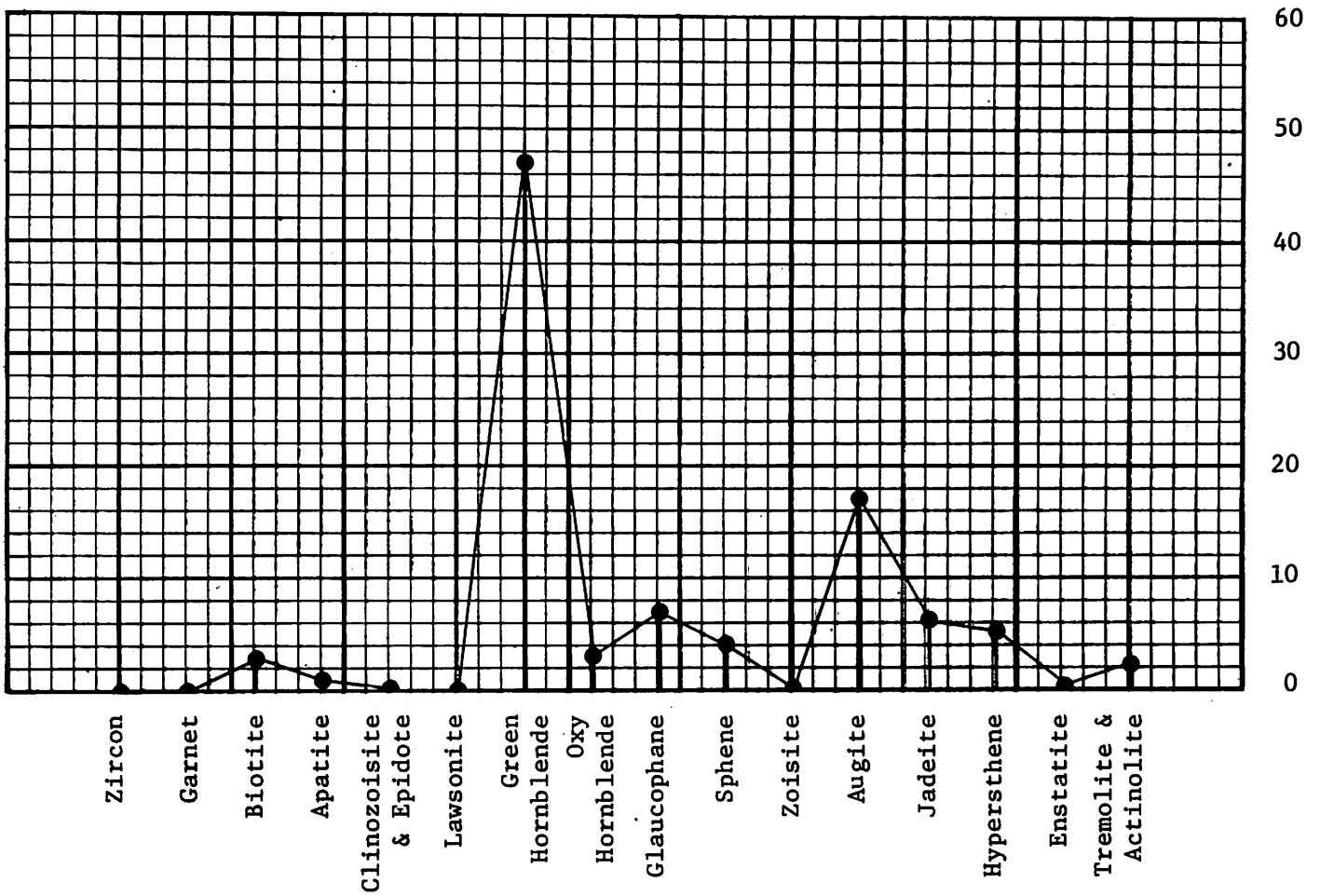
Wt. % of HM/SF 0.62

Total Grains Counted 331

% Transparent Grains 30.2

% Opaques 9.4

% Alterites and Unknowns 60.4



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	5

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	10
Magnetite	12
Picotite	3
Pyrite	1
Rock Frag.	5

Analyst T. Yancey

SAMPLE 1986

Location 37°53'10"N 122°38'13"W

Depth 12.80 meters 7.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 15.23

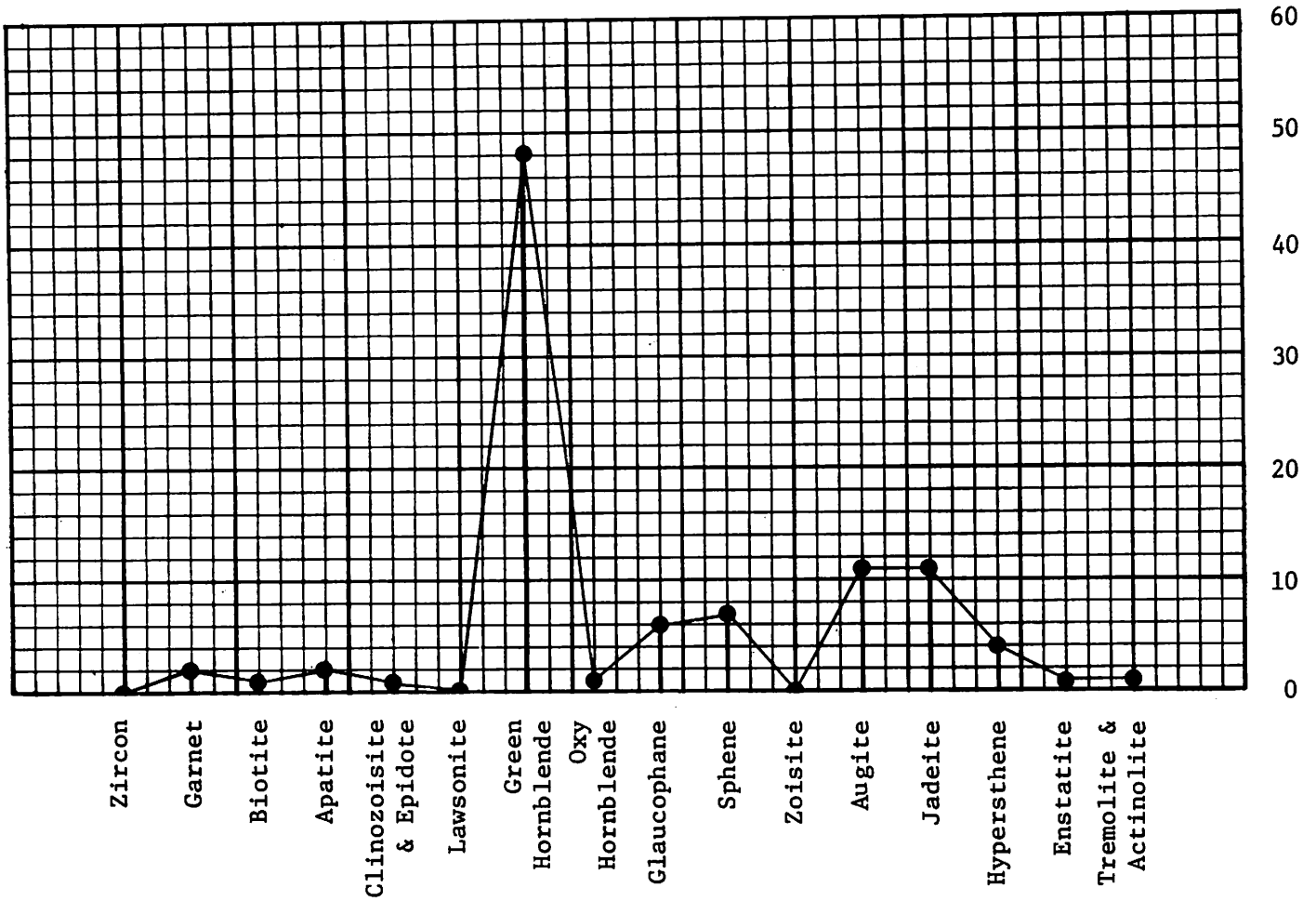
Wt. % of HM/SF 3.13

Total Grains Counted 199

% Transparent Grains 49.3

% Opaques 9.0

% Alterites and Unknowns 41.7



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	14
Picotite	3

Analyst T. Yancey

SAMPLE 1987

Location 37°52'58"N 122°37'58"W

Depth 12.50 meters 6.83 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 34.76

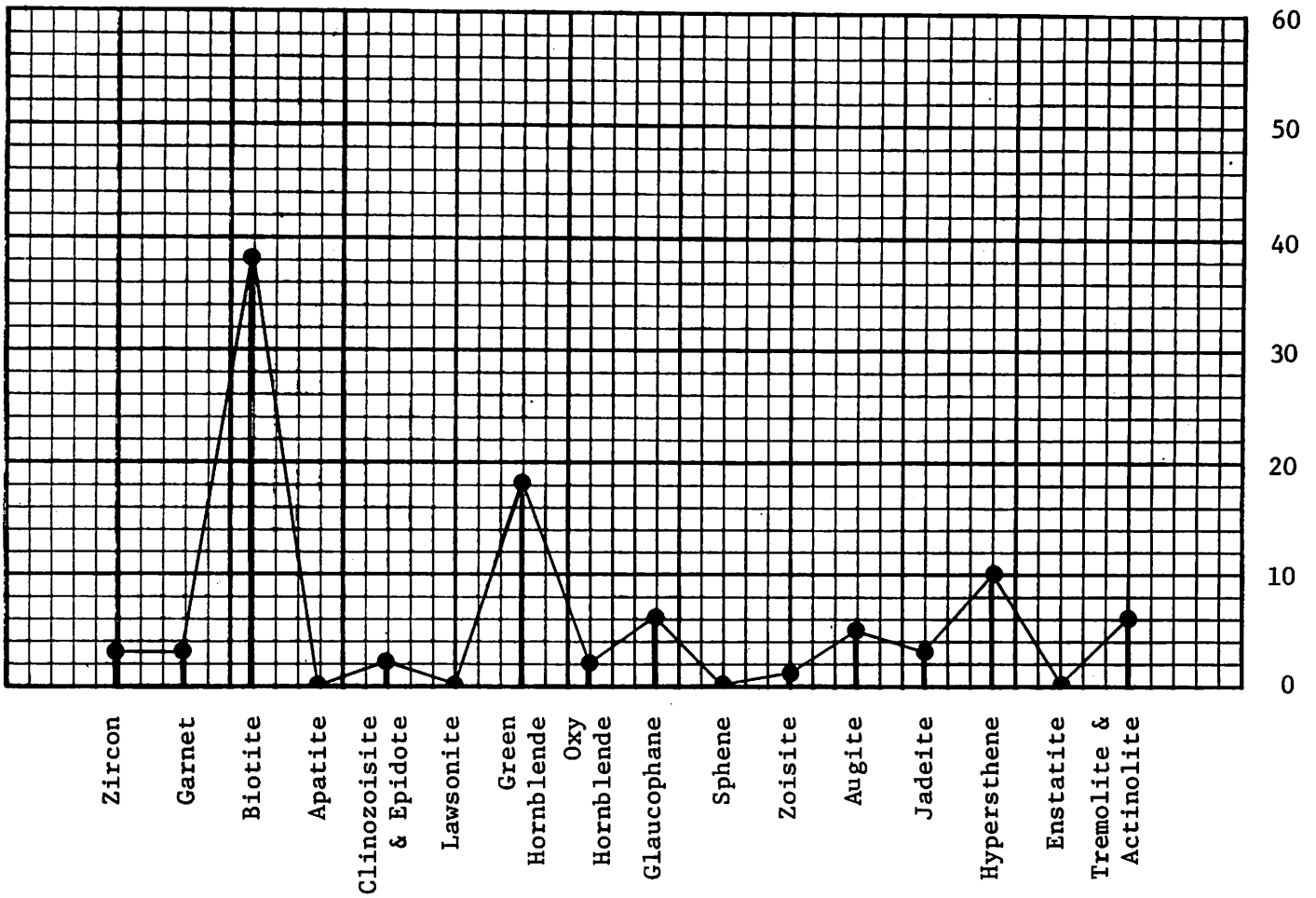
Wt. % of HM/SF 0.19

Total Grains Counted 212

% Transparent Grains 50.9

% Opaques 9.9

% Alterites and Unknowns 39.2



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	6
Carbonate	2
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	11
Magnetite	3
Rock Frag.	7

Analyst C. Isselhardt

SAMPLE 1987

Location 37°52'58"N 122°37'58"W

Depth 12.50meters 6.83 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 49.27

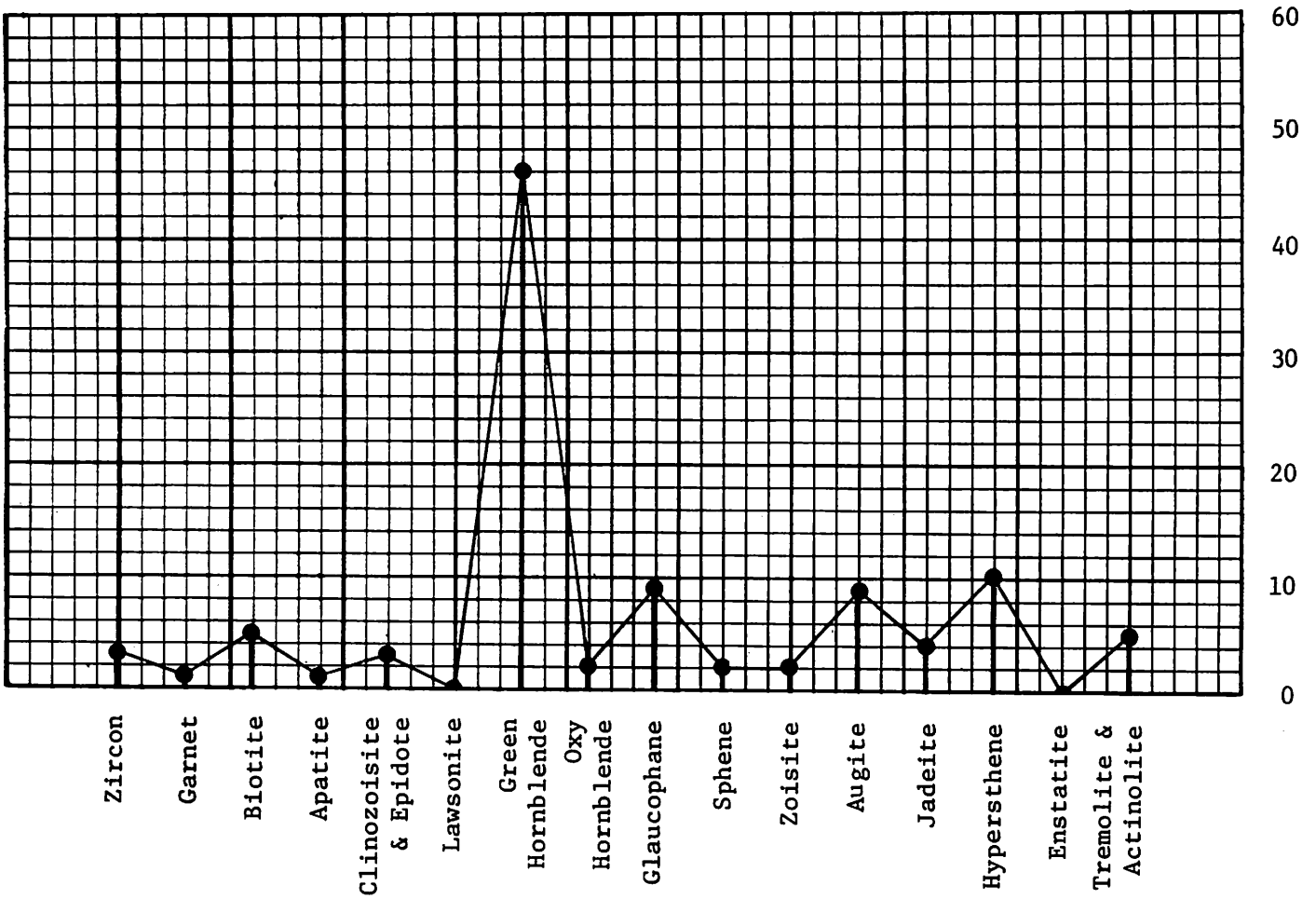
Wt. % of HM/SF 1.28

Total Grains Counted 271

% Transparent Grains 38.8

% Opaques 4.8

% Alterites and Unknowns 56.4



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	3
Picotite	1
Rock Frag.	7

Analyst C. Isselhardt

SAMPLE 1987

Location 37°52'58"N 122°37'58"W

Depth 12.50 meters 6.83 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 4.36

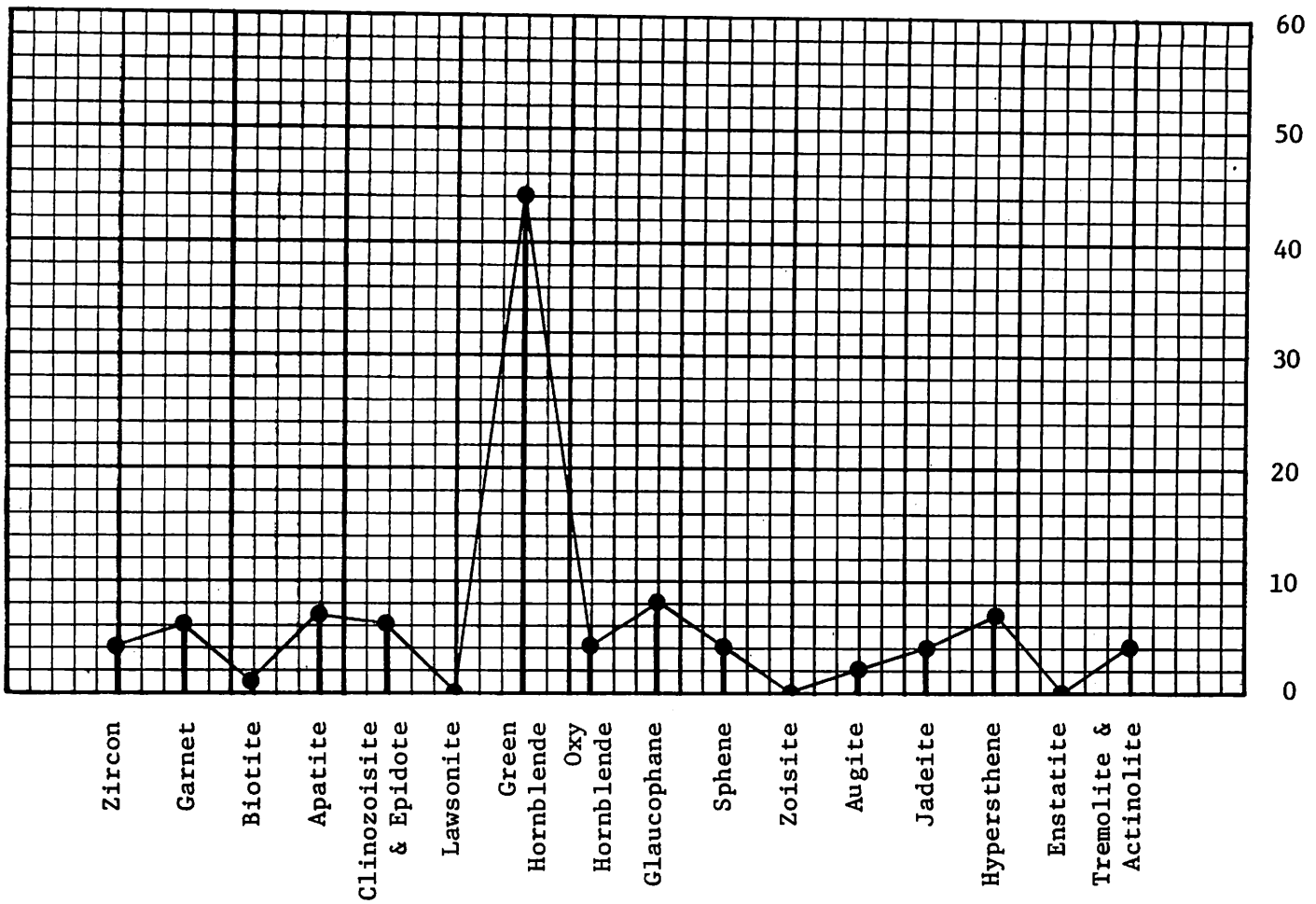
Wt. % of HM/SF 12.17

Total Grains Counted 228

% Transparent Grains 49.6

% Opaques 11.4

% Alterites and Unknowns 39.0



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	6
Magnetite	8
Picotite	5
Rock Frag.	7

Analyst C. Isselhardt

SAMPLE 1989

Location 37°52'33"N 122°37'44"W

Depth 15.53 meters 8.50 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 46.00

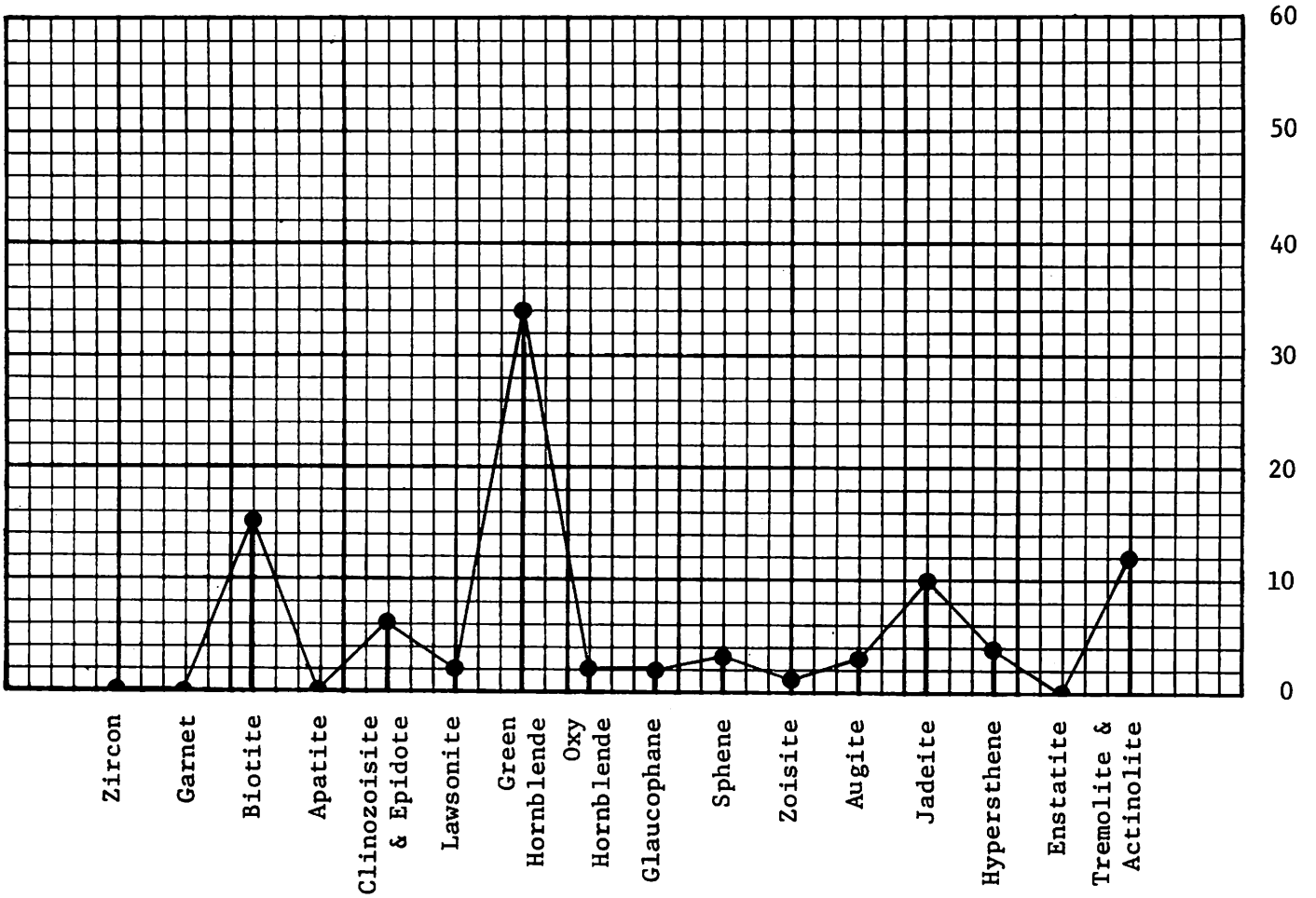
Wt. % of HM/SF 0.11

Total Grains Counted 281

% Transparent Grains 44

% Opaques 13

% Alterites and Unknowns 43



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	6

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	18
Magnetite	1
Picotite	2
Rock Frag.	16

Analyst L. Osuch

SAMPLE 1989

Location 37°52'33"N 122°37'44"W

Depth 15.53 meters 8.50 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 38.26

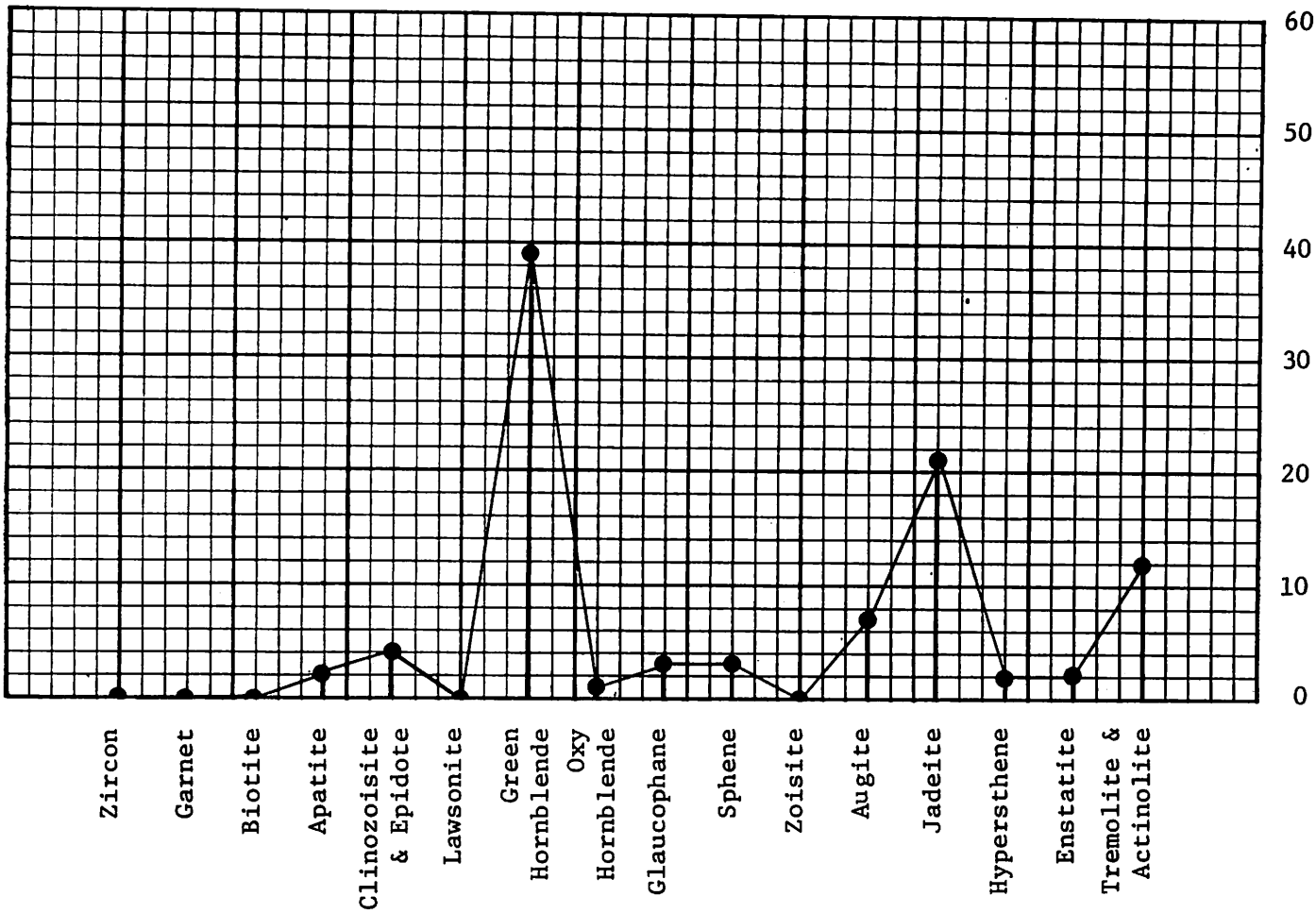
Wt. % of HM/SF 1.37

Total Grains Counted 246

% Transparent Grains 44

% Opaques 18

% Alterites and Unknowns 38



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	2
Rock Frag.	37

Analyst L. Osuch

SAMPLE 1989

Location 37°52'33"N 122°37'44"W

Depth 15.53 meters 8.50 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 2.92

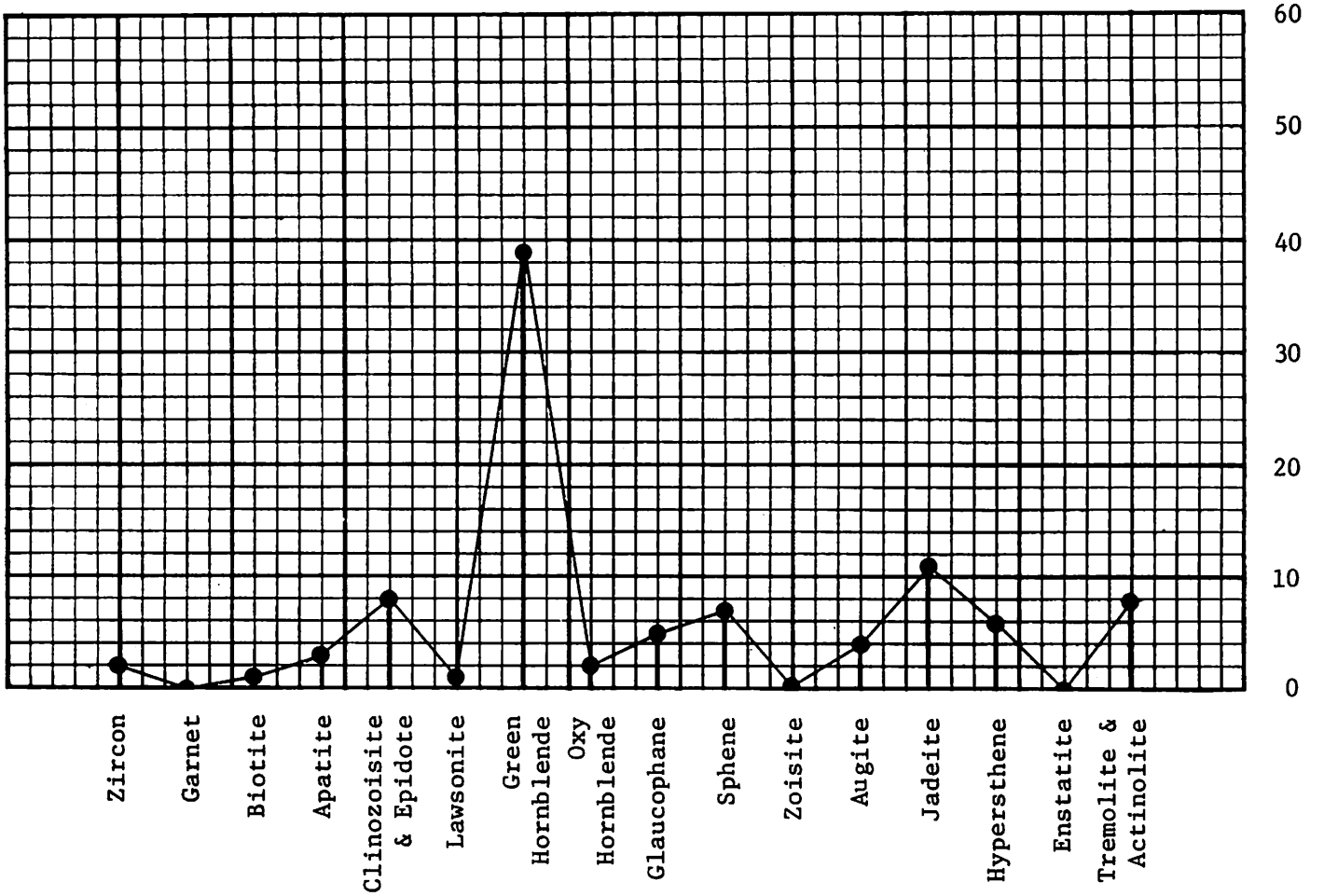
Wt. % of HM/SF 11.70

Total Grains Counted 146

% Transparent Grains 68

% Opaques 22

% Alterites and Unknowns 10



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	9
Picotite	8
Rock Frag.	12

Analyst L. Osuch

SAMPLE 1990

Location 37°52'45"N 122°37'57"W

Depth 15.22 meters 8.33 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 46.41

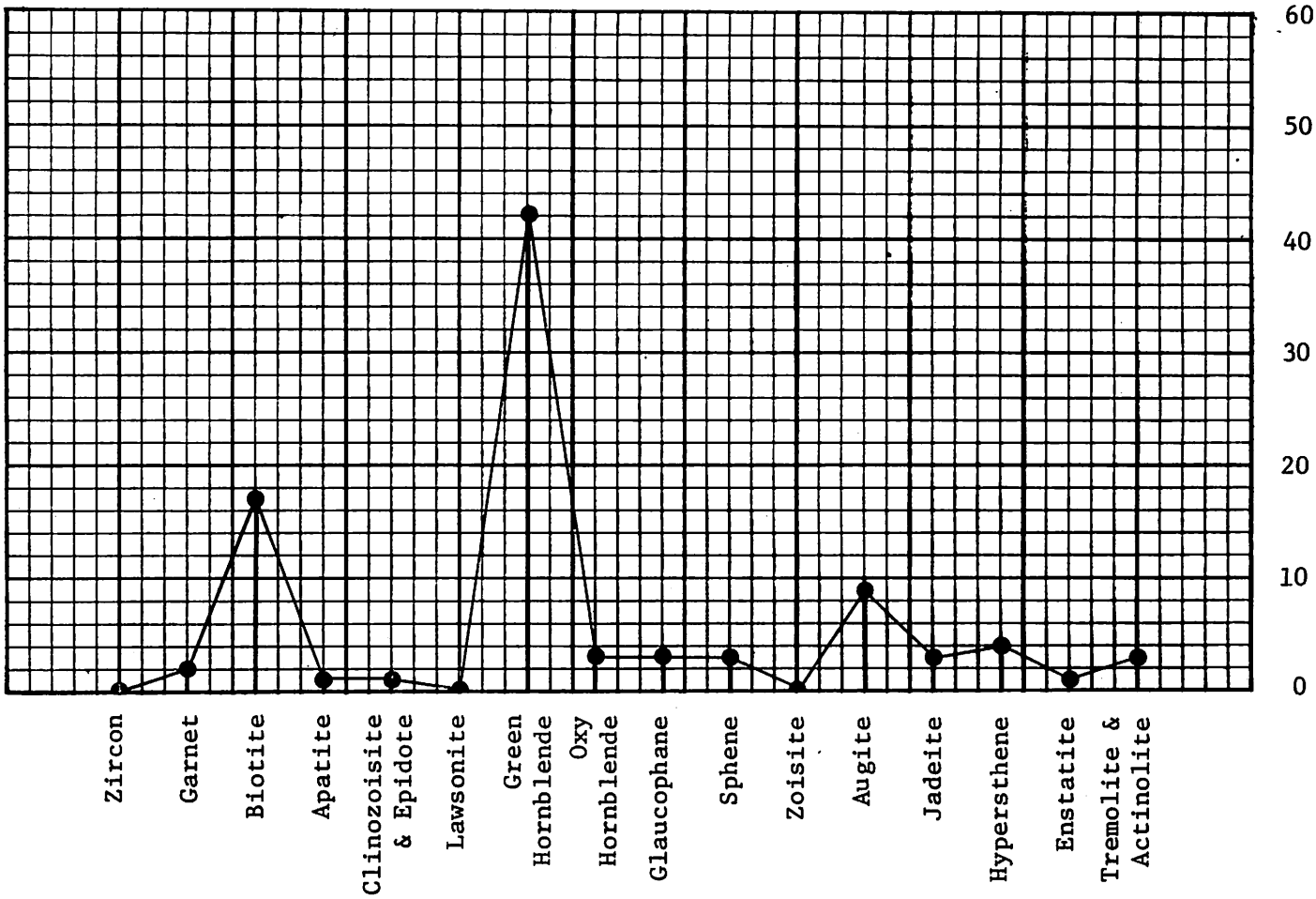
Wt. % of HM/SF 0.14

Total Grains Counted 289

% Transparent Grains 40.5

% Opaques 10.4

% Alterites and Unknowns 49.1



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Chlorite	2
Carbonate	5
Tourmaline	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	12
Magnetite	10
Picotite	3
Rock Frag.	5

Analyst T. Yancey

SAMPLE 1990

Location 37°52'45"N 122°37'57"W

Depth 15.22 meters 8.33 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 33.61

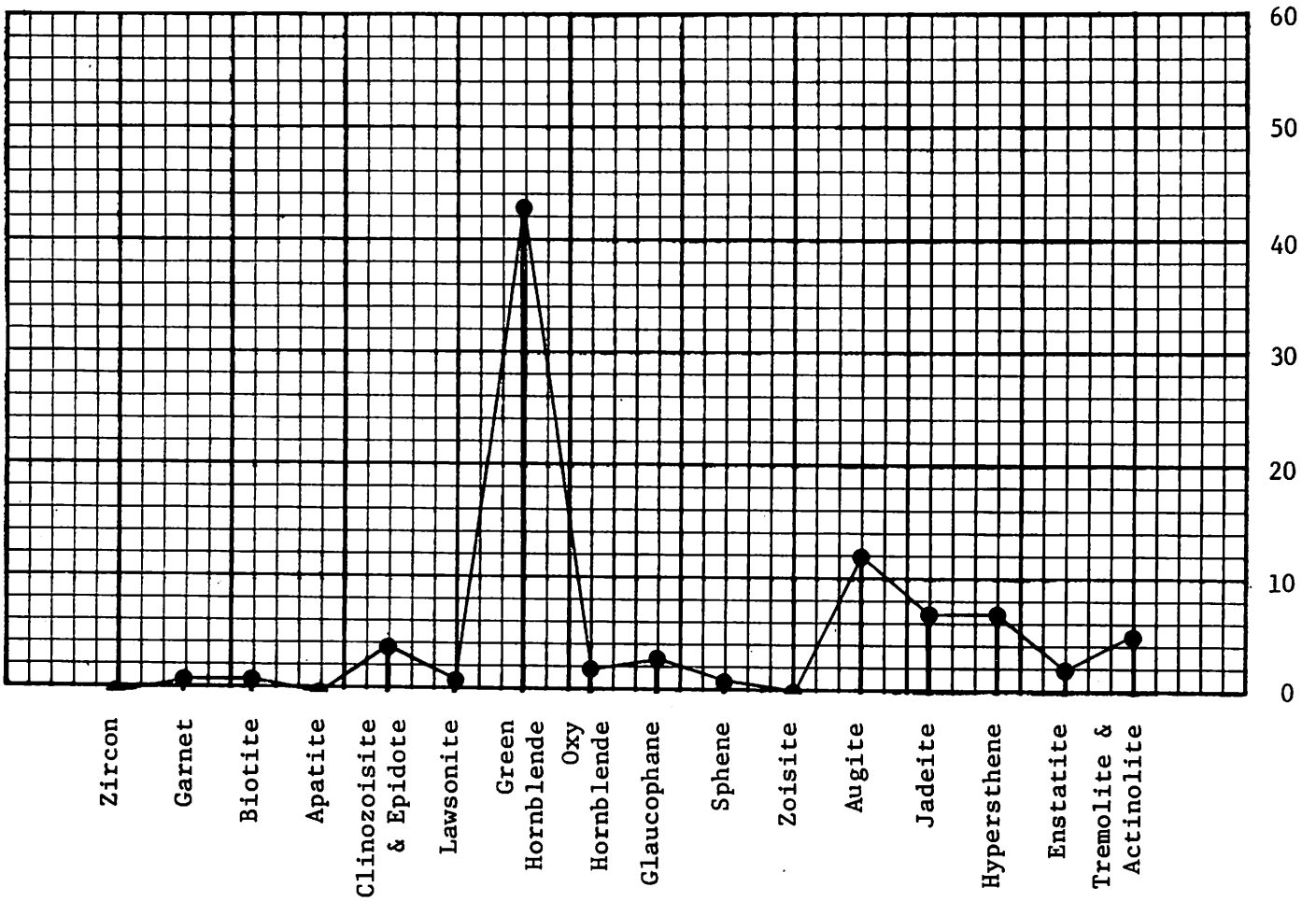
Wt. % of HM/SF 1.2

Total Grains Counted 299

% Transparent Grains 33.5

% Opaques 9.0

% Alterites and Unknowns 57.5



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Carbonate	9
Tourmaline	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	14
Picotite	1
Rock Frag.	8

Analyst T. Yancey

SAMPLE 1990

Location 37°52'45"N 122°37'57"W

Depth 15.22 meters 8.33 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 3.24

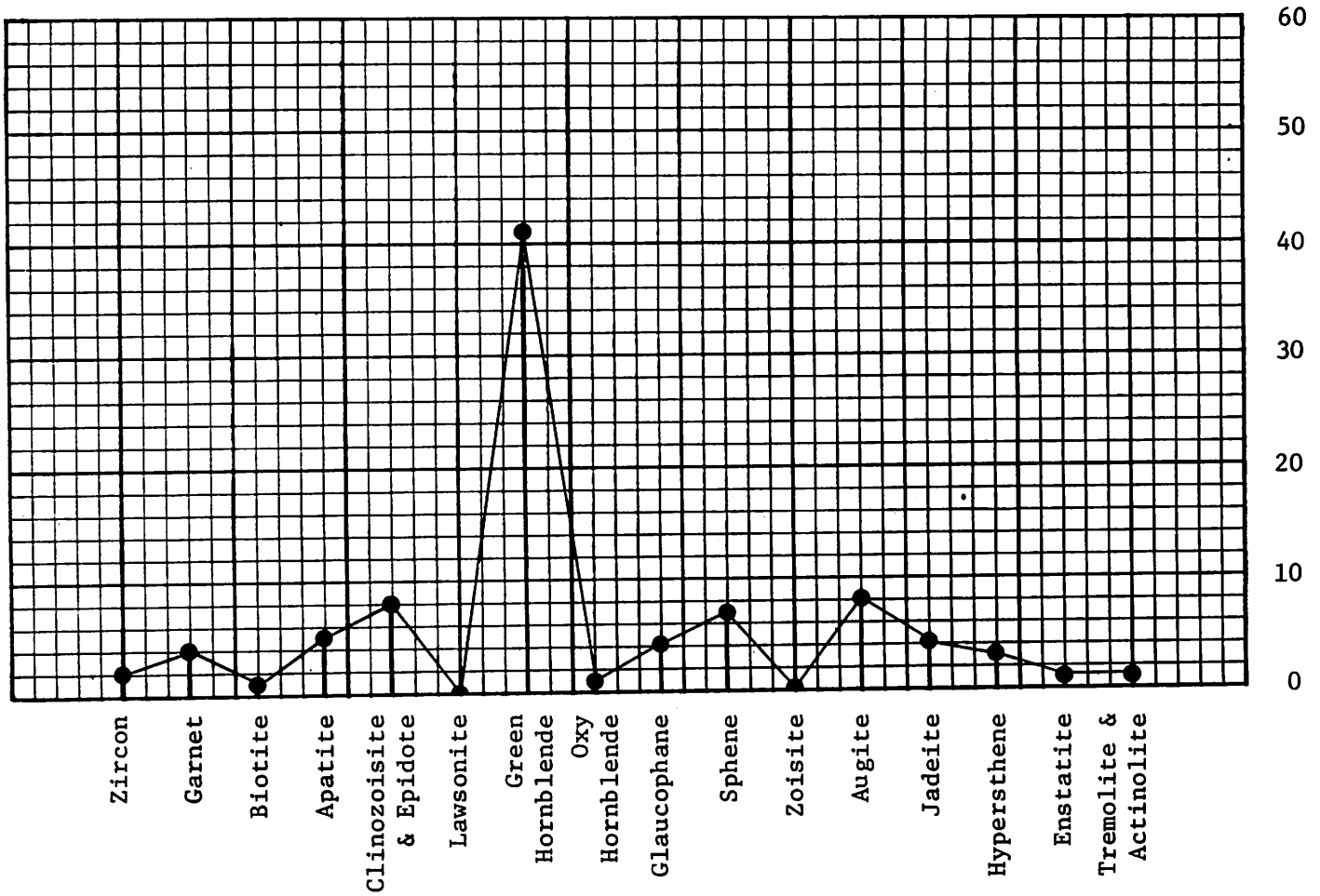
Wt. % of HM/SF 7.00

Total Grains Counted 185

% Transparent Grains 51.4

% Opaques 11.9

% Alterites and Unknowns 36.7



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	6

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	11
Picotite	6
Rock Frag.	3

Analyst T. Yancey

SAMPLE 1991

Location 37°53'N 122°38'12"W

Depth 15.22 meters 8.33 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 22.76

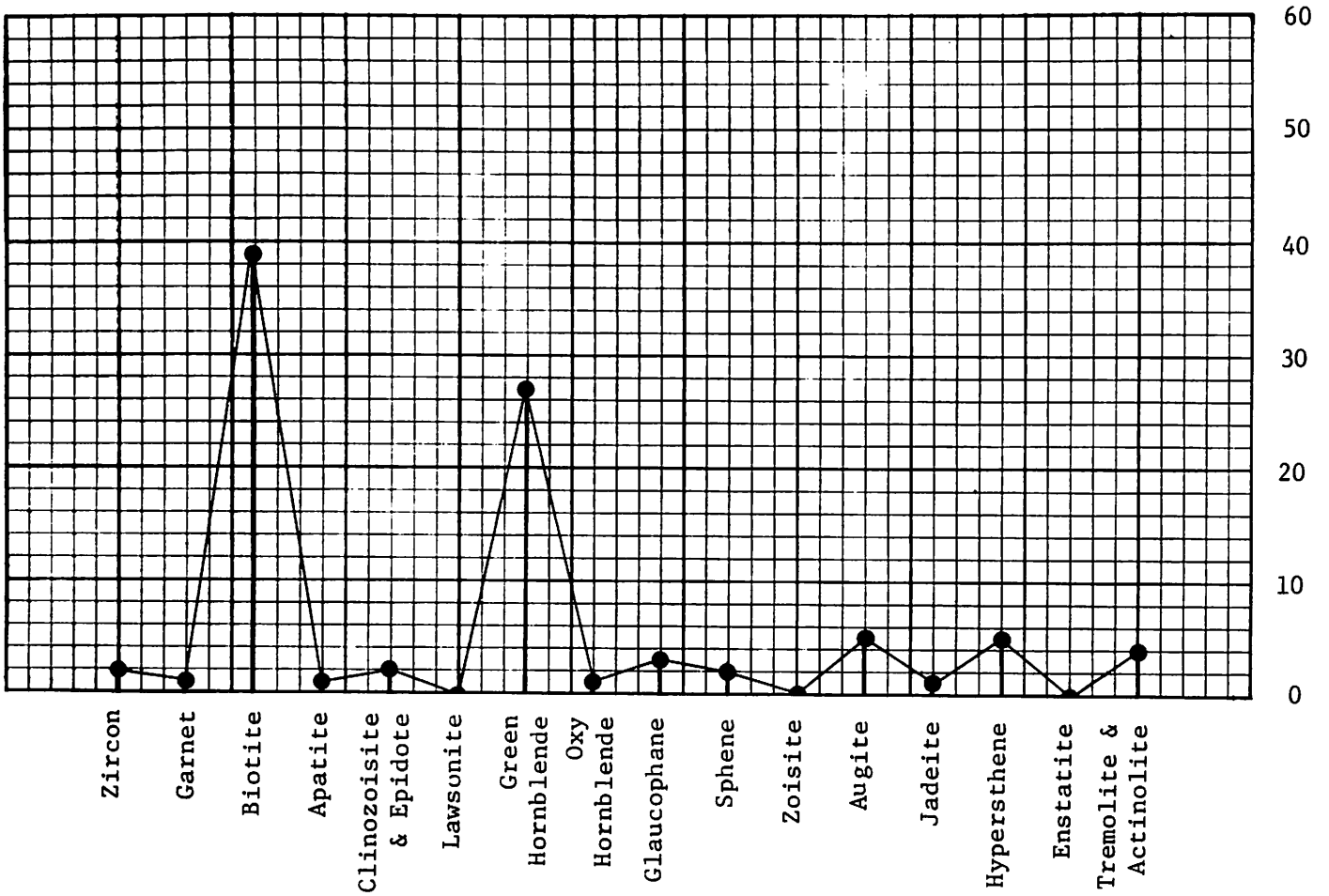
Wt. % of HM/SF 0.12

Total Grains Counted 196

% Transparent Grains 51.0

% Opaques 6.15

% Alterites and Unknowns 42.85



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	5
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	6
Magnetite	2
Rock Frag.	4

Analyst C. Isselhardt

SAMPLE 1991

Location 37°53'N 122°38'12"W

Depth 15.22 meters 8.33 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 60.92

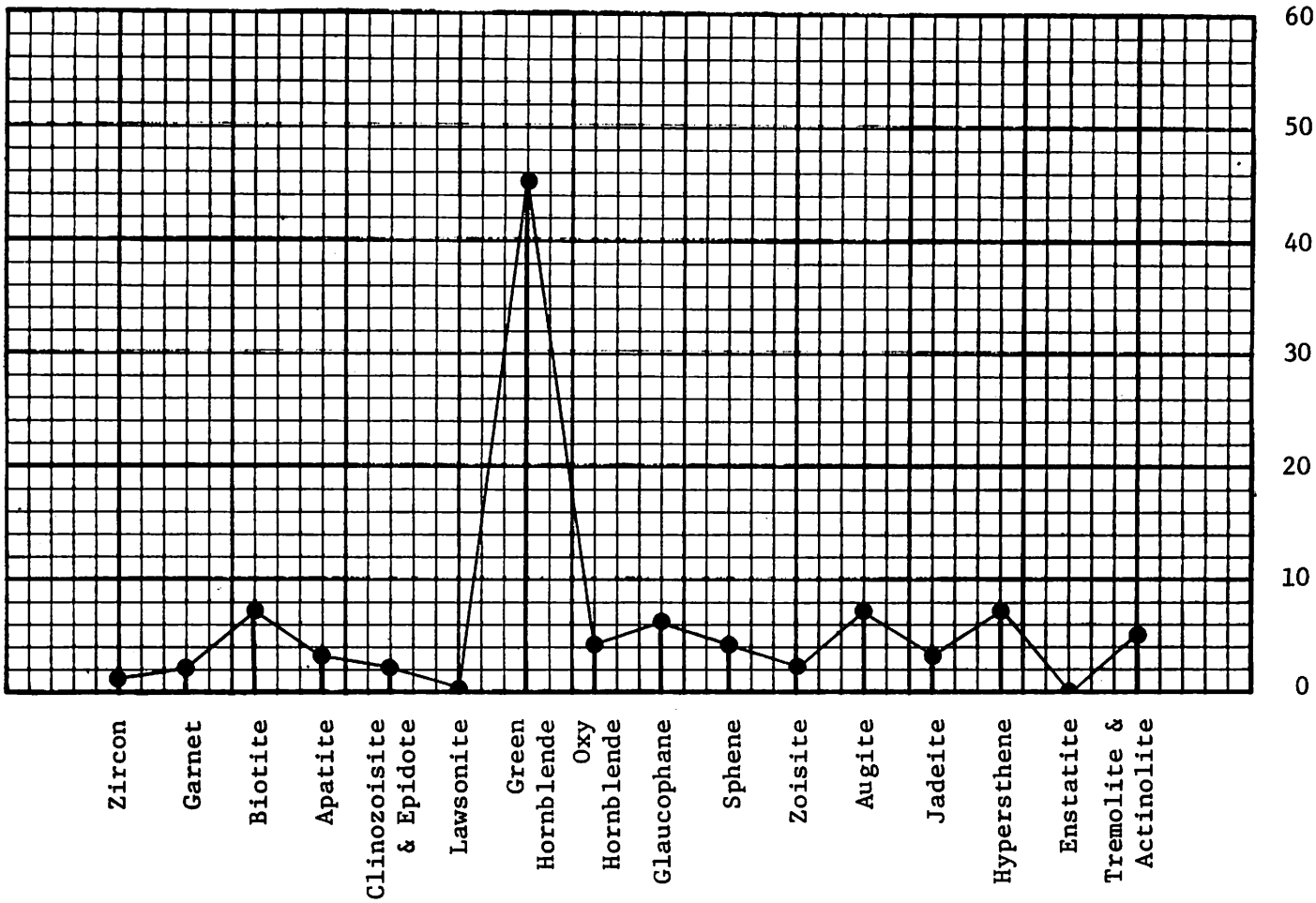
Wt. % of HM/SF 0.66

Total Grains Counted 218

% Transparent Grains 45.8

% Opaques 6.4

% Alterites and Unknowns 47.8



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	3
Picotite	1
Rock Frag.	6

Analyst C. Isselhardt

SAMPLE 1991

Location 37°53'N 122°38'12"W

Depth 15.22 meters 8.33 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 8.18

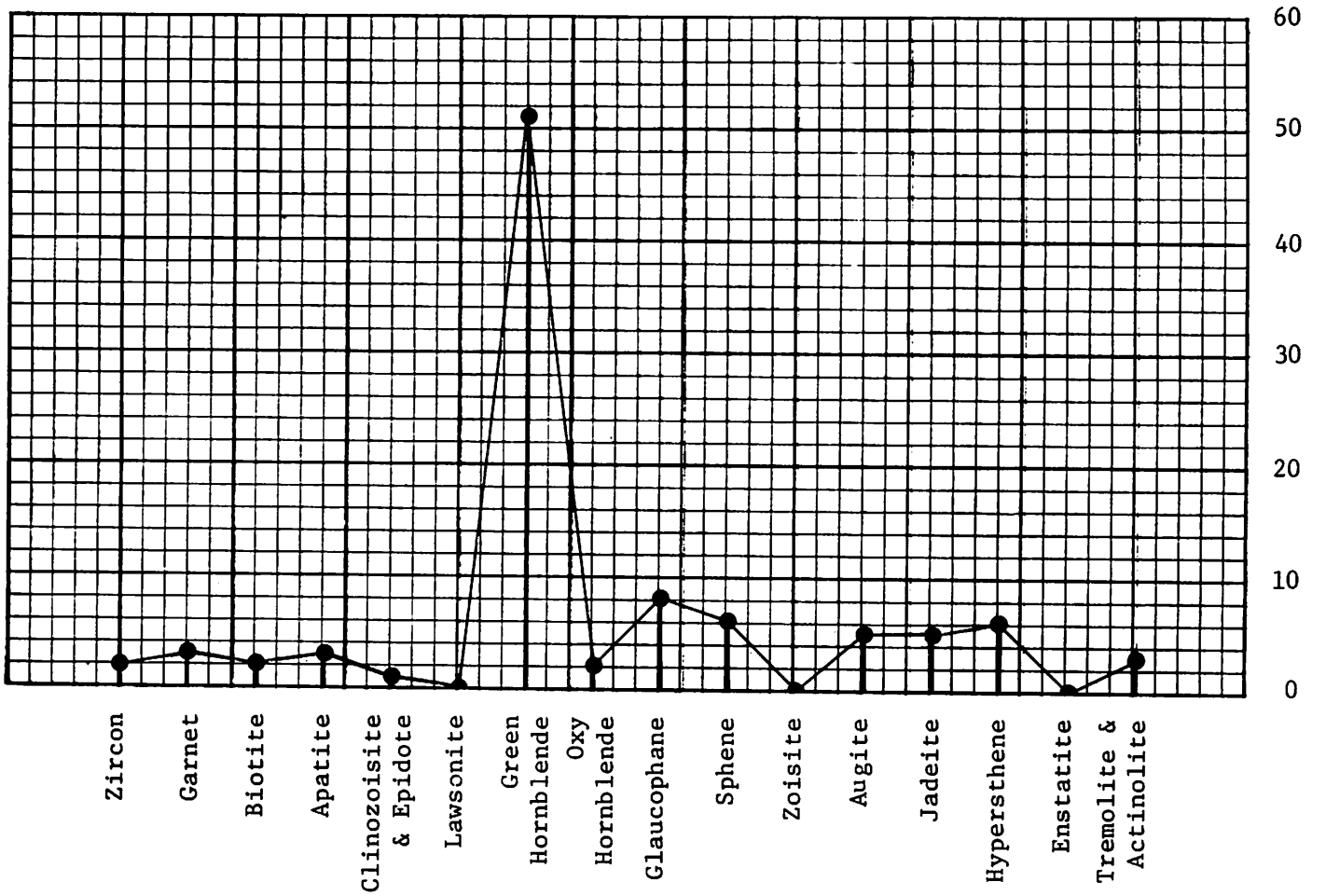
Wt. % of HM/SF 4.51

Total Grains Counted 181

% Transparent Grains 55.25

% Opaques 10.50

% Alterites and Unknowns 34.25



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	9
Picotite	2
Rock Frag.	4

Analyst C. Isselhardt

SAMPLE 1992

Location 37°53'12"N 122°38'31"W

Depth 14.93 meters 8.17 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 19.18

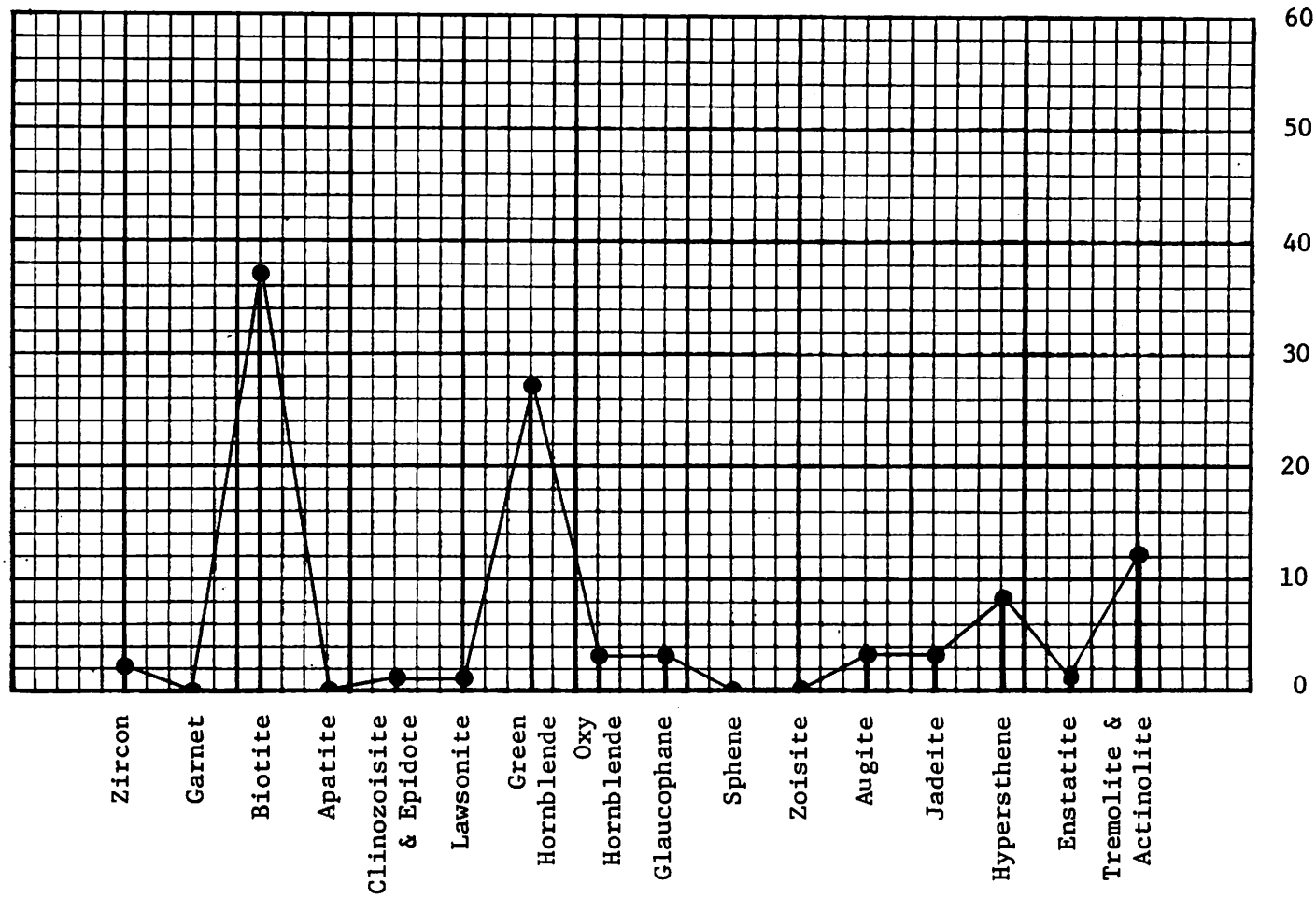
Wt. % of HM/SF 0.20

Total Grains Counted 225

% Transparent Grains 71

% Opaques 6

% Alterites and Unknowns 23



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	2
Picotite	1
Rock Frag.	7

Analyst L. Osuch

SAMPLE 1992

Location 37°53'12"N 122°38'31"W

Depth 14.93 meters 8.17 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 45.71

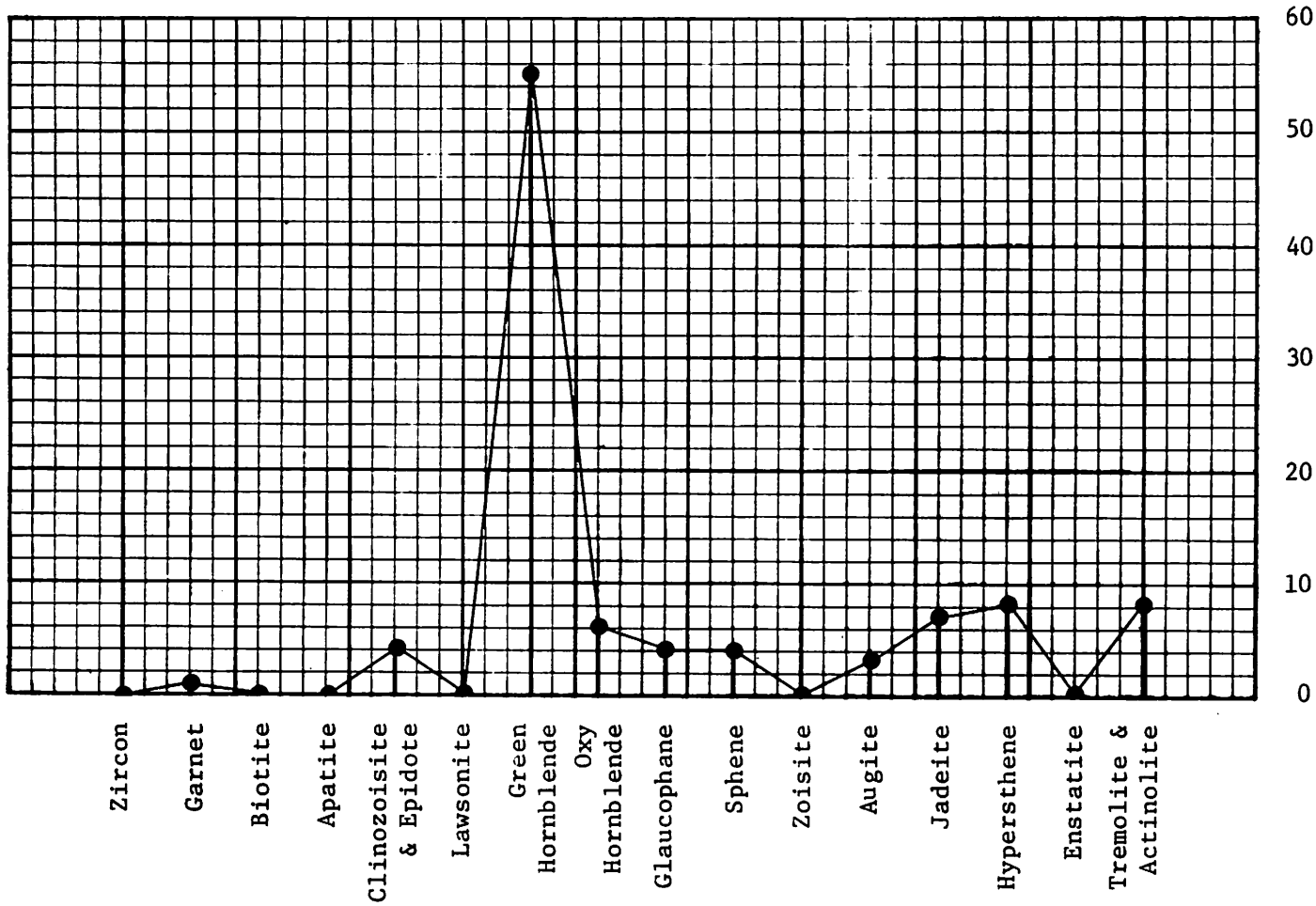
Wt. % of HM/SF 0.57

Total Grains Counted 159

% Transparent Grains 64

% Opaques 7

% Alterites and Unknowns 29



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Magnetite	2
Rock Frag.	10

Analyst L. Osuch

SAMPLE 1992

Location 37°53'12"N 122°38'31"W

Depth 14.93 meters 8.17 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 14.83

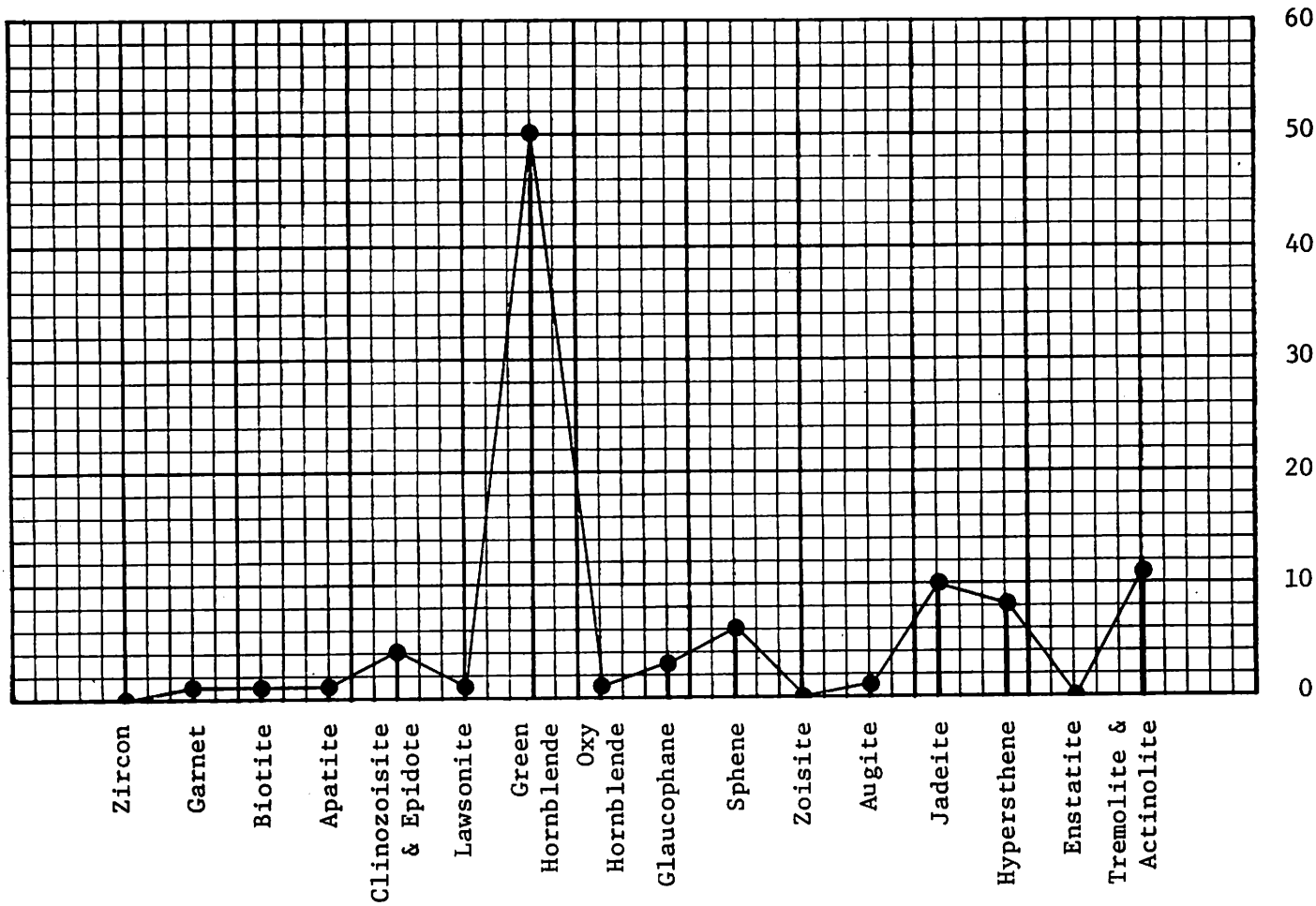
Wt. % of HM/SF 1.65

Total Grains Counted 171

% Transparent Grains 59

% Opaques 12

% Alterites and Unknowns 29



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	7
Picotite	2
Rock Frag.	8

Analyst L. Osuch

SAMPLE 1993

Location 37°53'29"N 122°39'00"W

Depth 13.41 meters 7.33 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 12.62

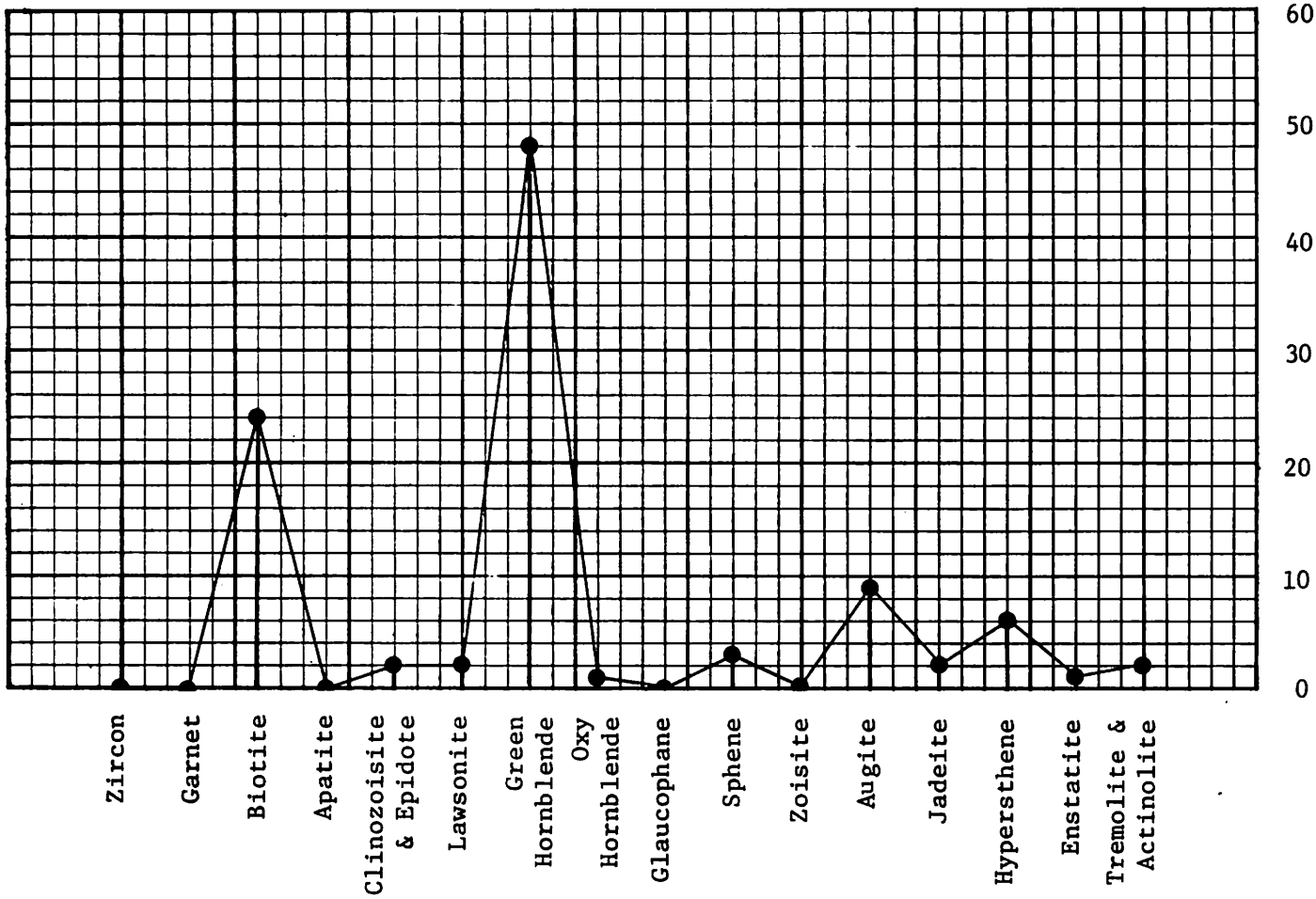
Wt. % of HM/SF 0.21

Total Grains Counted 244

% Transparent Grains 53.3

% Opaques 3.3

% Alterites and Unknowns 43.4



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth 13.41 meters 7.33 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 57.81

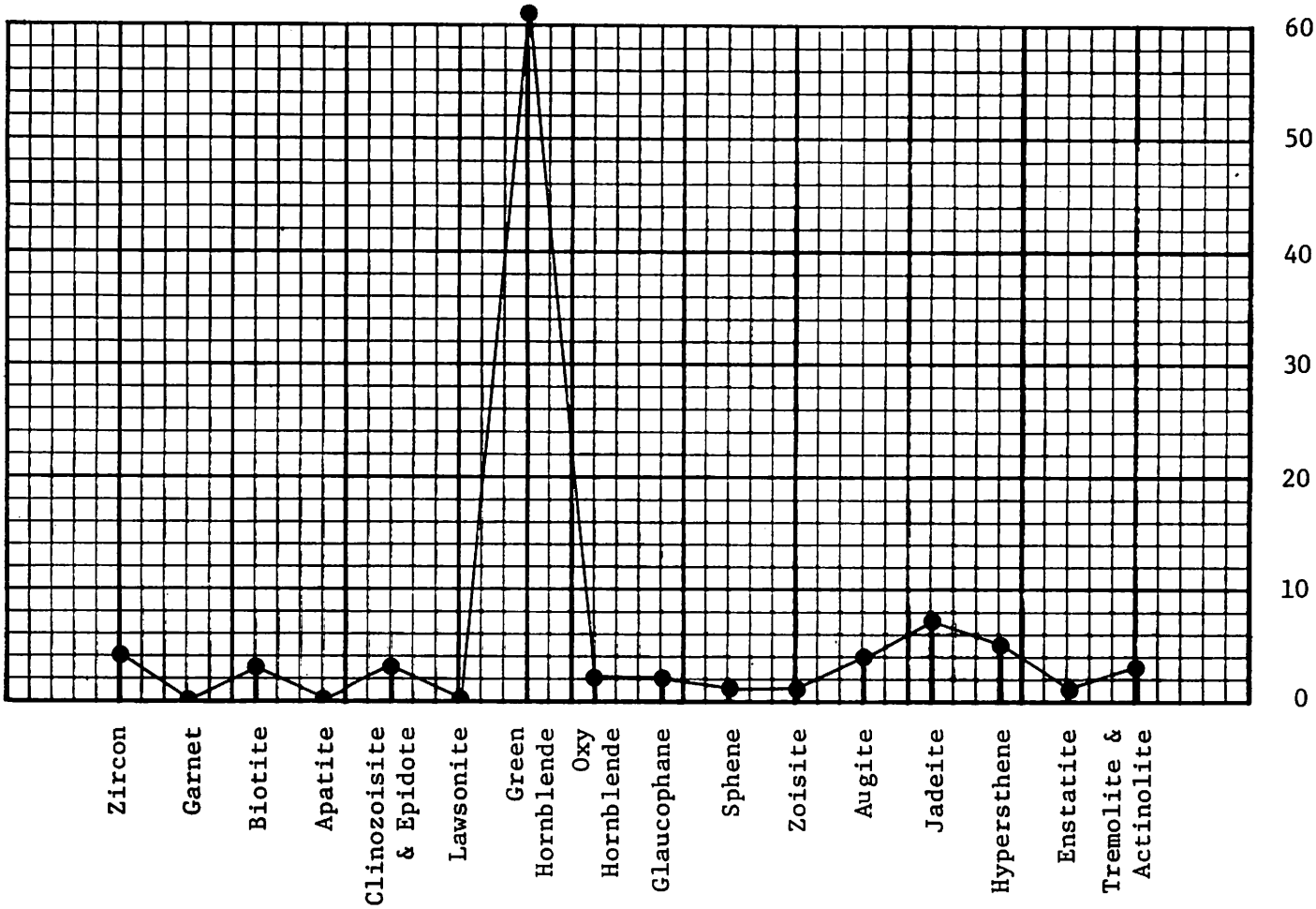
Wt. % of HM/SF 0.75

Total Grains Counted 211

% Transparent Grains 48.8

% Opaques 5.7

% Alterites and Unknowns 45.5



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	5
Rock Frag.	3

Analyst T. Yancey

SAMPLE 1993

Location 37°53'29"N 122°39'00"W

Depth 13.41 meters 7.33 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 17.50

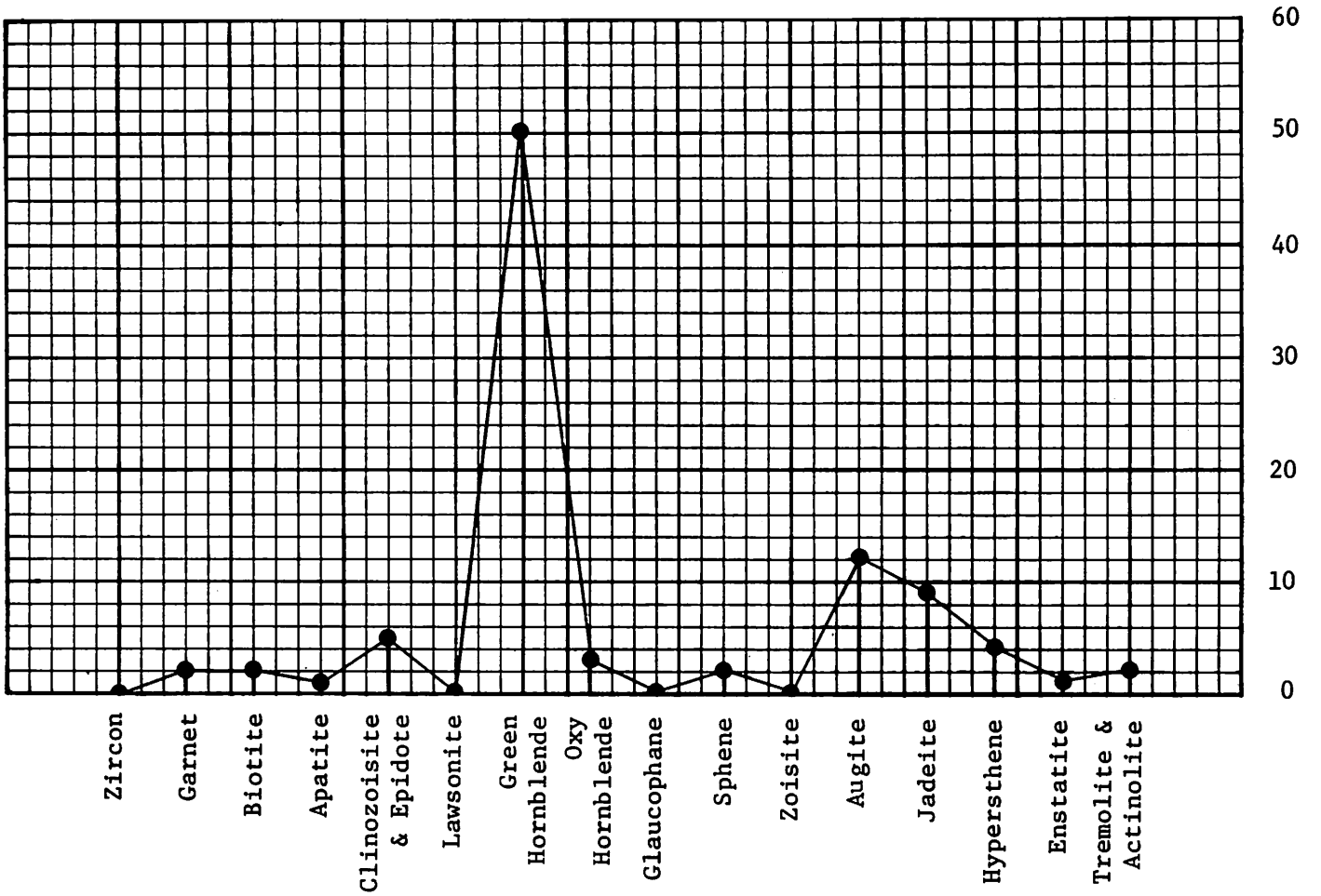
Wt. % of HM/SF 2.46

Total Grains Counted 210

% Transparent Grains 46.7

% Opaques 11.4

% Alterites and Unknowns 41.9



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	5

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	11
Picotite	4
Rock Frag.	4

Analyst T. Yancey

SAMPLE 1994

Location 37°53'41"N 122°39'21"W

Depth 11.88 meters 6.5 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 17.18

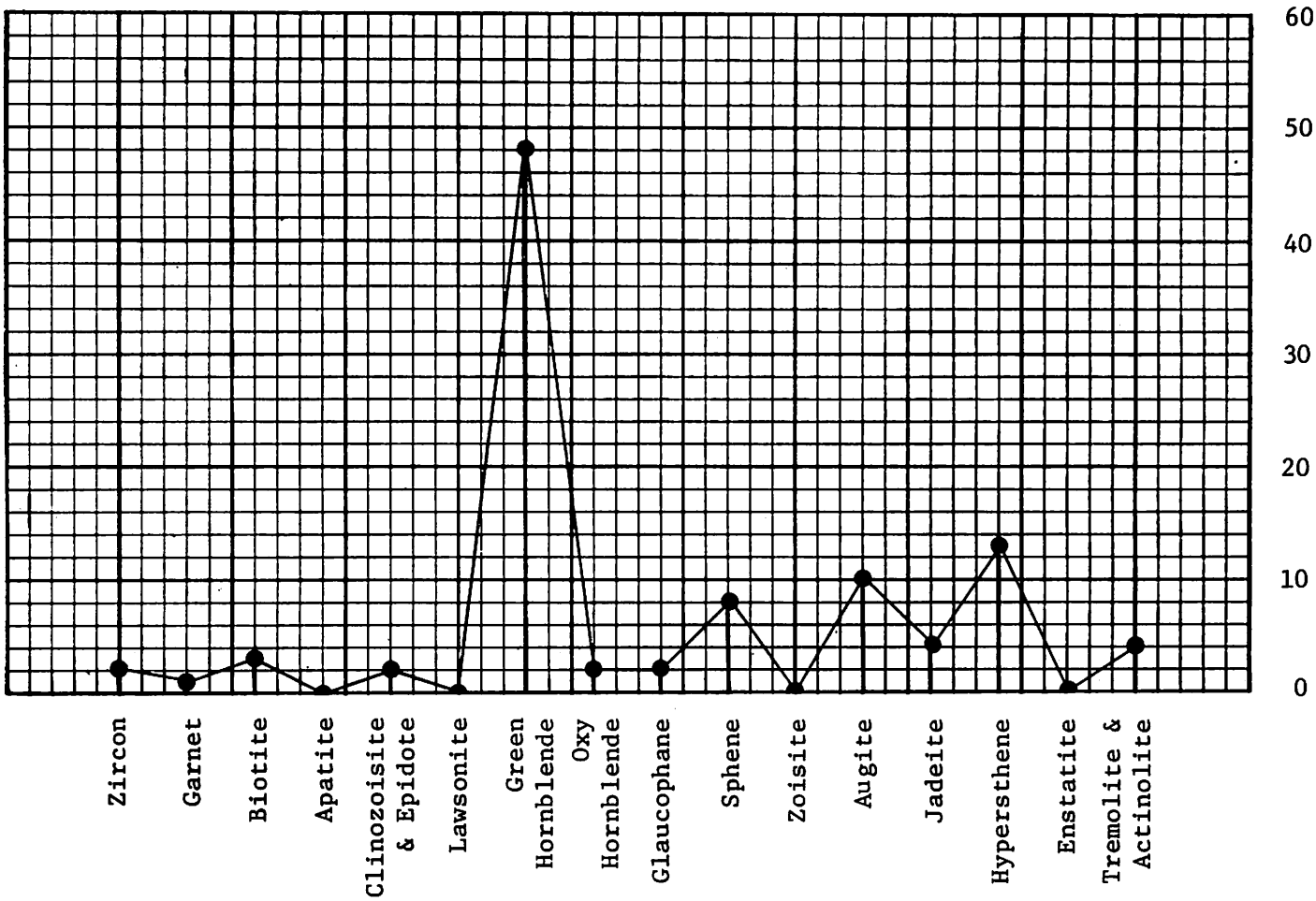
Wt. % of HM/SF 0.78

Total Grains Counted 155

% Transparent Grains 64.6

% Opaques 5.8

% Alterites and Unknowns 29.6



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1

Other Opaque Minerals

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

Analyst C. Isselhardt

SAMPLE 1994

Location 37°53'41"N 122°39'21"W

Depth 11.88 meters 6.5 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 59.88

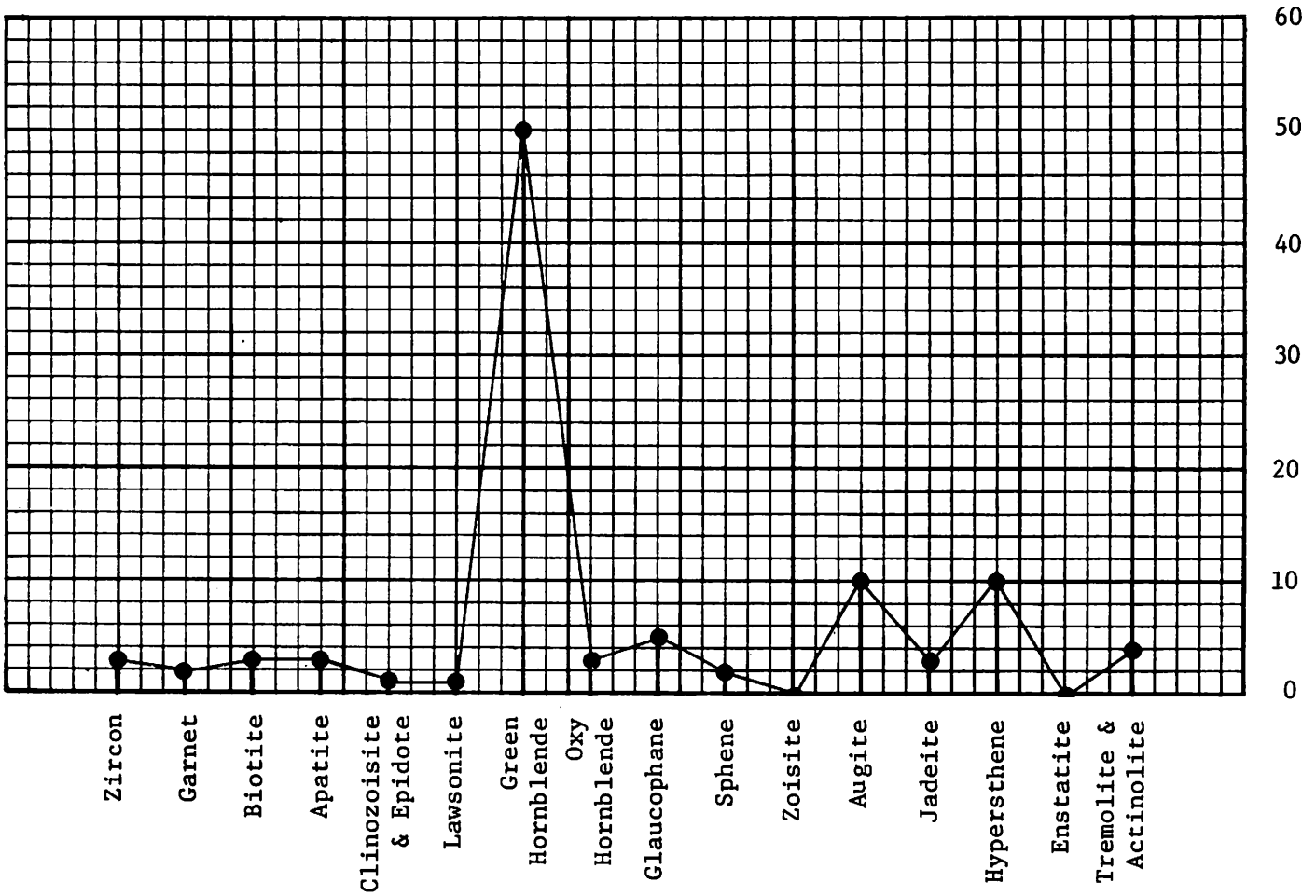
Wt. % of HM/SF 1.44

Total Grains Counted 191

% Transparent Grains 52.3

% Opaques 10.5

% Alterites and Unknowns 37.2



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	5
Picotite	5
Rock Frag.	9

Analyst C. Isselhardt

SAMPLE 1994

Location 37°53'41"N 122°39'21"W

Depth 11.88 meters 6.5 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 12.87

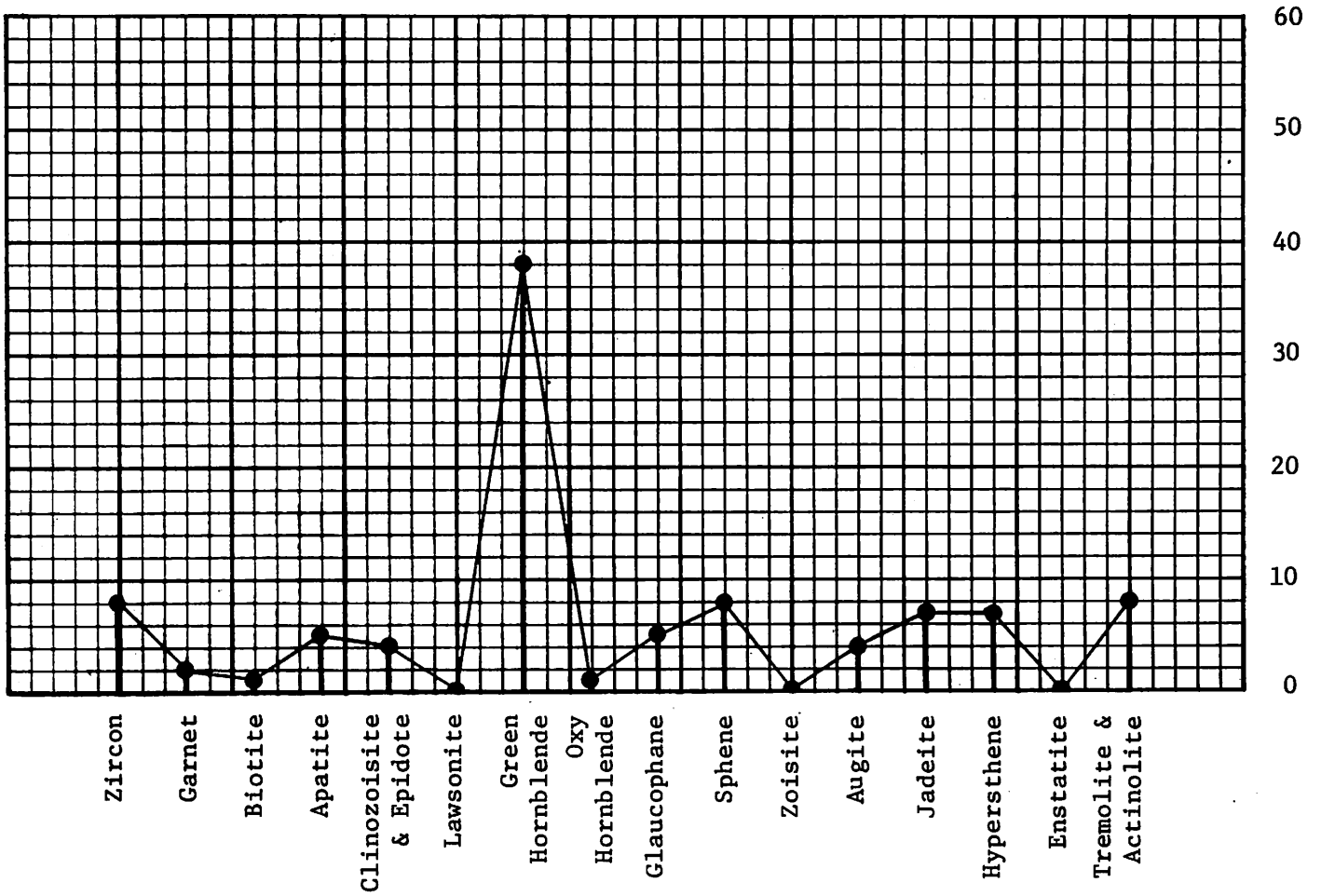
Wt. % of HM/SF 3.92

Total Grains Counted 176

% Transparent Grains 56.8

% Opaques 14.8

% Alterites and Unknowns 28.4



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	11
Picotite	4
Rock Frag.	6

Analyst C. Isselhardt

SAMPLE 1995

Location 37°53'47"N 122°39'41"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 14.36

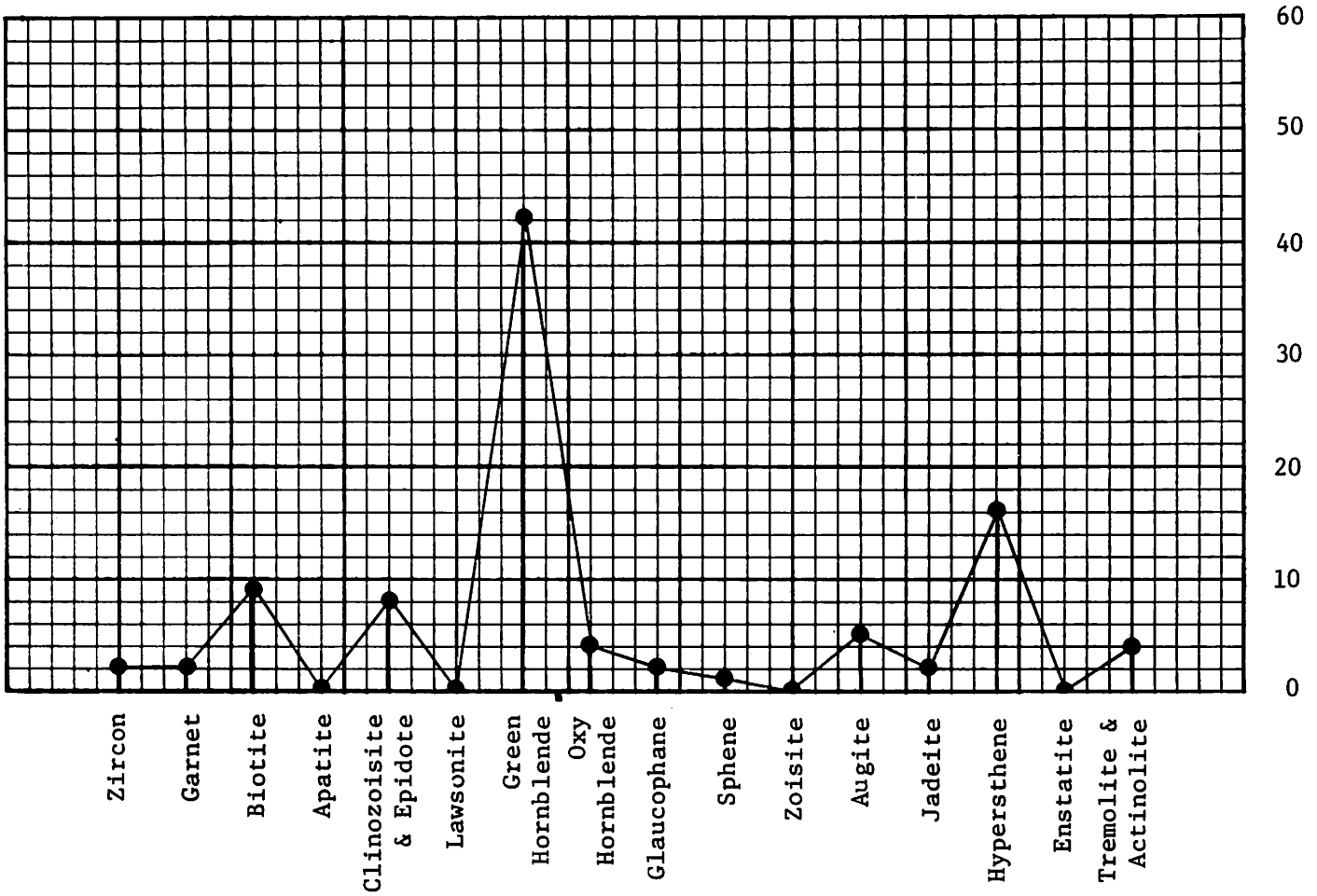
Wt. % of HM/SF 0.72

Total Grains Counted 145

% Transparent Grains 76

% Opaques 8

% Alterites and Unknowns 16



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	3
Rock Frag.	8

Analyst L. Osuch

SAMPLE 1995

Location 37°53'47"N 122°39'41"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 46.59

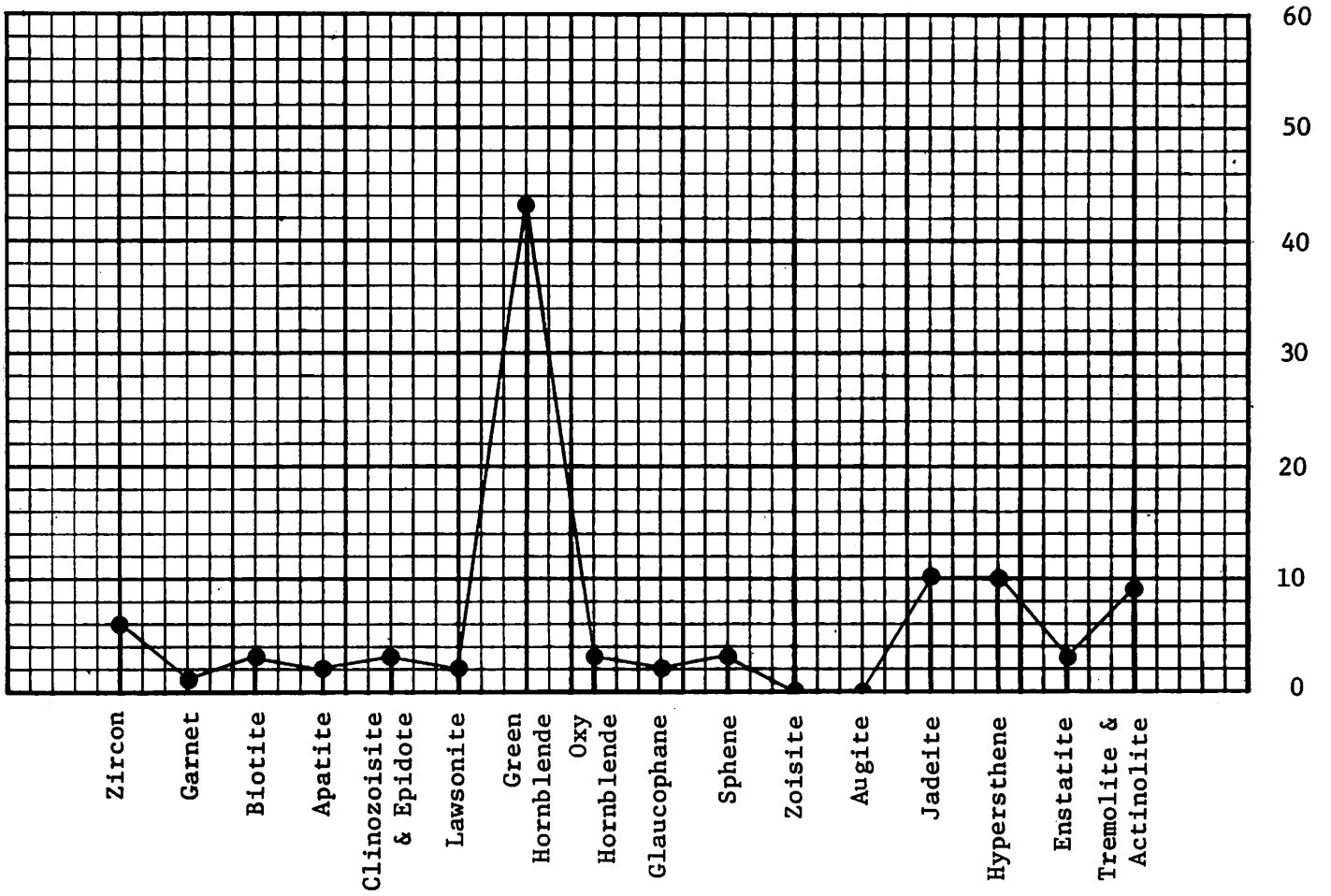
Wt. % of HM/SF 1.51

Total Grains Counted 192

% Transparent Grains 54

% Opaques 12

% Alterites and Unknowns 34



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	3
Rock Frag.	15

Analyst L. Osuch

SAMPLE 1995

Location 37°53'47"N 122°39'41"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 20.20

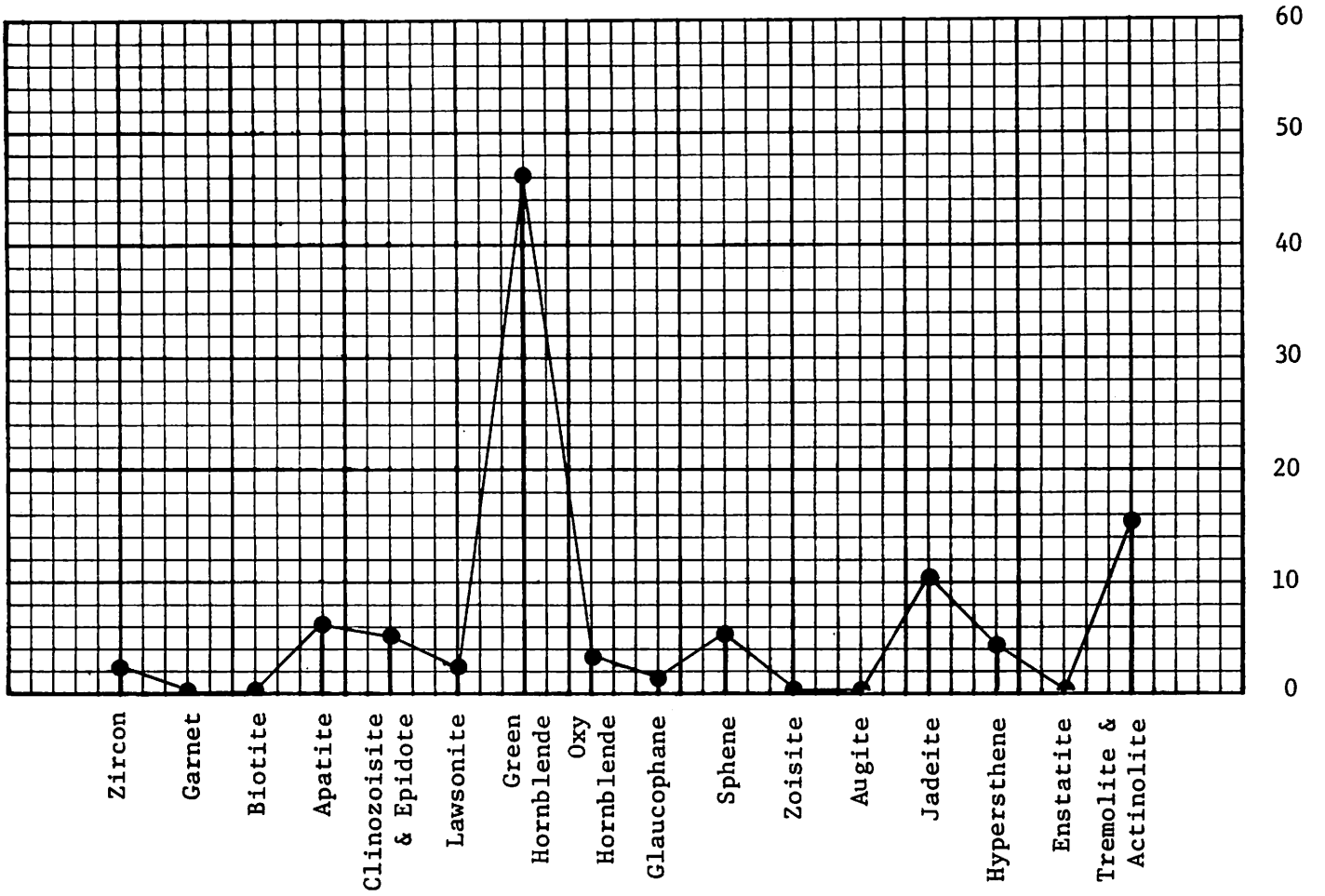
Wt. % of HM/SF 2.60

Total Grains Counted 157

% Transparent Grains 64

% Opaques 18

% Alterites and Unknowns 18



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	14
Picotite	1
Rock Frag.	10

Analyst L. Osuch

SAMPLE 1996

Location 37°53'44"N 122"39'53"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 23.73

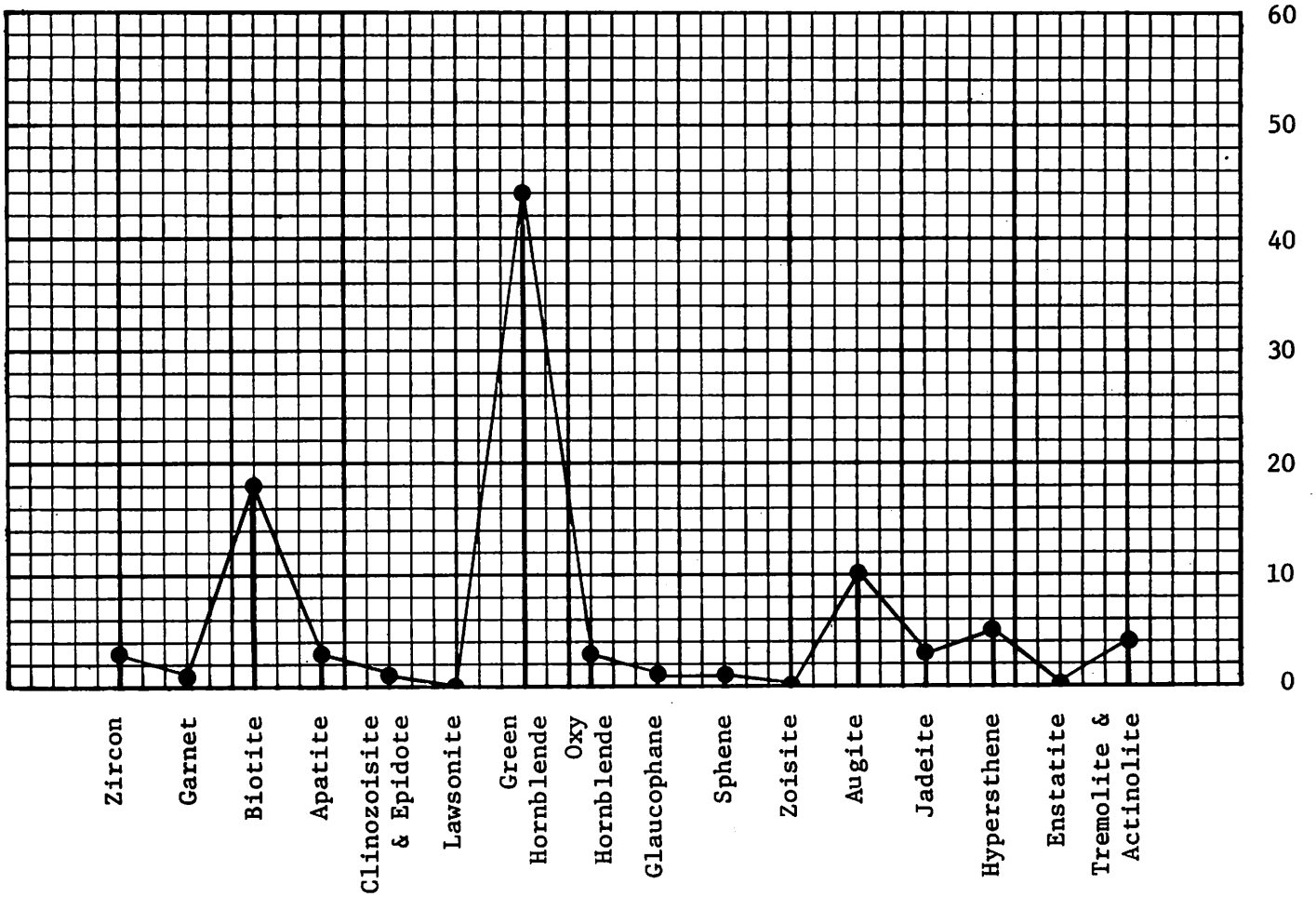
Wt. % of HM/SF 0.81

Total Grains Counted 341

% Transparent Grains 34.3

% Opaques 12.6

% Alterites and Unknowns 53.1



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	4

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	8
Magnetite	14
Picotite	4
Rock Frag.	4

Analyst T. Yancey

SAMPLE 1996

Location 37°53'44"N 122°39'53"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 55.86

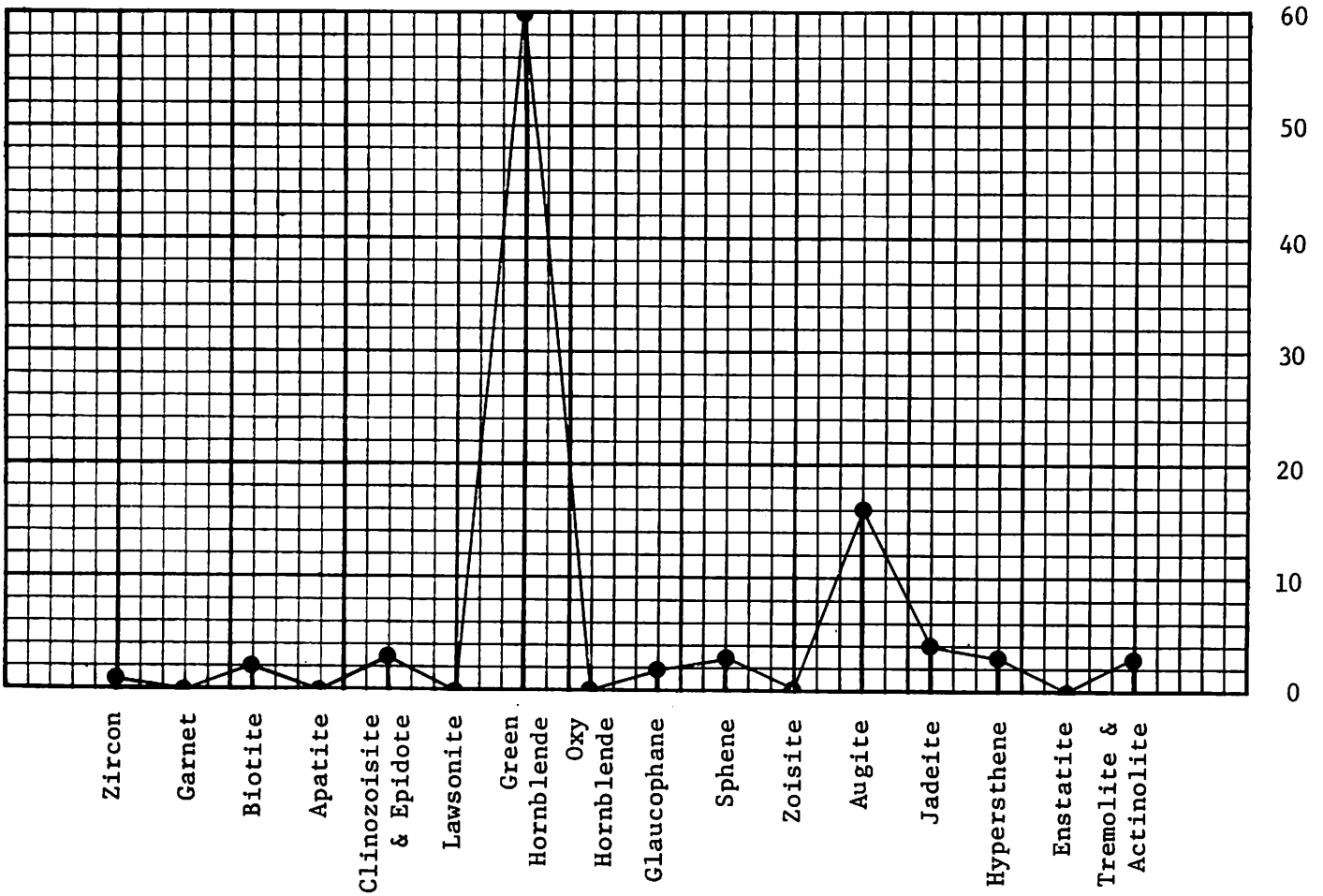
Wt. % of HM/SF 1.14

Total Grains Counted 235

% Transparent Grains 42.6

% Opaques 7.7

% Alterites and Unknowns 49.7



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	7
Magnetite	8
Pyrite	1
Rock Frag.	2

Analyst T. Yancey

SAMPLE 1996

Location 37°53'44"N 122°39'53"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 12.21

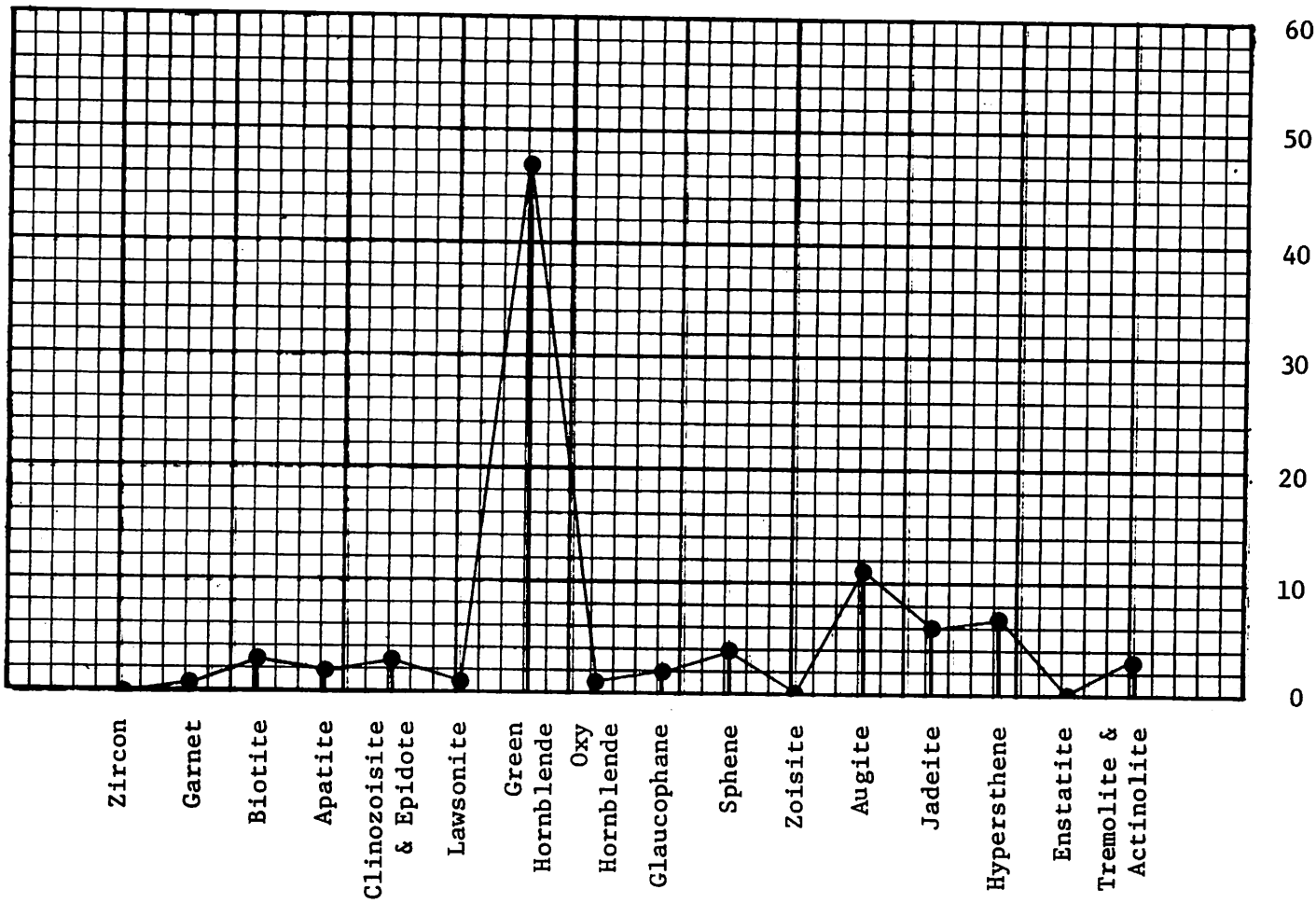
Wt. % of HM/SF 5.49

Total Grains Counted 271

% Transparent Grains 36.1

% Opaques 8.9

% Alterites and Unknowns 55.0



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	8

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	18
Picotite	5

Analyst T. Yancey

SAMPLE 1997

Location 37°53'45"N 122°40'20"W

Depth 7.93 meters 4.33 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 35.4

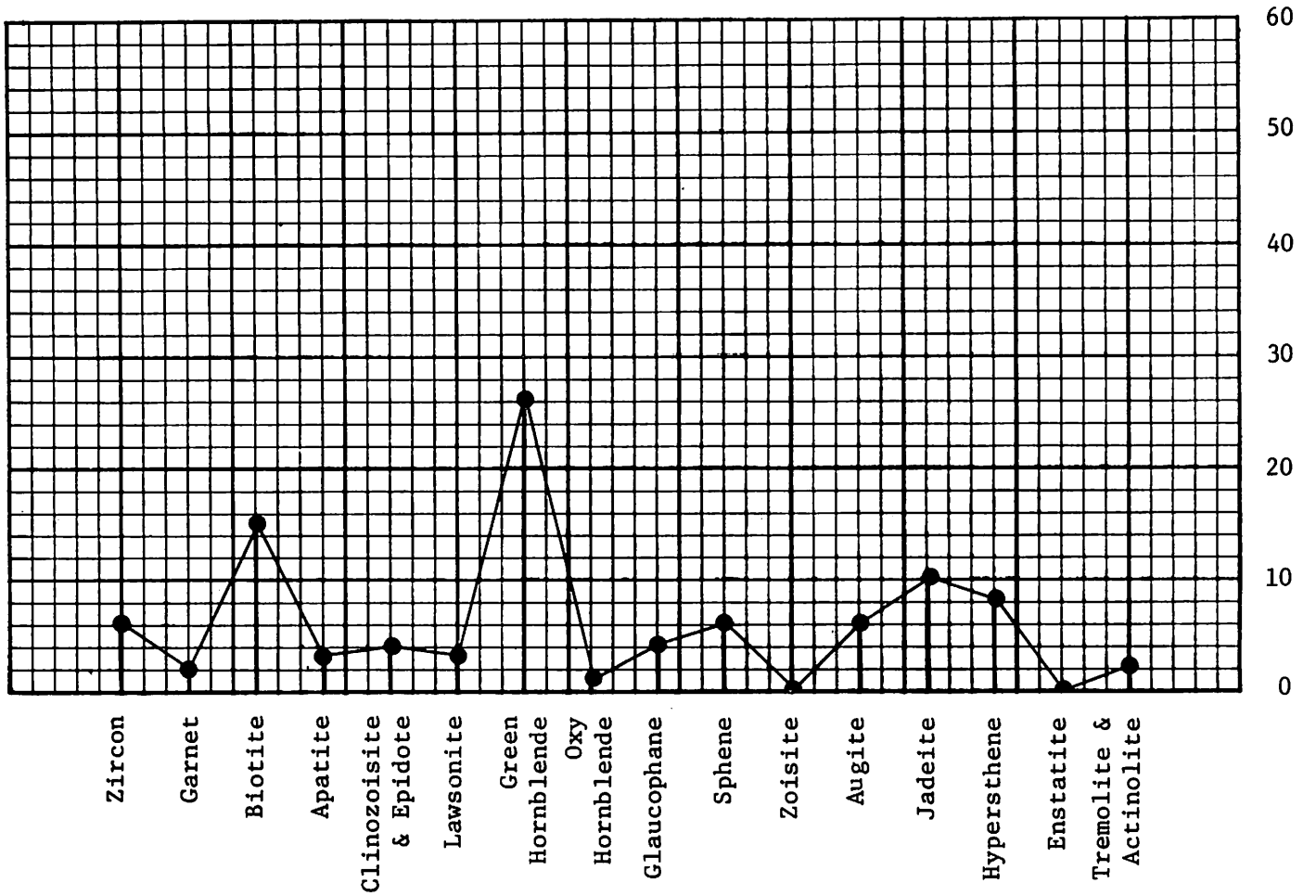
Wt. % of HM/SF 0.82

Total Grains Counted 212

% Transparent Grains 51.9

% Opaques 15.6

% Alterites and Unknowns 32.5



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	3
Carbonate	4

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	14
Magnetite	10
Picotite	3
Rock Frag.	6

Analyst C. Isselhardt

SAMPLE 1997

Location 37°53'45"N 122°40'20"W

Depth 7.93 meters 4.33 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 40.8

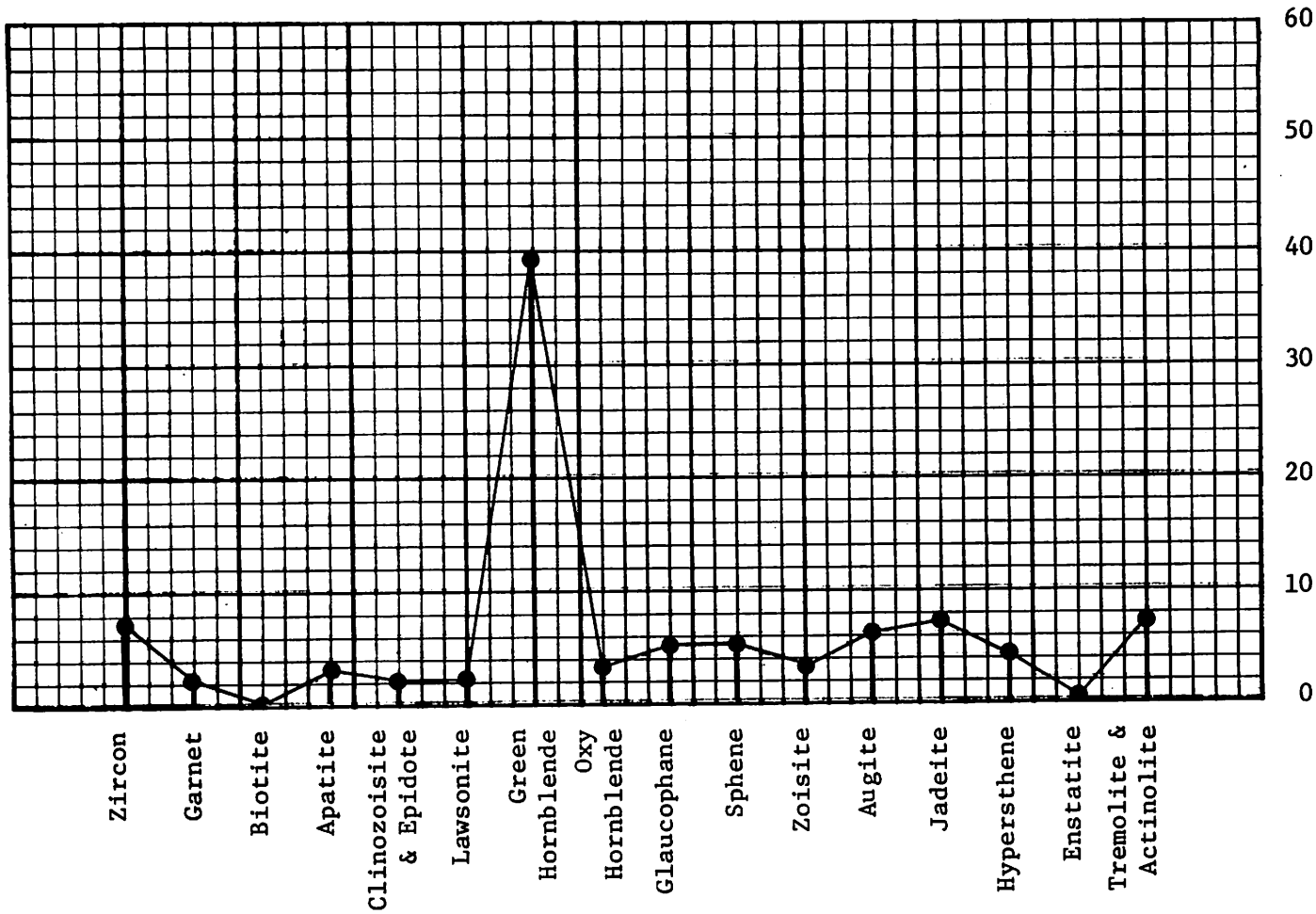
Wt. % of HM/SF 3.24

Total Grains Counted 198

% Transparent Grains 50.4

% Opaques 11.2

% Alterites and Unknowns 38.4



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	5

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	7
Magnetite	6
Pyrite	1
Rock Frag.	8

Analyst C. Isselhardt

SAMPLE 1997

Location 37°53'45"N 122°40'20"W

Depth 7.93 meters 4.33 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 10.3

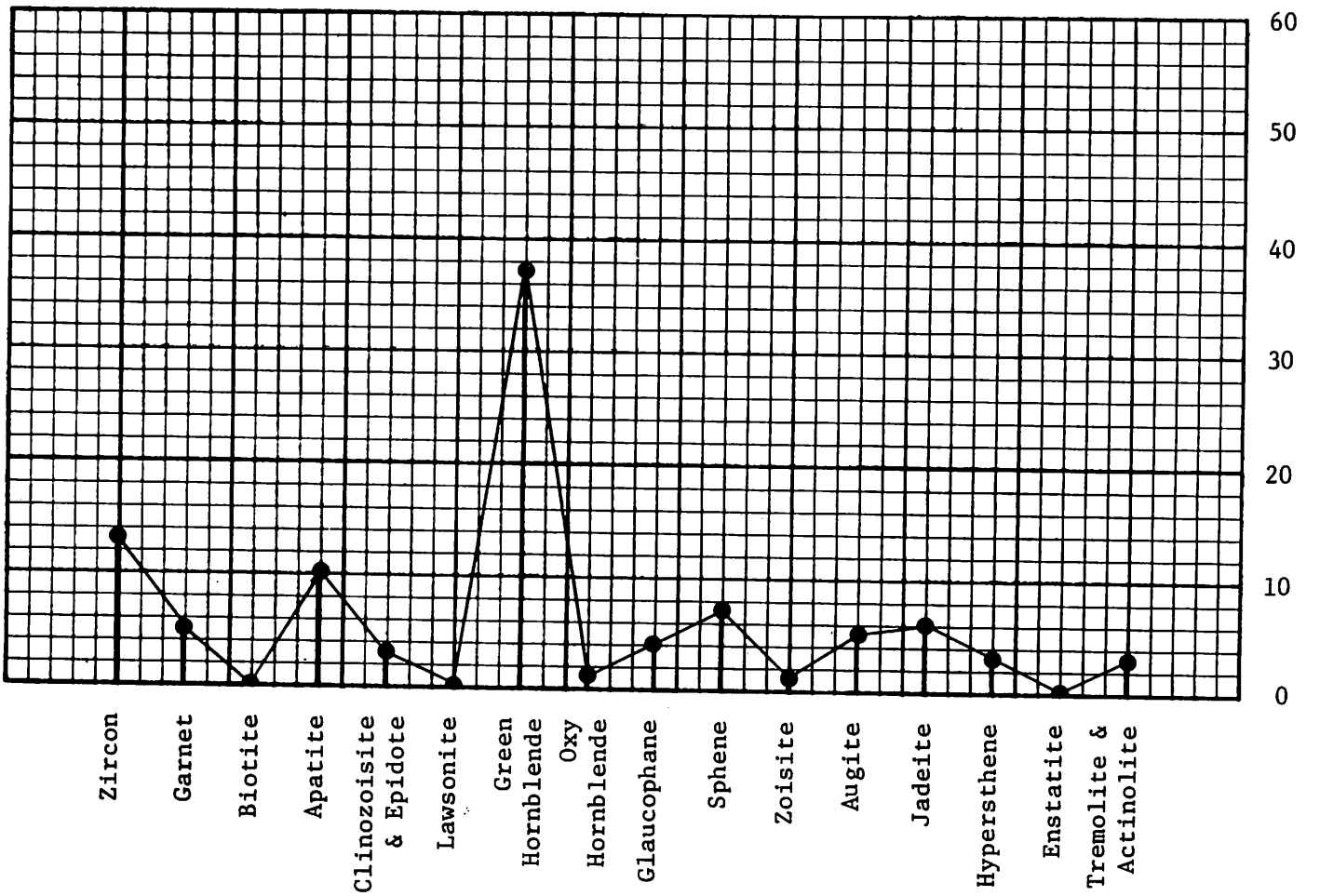
Wt. % of HM/SF 13.54

Total Grains Counted 175

% Transparent Grains 57.1

% Opaques 18.3

% Alterites and Unknowns 24.6



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	7
Magnetite	14
Picotite	5
Rock Frag.	6

Analyst C. Isselhardt

SAMPLE 1999

Location 37°53'19"N 122°40'32"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 17.42

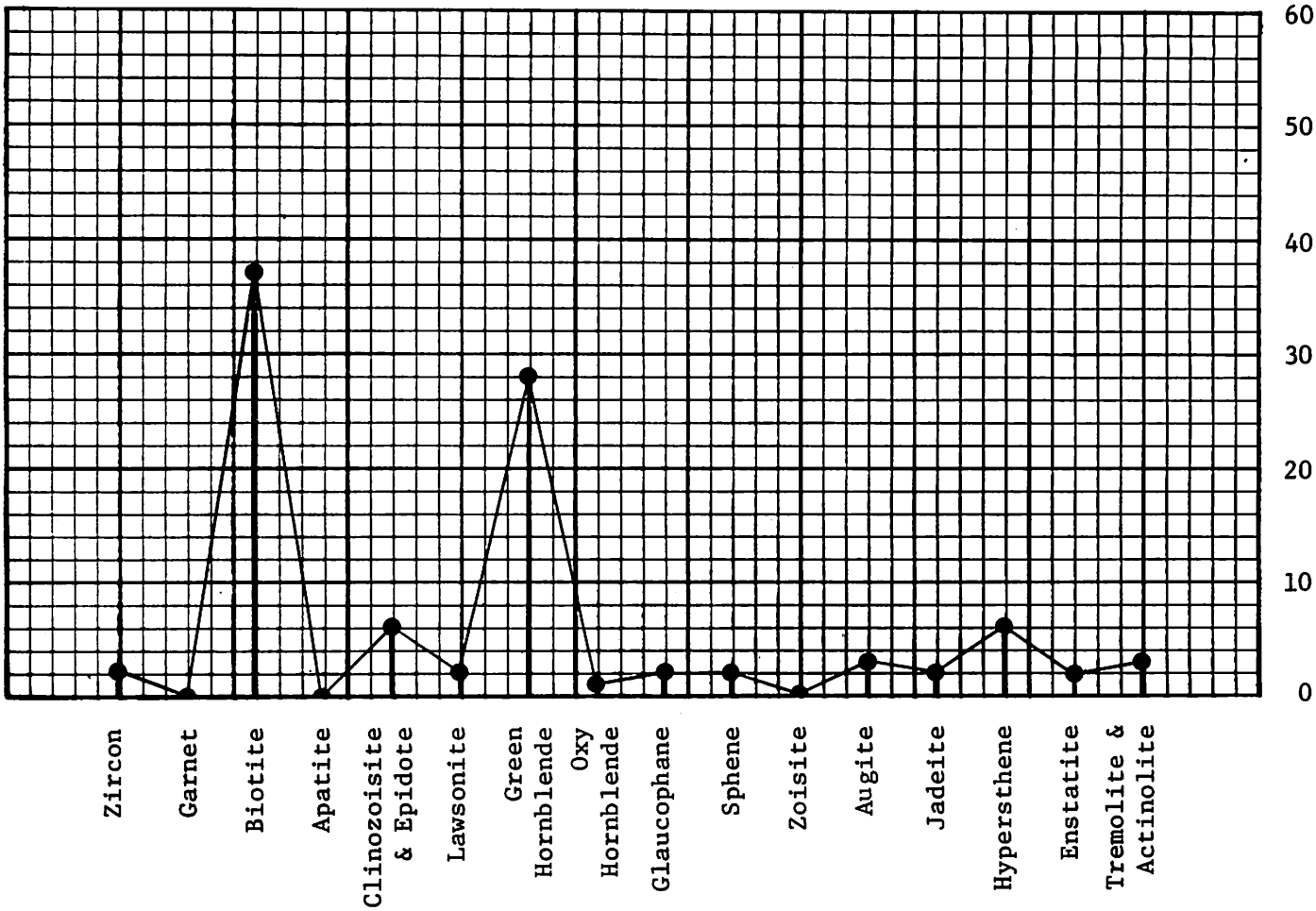
Wt. % of HM/SF 0.31

Total Grains Counted 169

% Transparent Grains 59

% Opaques 10

% Alterites and Unknowns 31



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	8
Magnetite	3
Picotite	1
Pyrite	1
Rock Frag.	4

Analyst L. Osuch

SAMPLE 1999

Location 37°53'19"N 122°40'32"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 28.63

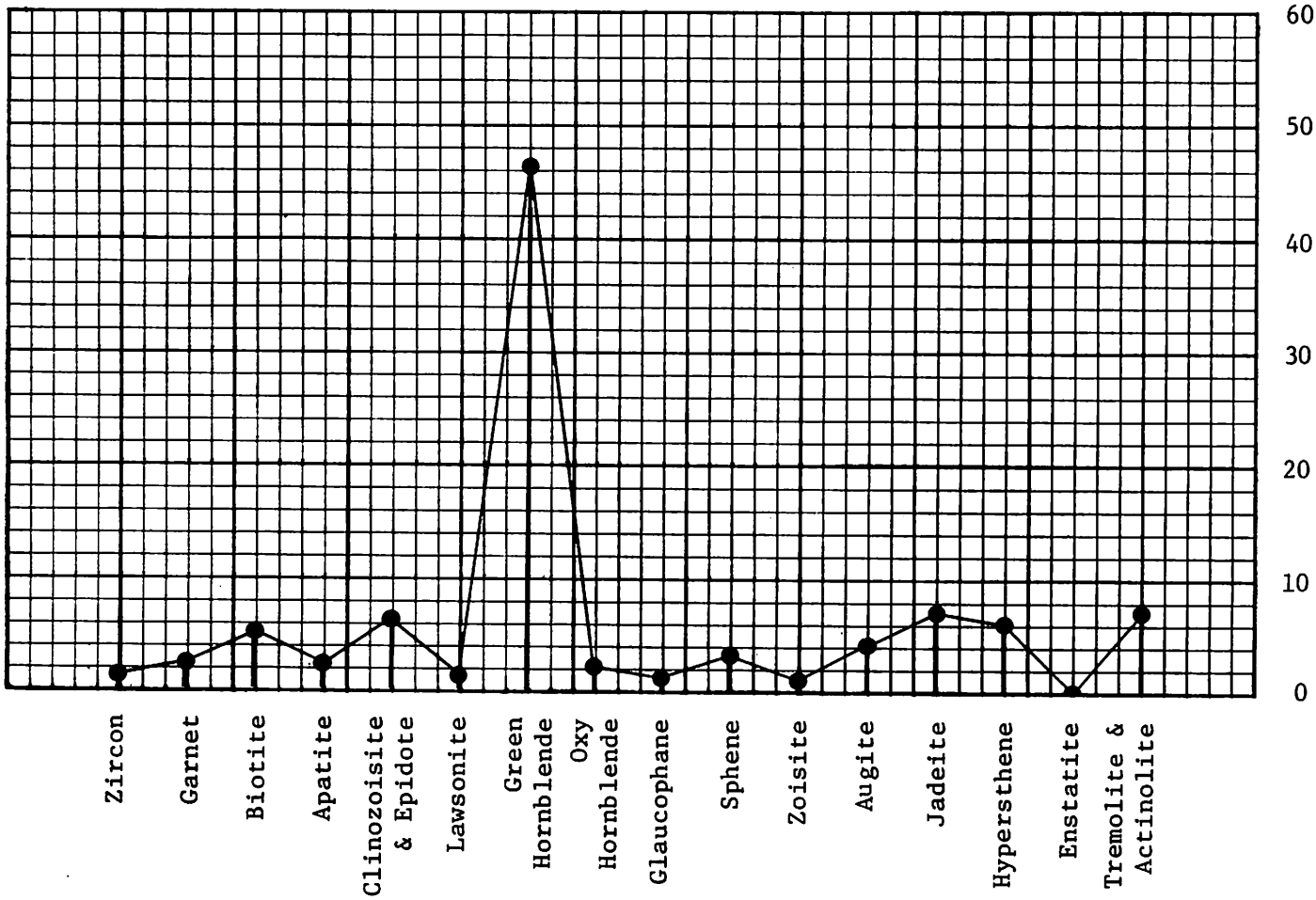
Wt. % of HM/SF 0.85

Total Grains Counted 154

% Transparent Grains 65

% Opaques 15

% Alterites and Unknowns 20



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	5

Other Opaque Minerals

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

Analyst L. Osuch

SAMPLE 1999

Location 37°53'19"N 122°40'32"W

Depth 10.98 meters 6.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 30.12

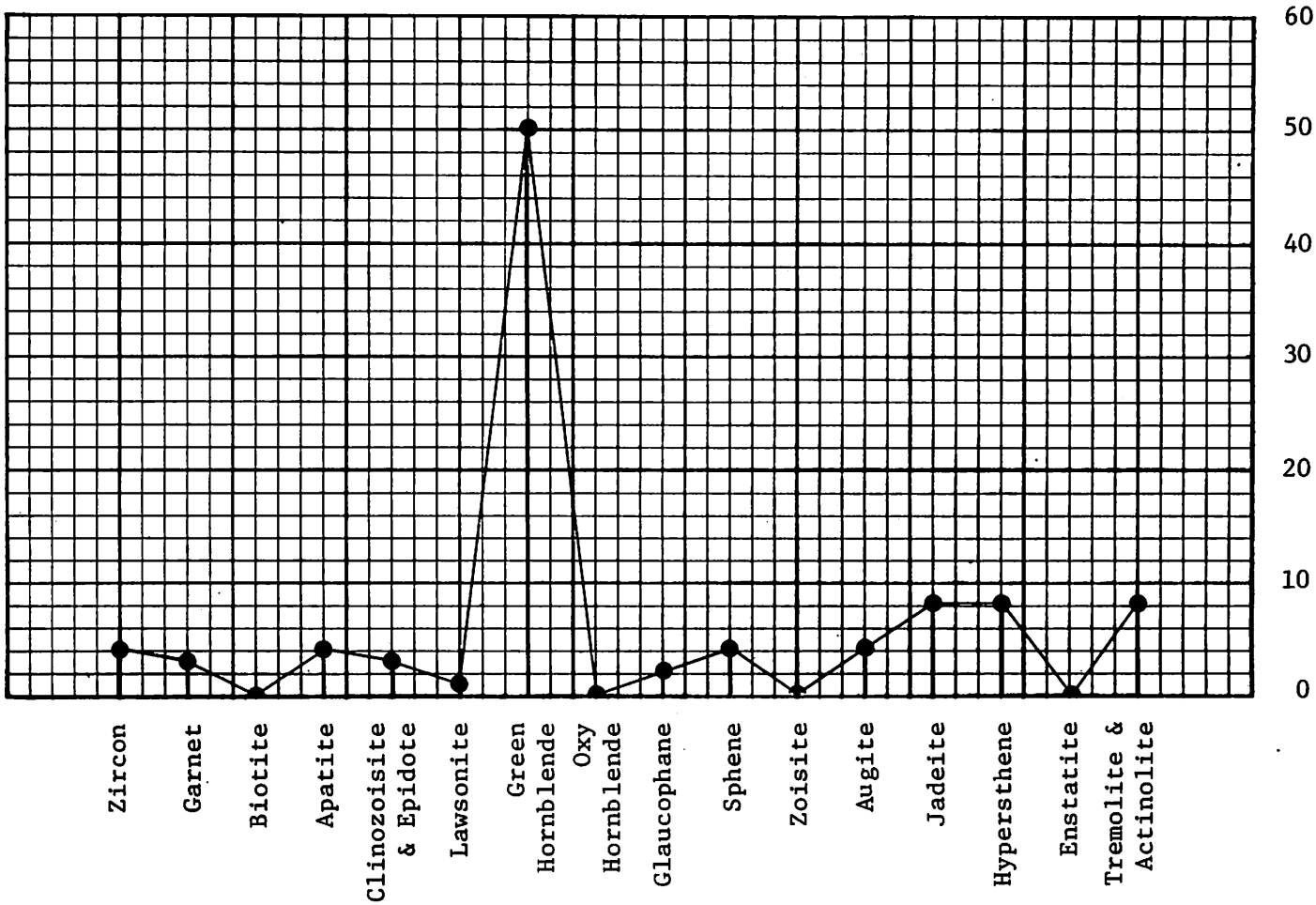
Wt. % of HM/SF 2.00

Total Grains Counted 151

% Transparent Grains 67

% Opaques 15

% Alterites and Unknowns 18



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	15
Picotite	1
Pyrite	1
Gold	1
Rock Frag.	2

Analyst L. Osuch

SAMPLE 2001

Location 37°53'13"N 122°40'08"W

Depth 13.41 meters 7.33 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 21.61

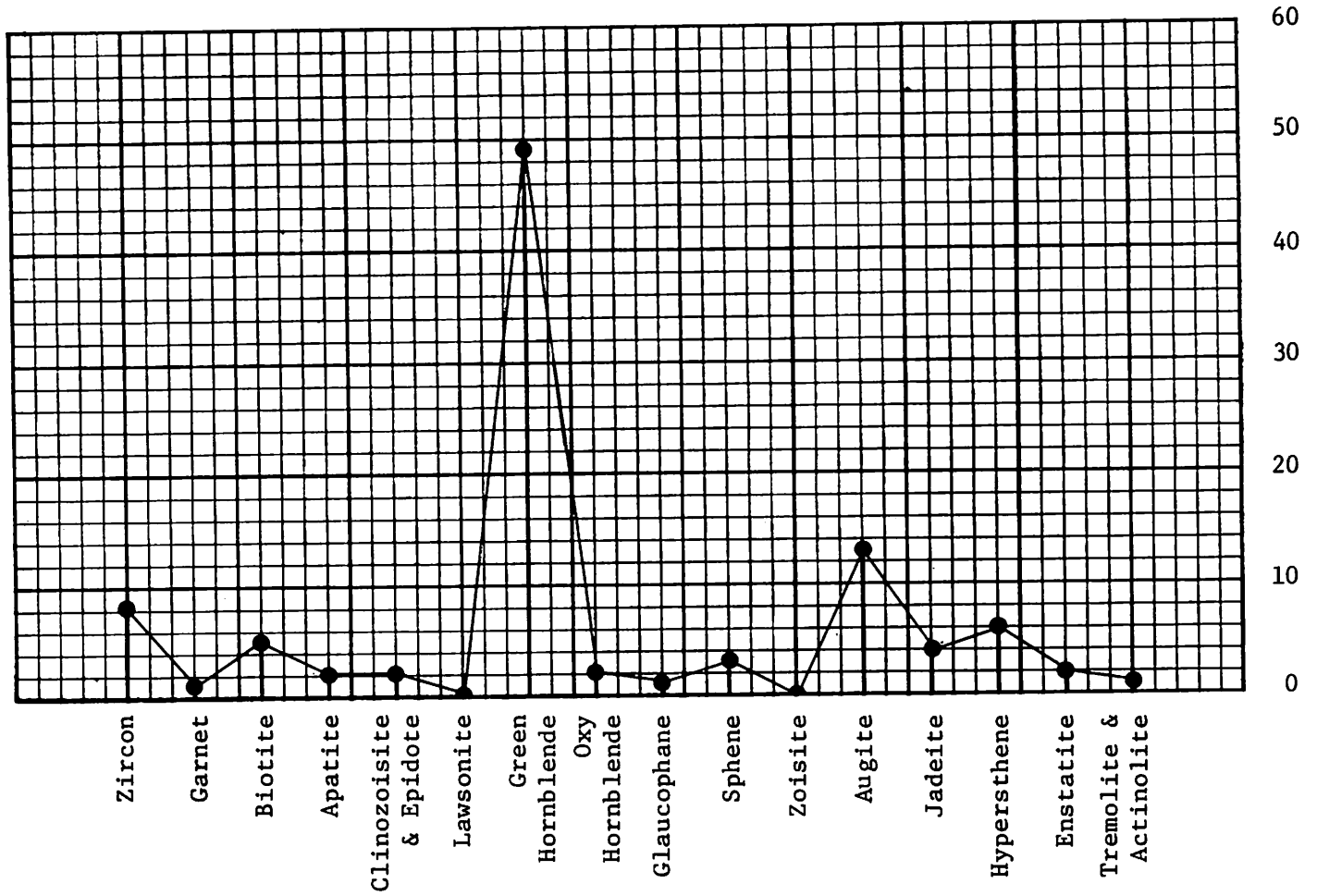
Wt. % of HM/SF 0.70

Total Grains Counted 201

% Transparent Grains 51.3

% Opaques 15.9

% Alterites and Unknowns 32.8



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	22
Picotite	2
Rock Frag.	3

Analyst T. Yancey

SAMPLE 2001

Location 37°53'13"N 122°40'08"W

Depth 13.41 meters 7.33 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 40.41

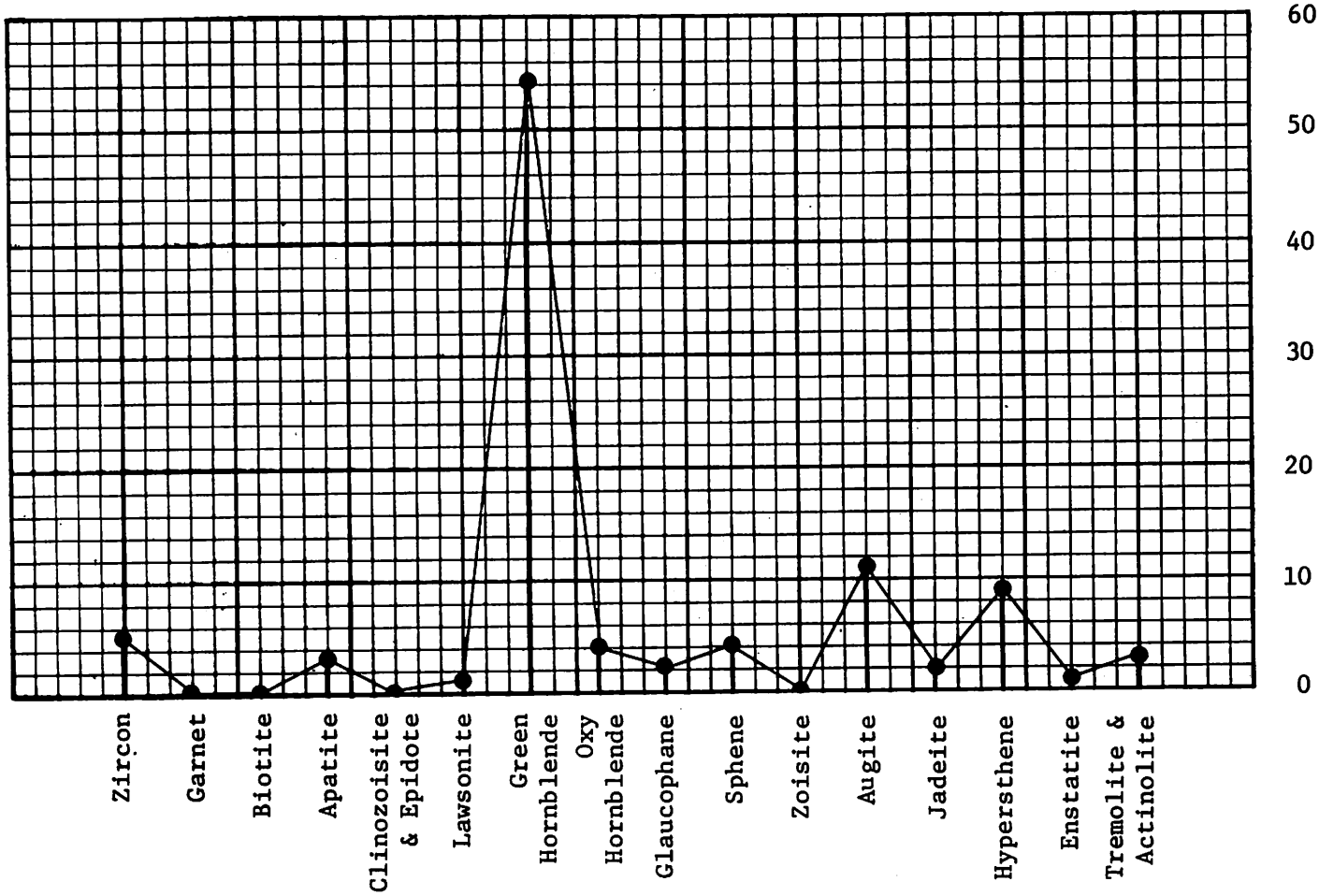
Wt. % of HM/SF 2.34

Total Grains Counted 211

% Transparent Grains 48.8

% Opaques 8.1

% Alterites and Unknowns 43.1



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1
Tourmaline	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	9
Rock Frag.	5

Analyst T. Yancey

SAMPLE 2001

Location 37°53'13"N 122°40'08"W

Depth 13.41 meters 7.33 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 19.06

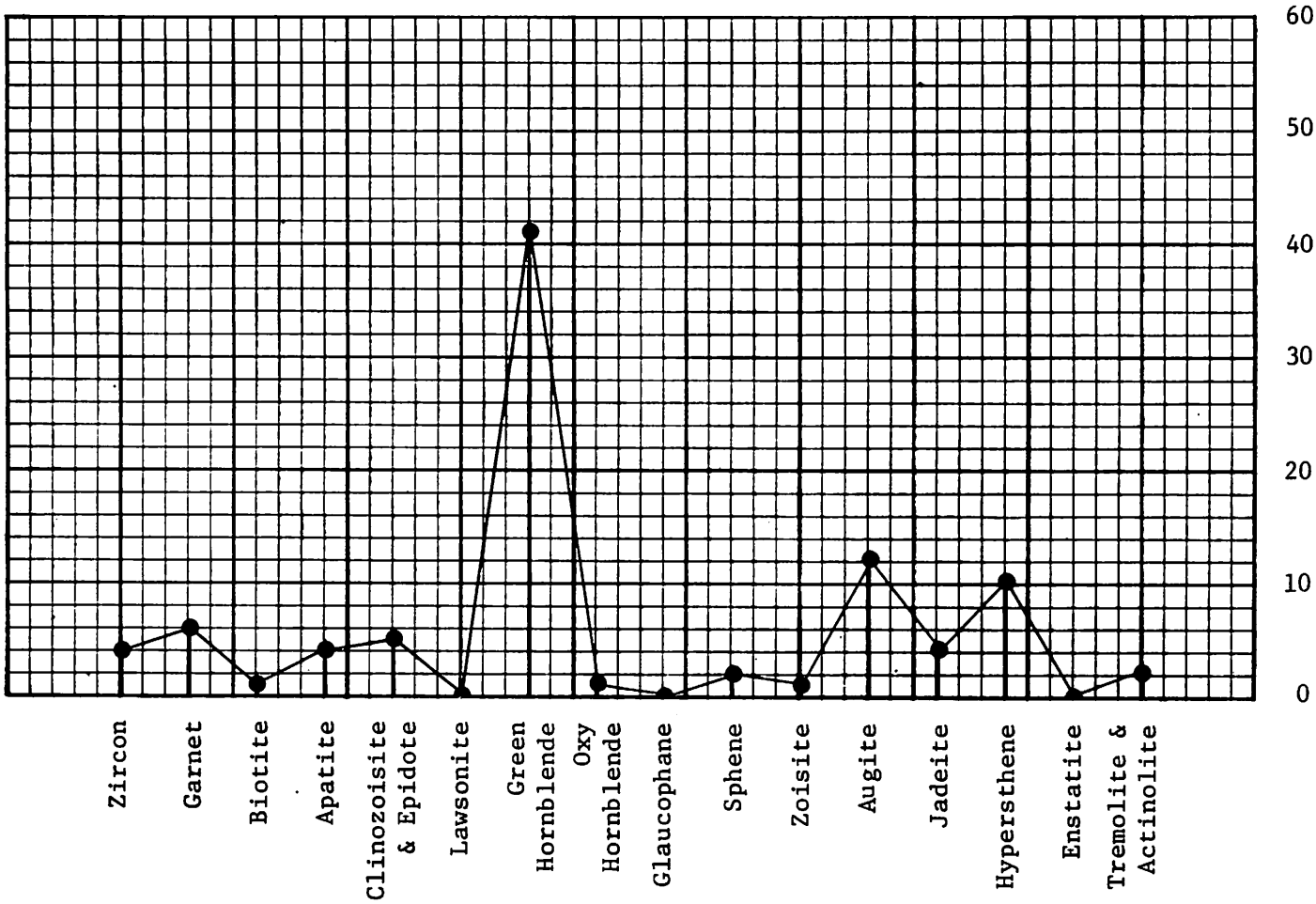
Wt. % of HM/SF 4.43

Total Grains Counted 187

% Transparent Grains 52.4

% Opaques 15

% Alterites and Unknowns 32.6



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	2
Chlorite	1
Carbonate	2
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	20
Picotite	7
Rock Frag.	3

Analyst T. Yancey

SAMPLE 2002

Location 37°53'35"N 122°39'39"W

Depth 12.20 meters 6.67 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 23.88

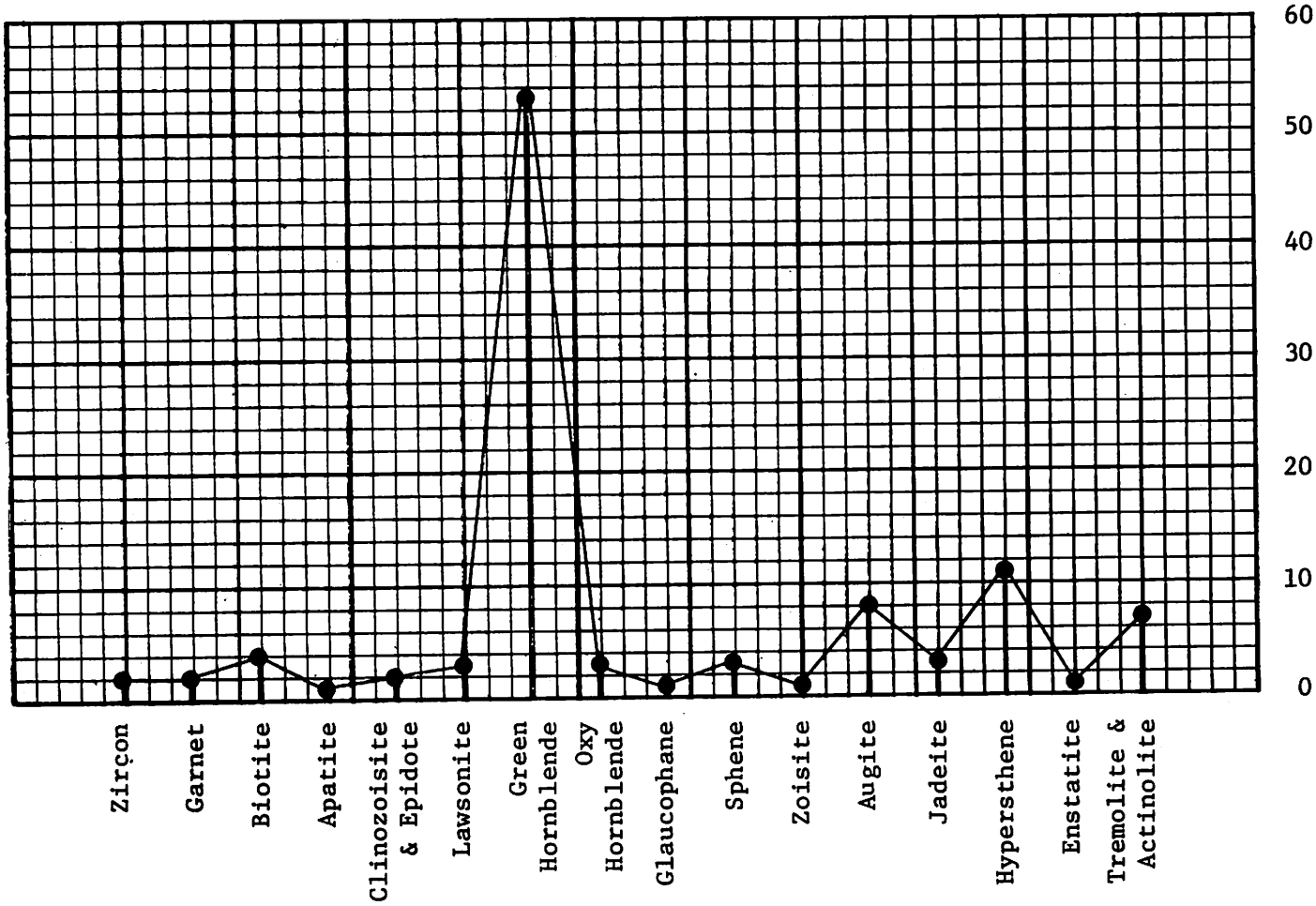
Wt. % of HM/SF 0.72

Total Grains Counted 157

% Transparent Grains 74.5

% Opaques 10.2

% Alterites and Unknowns 15.3



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	5
Picotite	1
Rock Frag.	6

Analyst C. Isselhardt

SAMPLE 2002

Location 37°53'35"N 122°39'39"W

Depth 12.20 meters 6.67 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 49.35

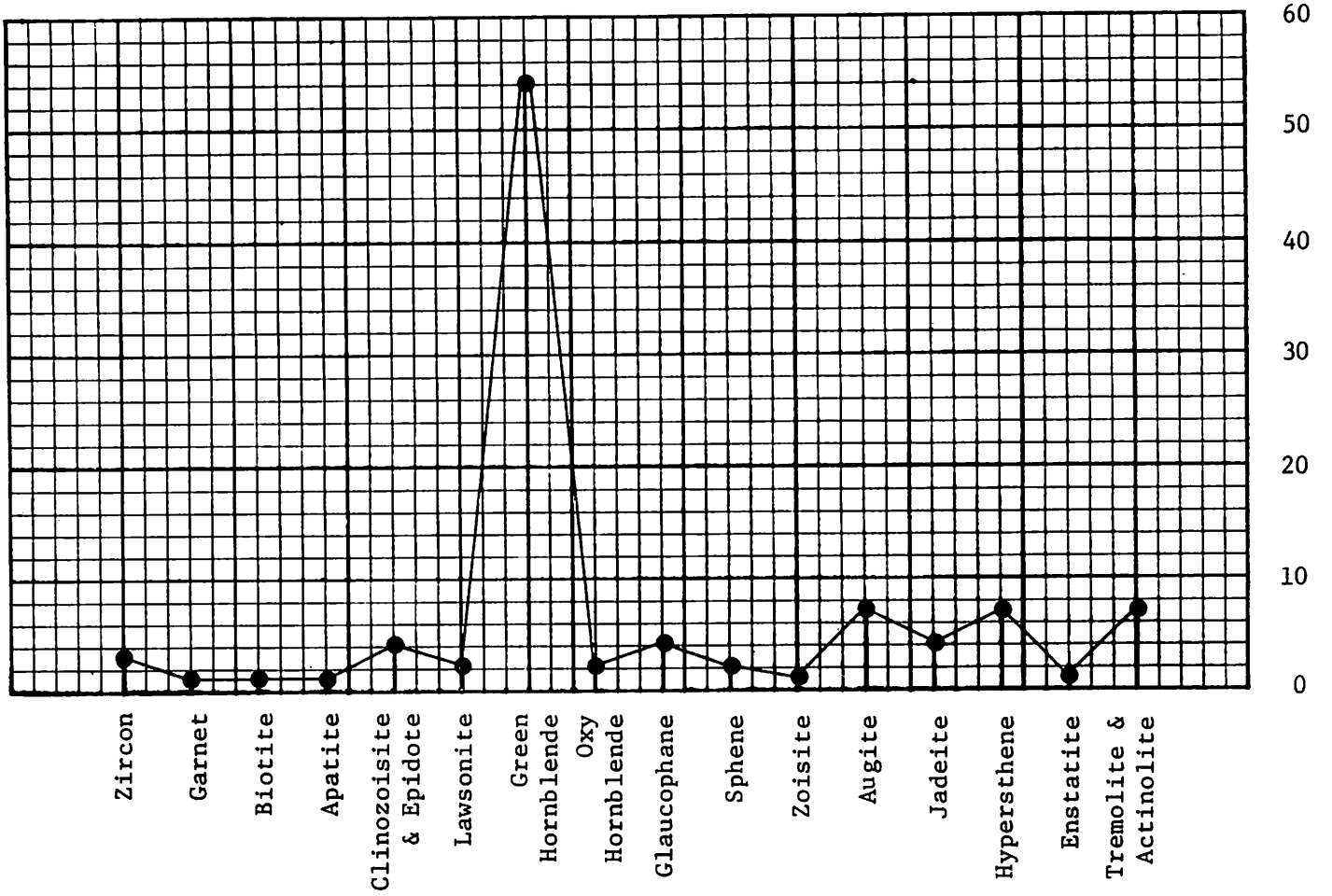
Wt. % of HM/SF 1.87

Total Grains Counted 166

% Transparent Grains 69.5

% Opaques 10.2

% Alterites and Unknowns 20.3



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	4
Picotite	1
Rock Frag.	8

Analyst C. Isselhardt

SAMPLE 2002

Location 37°53'35"N 122°39'39"W

Depth 12.20 meters 6.67 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 12.66

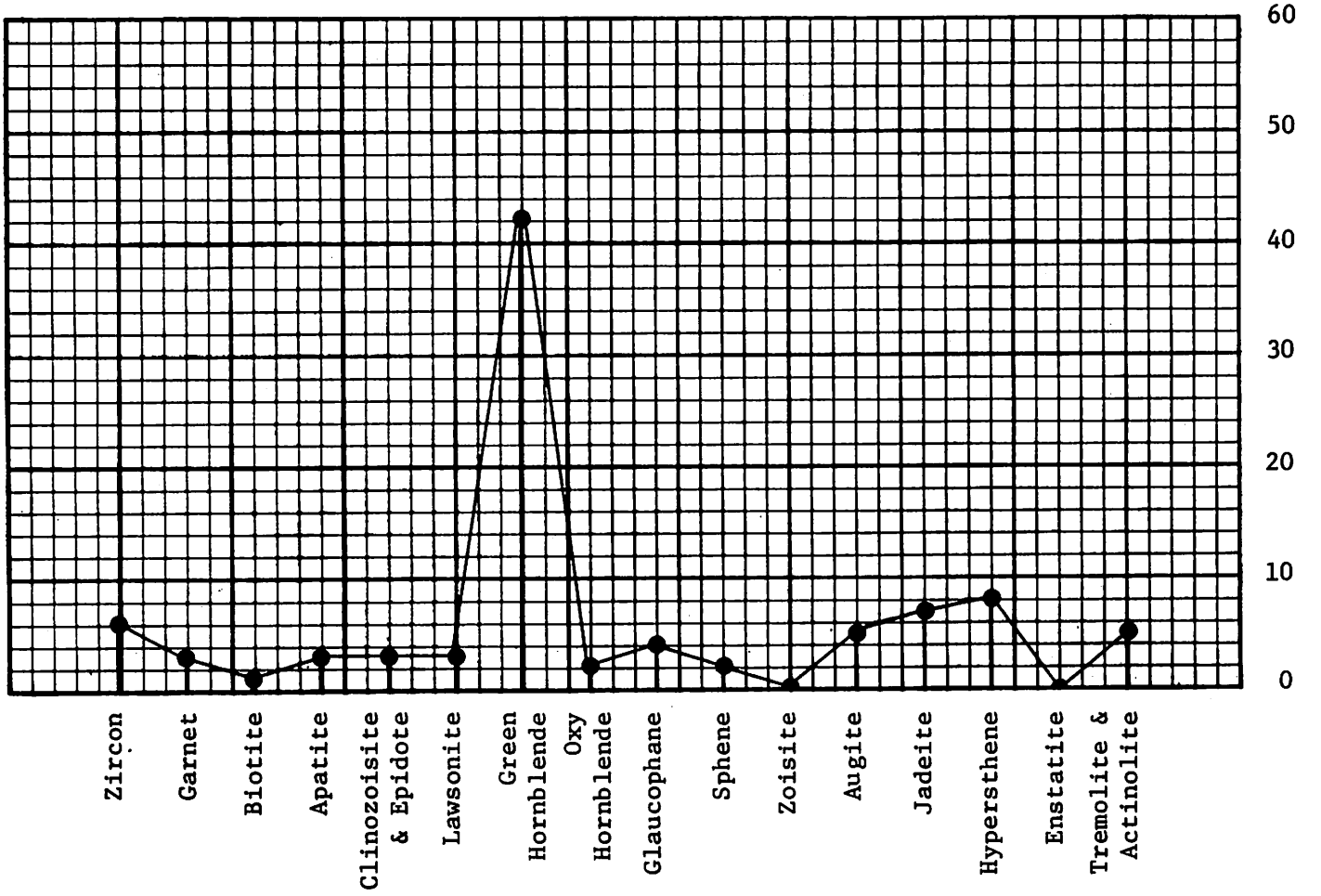
Wt. % of HM/SF 3.93

Total Grains Counted 223

% Transparent Grains 56.9

% Opaques 21.2

% Alterites and Unknowns 21.9



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	23
Picotite	5
Rock Frag.	14

Analyst C. Isselhardt

SAMPLE 2003

Location 37°53'25"N 122°39'18"W

Depth 13.72 meters 7.50 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 18.83

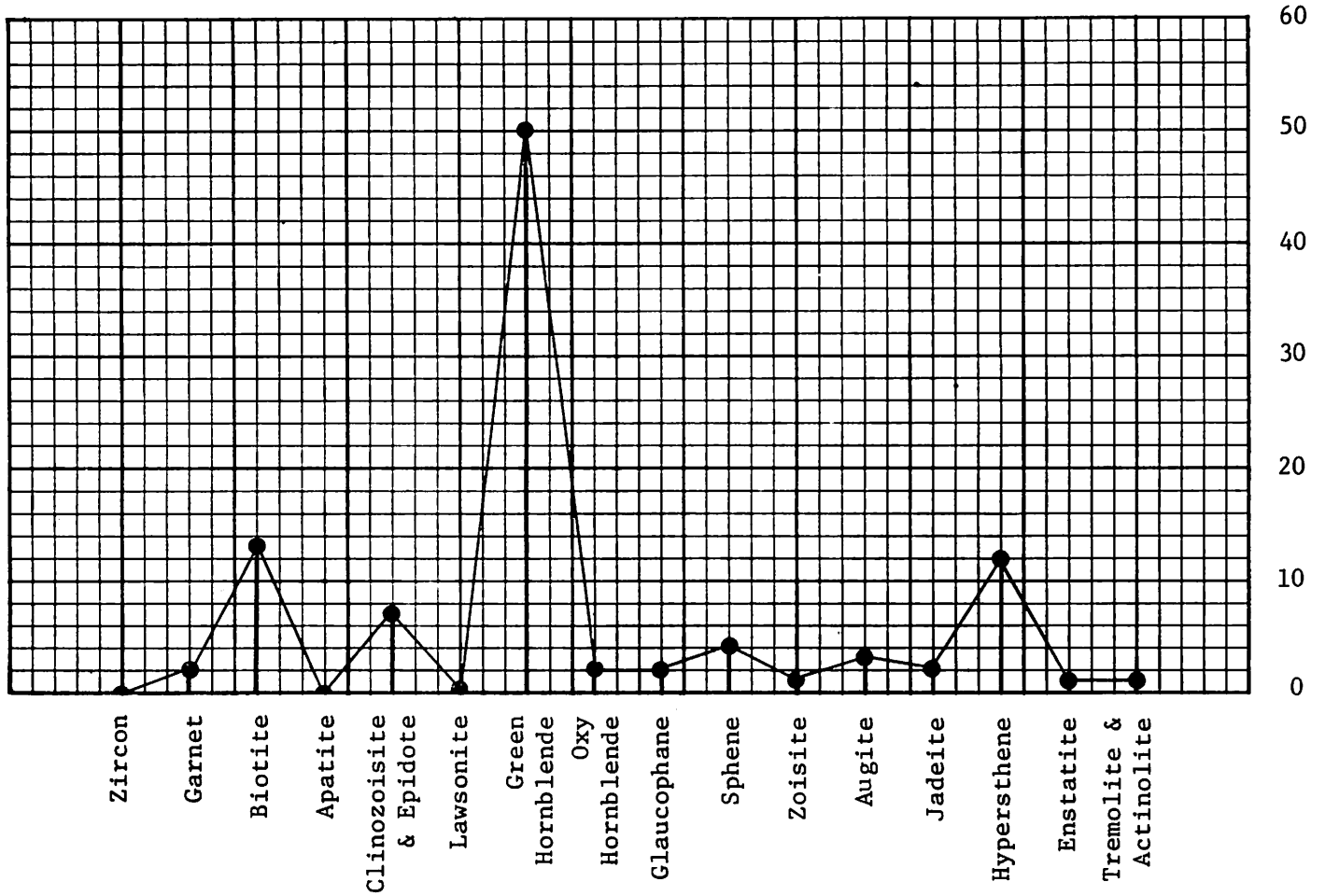
Wt. % of HM/SF 0.56

Total Grains Counted 160

% Transparent Grains 65

% Opaques 5

% Alterites and Unknowns 30



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Magnetite	5
Rock Frag.	3

Analyst L. Osuch

SAMPLE 2003

Location 37°53'25"N 122°39'18"W

Depth 13.72 meters 7.50 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 42.91

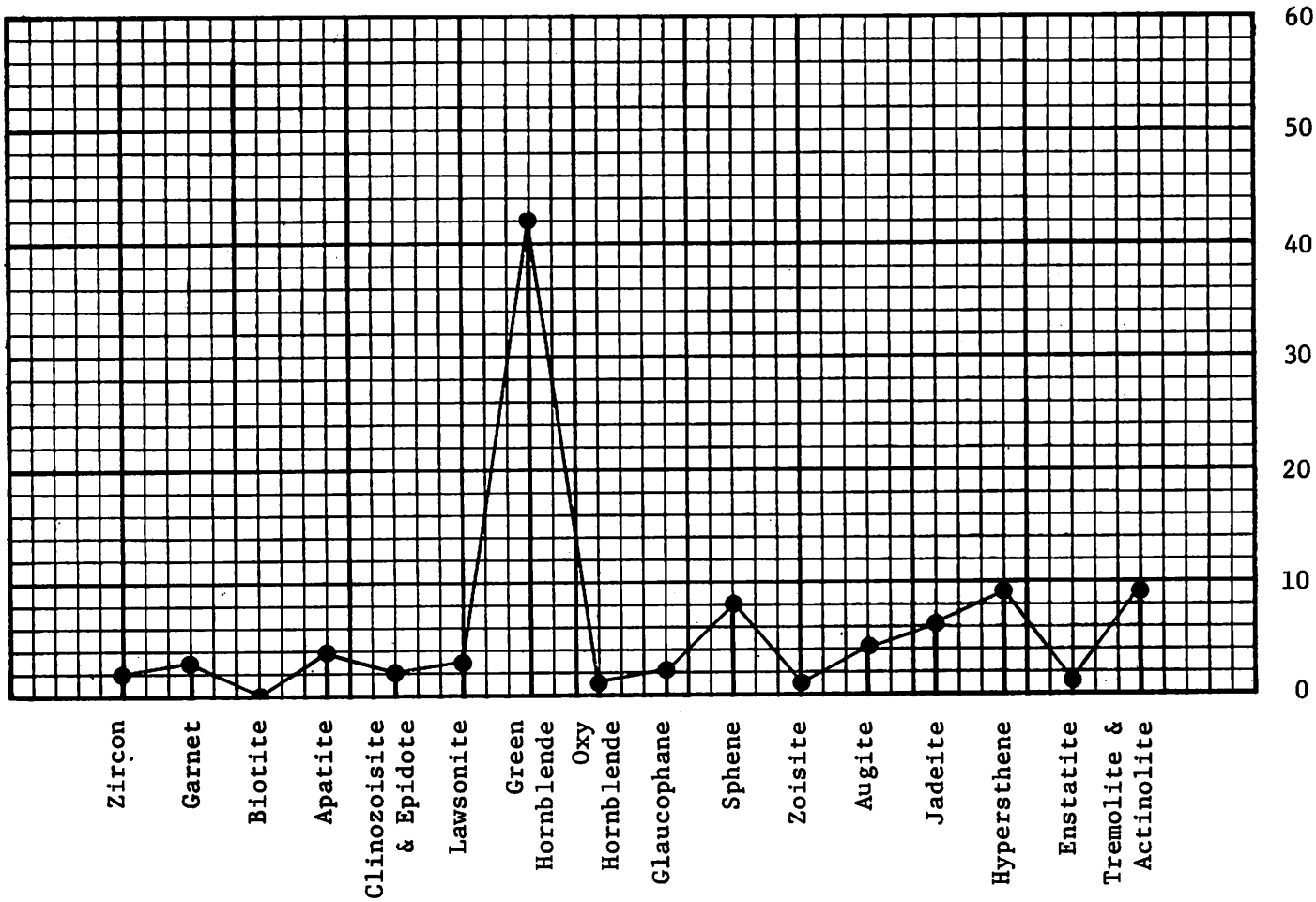
Wt. % of HM/SF 1.03

Total Grains Counted 153

% Transparent Grains 69

% Opaques 9

% Alterites and Unknowns 22



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	5
Picotite	3
Rock Frag.	5

Analyst L. Osuch

SAMPLE 2003

Location 37°53'25"N 122°39'18"W

Depth 13.72 meters 7.50 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 16.63

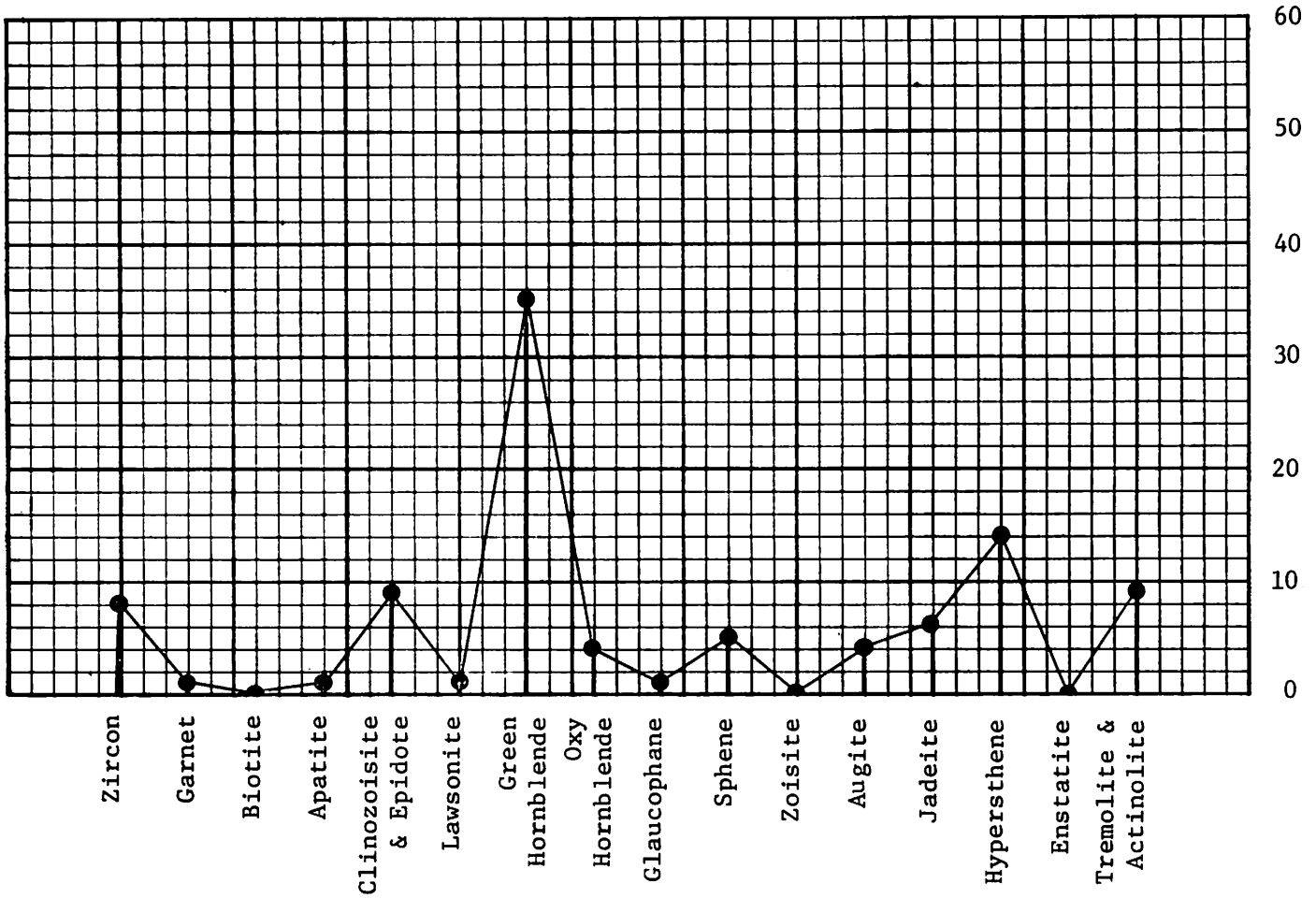
Wt. % of HM/SF 2.00

Total Grains Counted 165

% Transparent Grains 59

% Opaques 18

% Alterites and Unknowns 23



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	13
Rock Frag.	15

Analyst L. Osuch

SAMPLE 2004

Location 37°53'13"N 122°38'55"W

Depth 14.64 meters 8.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 13.27

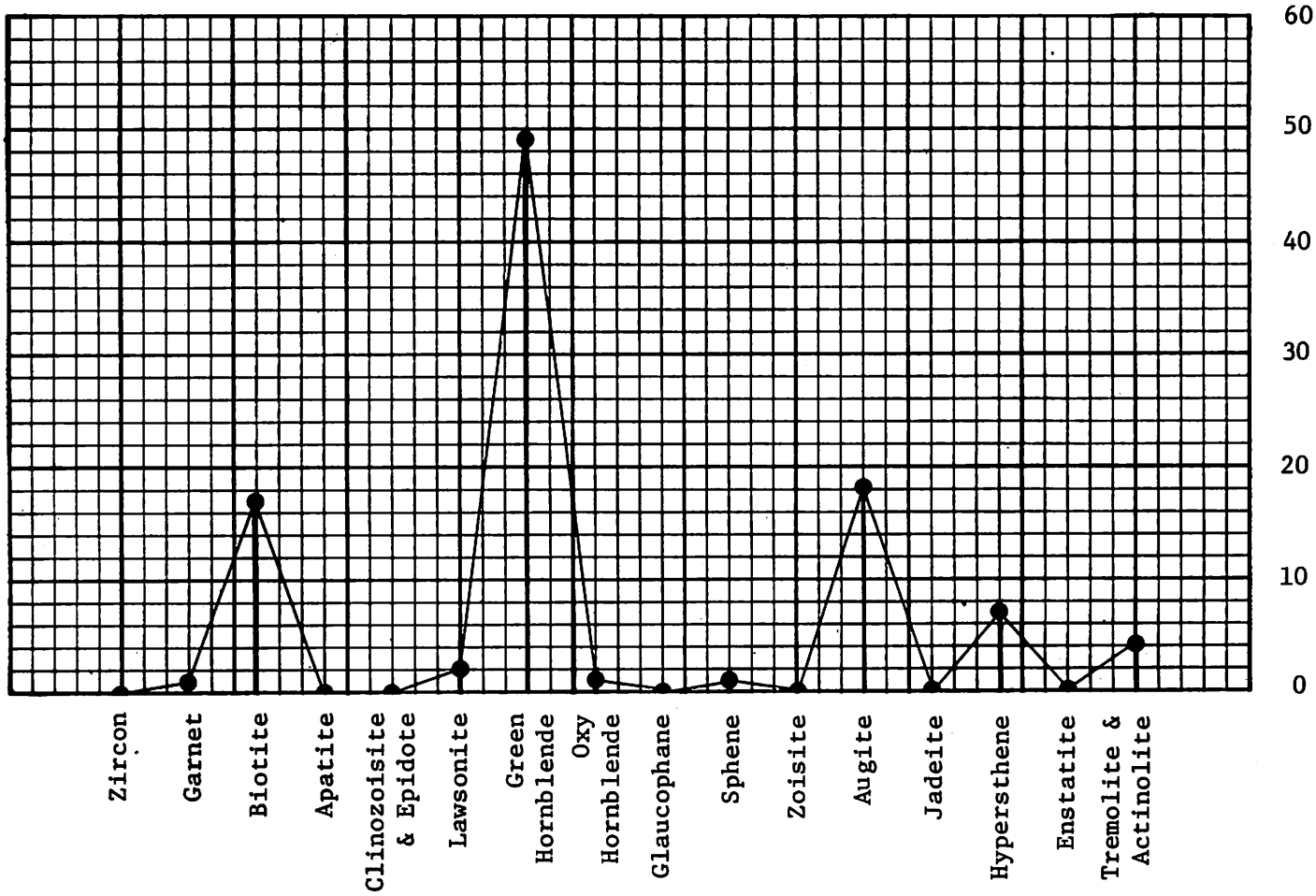
Wt. % of HM/SF 0.24

Total Grains Counted 196

% Transparent Grains 61.7

% Opaques 7.2

% Alterites and Unknowns 31.1



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	7
Pyrite	1
Rock Frag.	3

Analyst T. Yancey

SAMPLE 2004

Location 37°53'13"N 122°38'55"W

Depth 14.64 meters 8.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 42.50

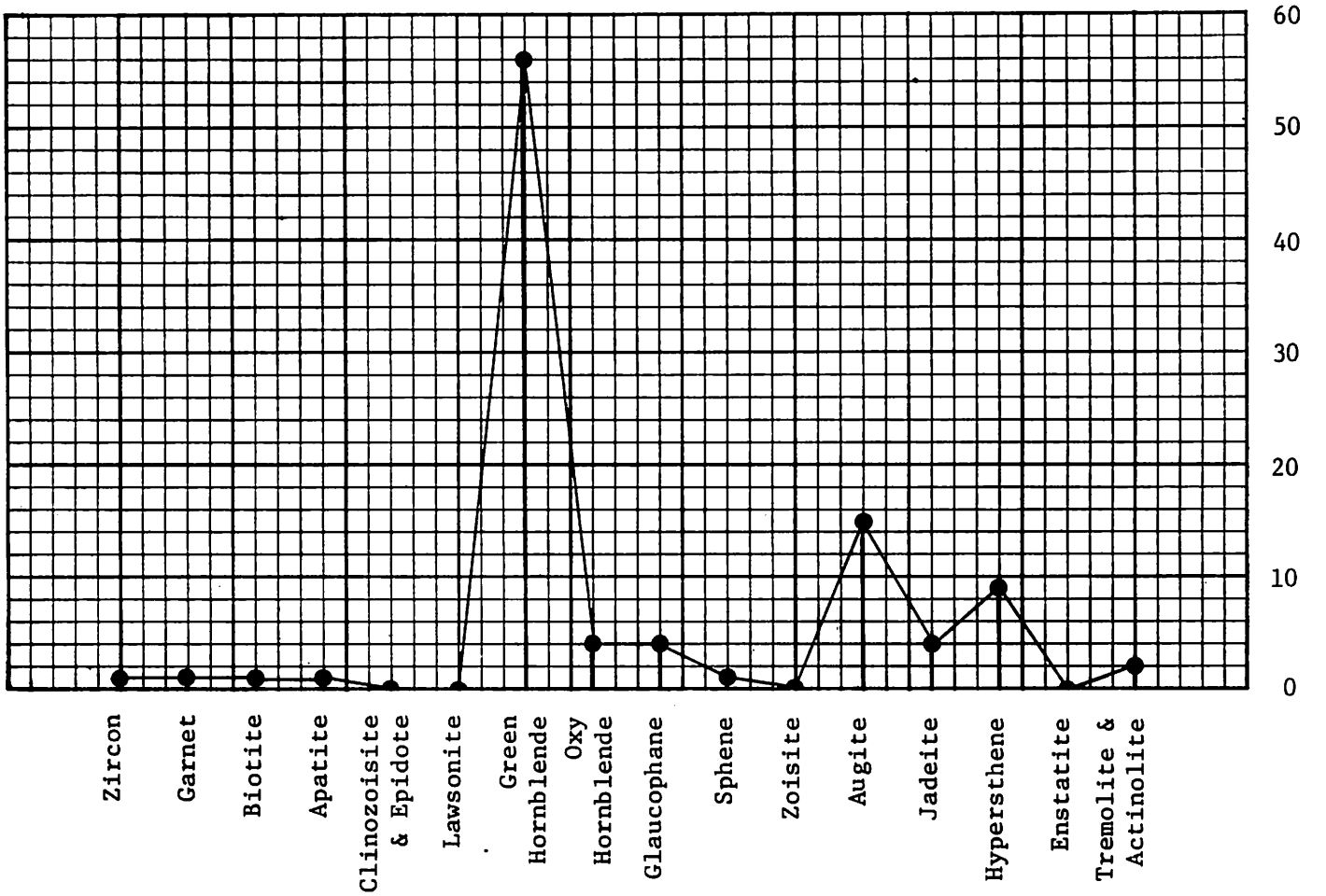
Wt. % of HM/SF 0.96

Total Grains Counted 172

% Transparent Grains 58.2

% Opaques 5.2

% Alterites and Unknowns 36.6



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Magnetite	6
Picotite	1
Pyrite	1
Rock Frag.	1

Analyst T. Yancey

SAMPLE 2004

Location 37°53'13"N 122°38'55"W

Depth 14.64 meters 8.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 21.15

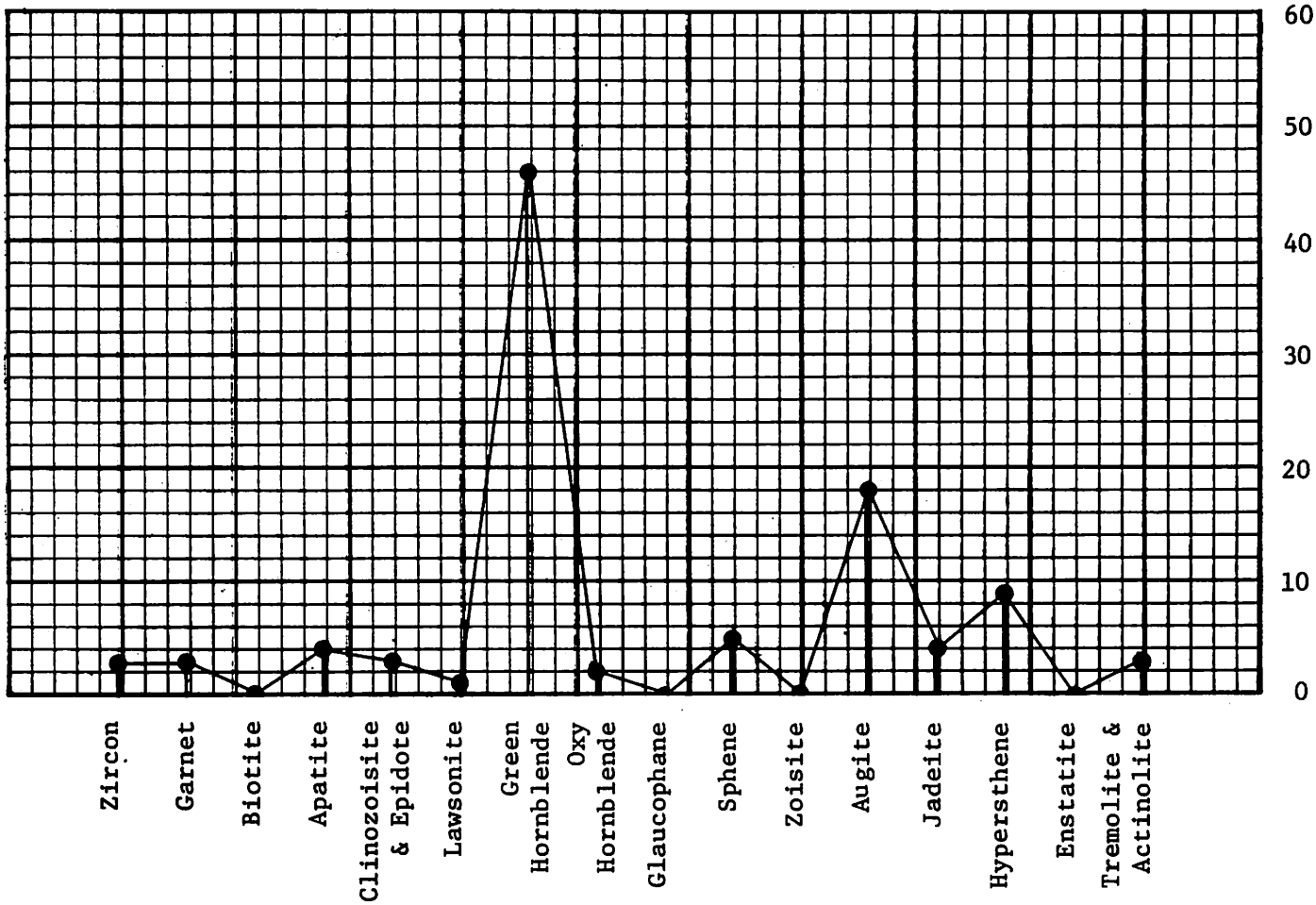
Wt. % of HM/SF 2.15

Total Grains Counted 195

% 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

SAMPLE 2005

Location 37°53'2"N 122°38'27"W

Depth 15.86 meters 8.67 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 17.84

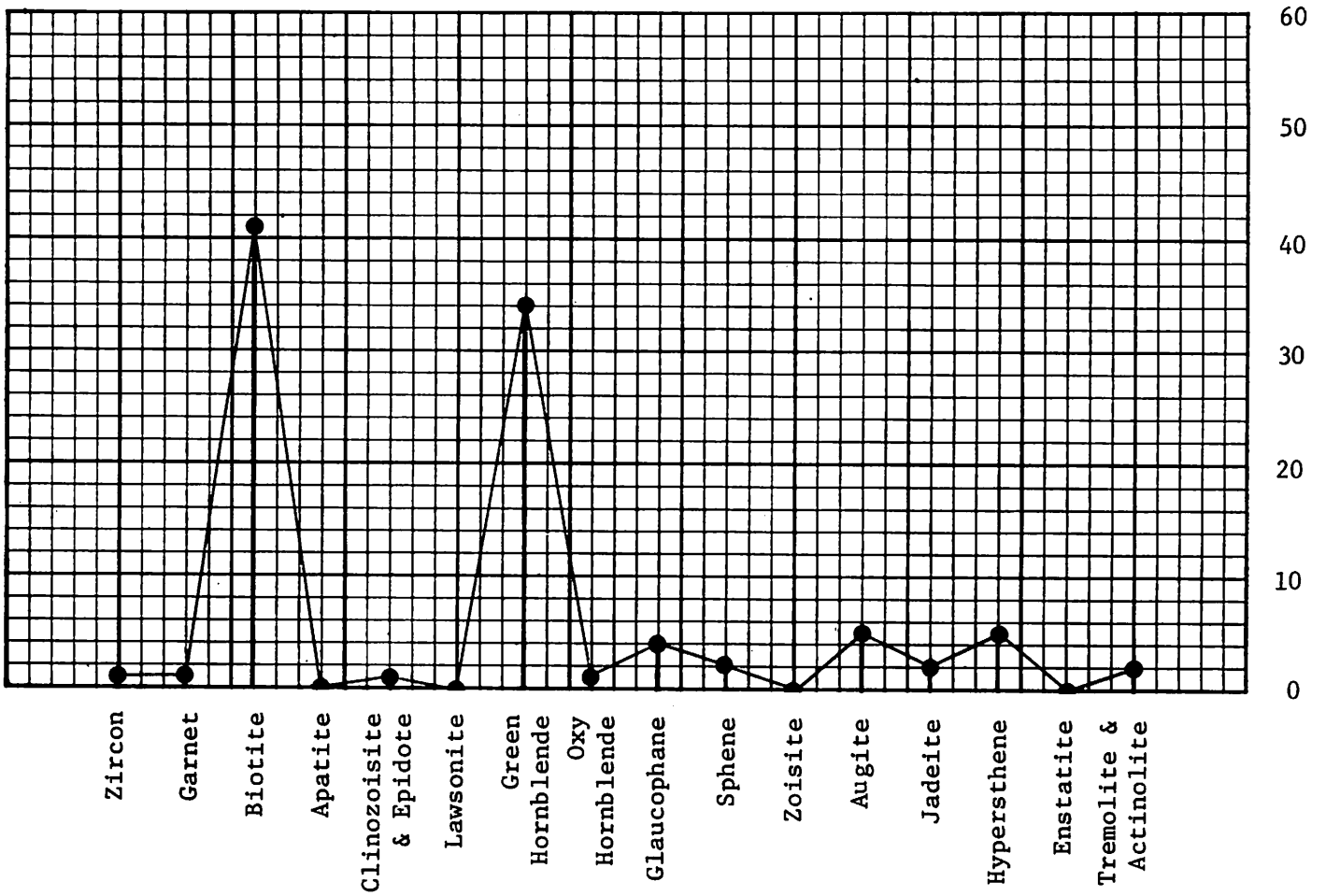
Wt. % of HM/SF 0.08

Total Grains Counted 138

% Transparent Grains 72.4

% Opaques 5.1

% Alterites and Unknowns 22.5



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Carbonate	1

Other Opaque Minerals

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

Analyst C. Isselhardt

SAMPLE 2005

Location 37°53'2"N 122"38'27"W

Depth 15.86 meters 8.67 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 40.48

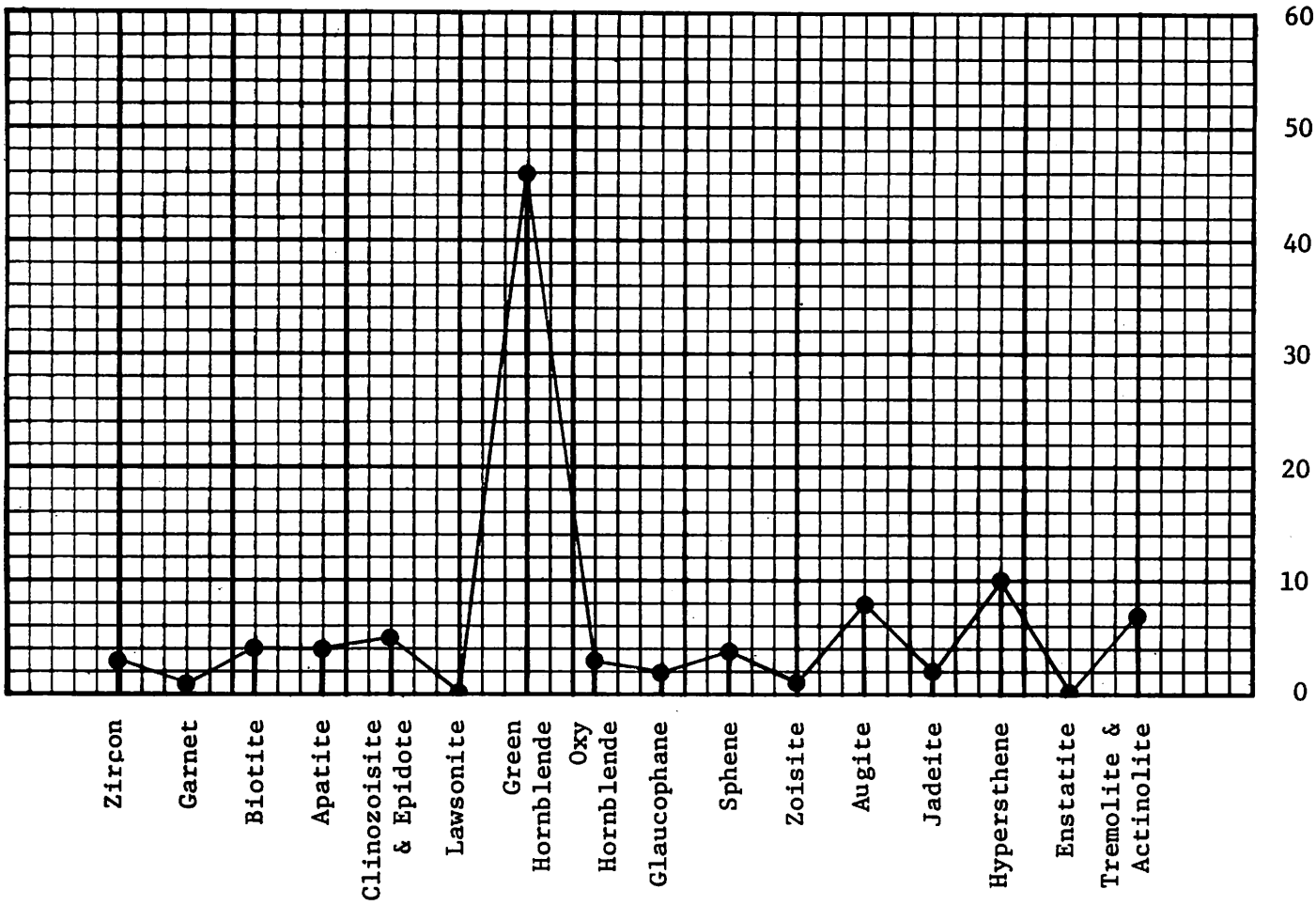
Wt. % of HM/SF 0.49

Total Grains Counted 159

% Transparent Grains 62.8

% Opaques 7.0

% Alterites and Unknowns 30.2



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

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

Analyst C. Isselhardt

SAMPLE 2005

Location 37°53'2"N 122°38'27°W

Depth 15.86 meters 8.67 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 20.73

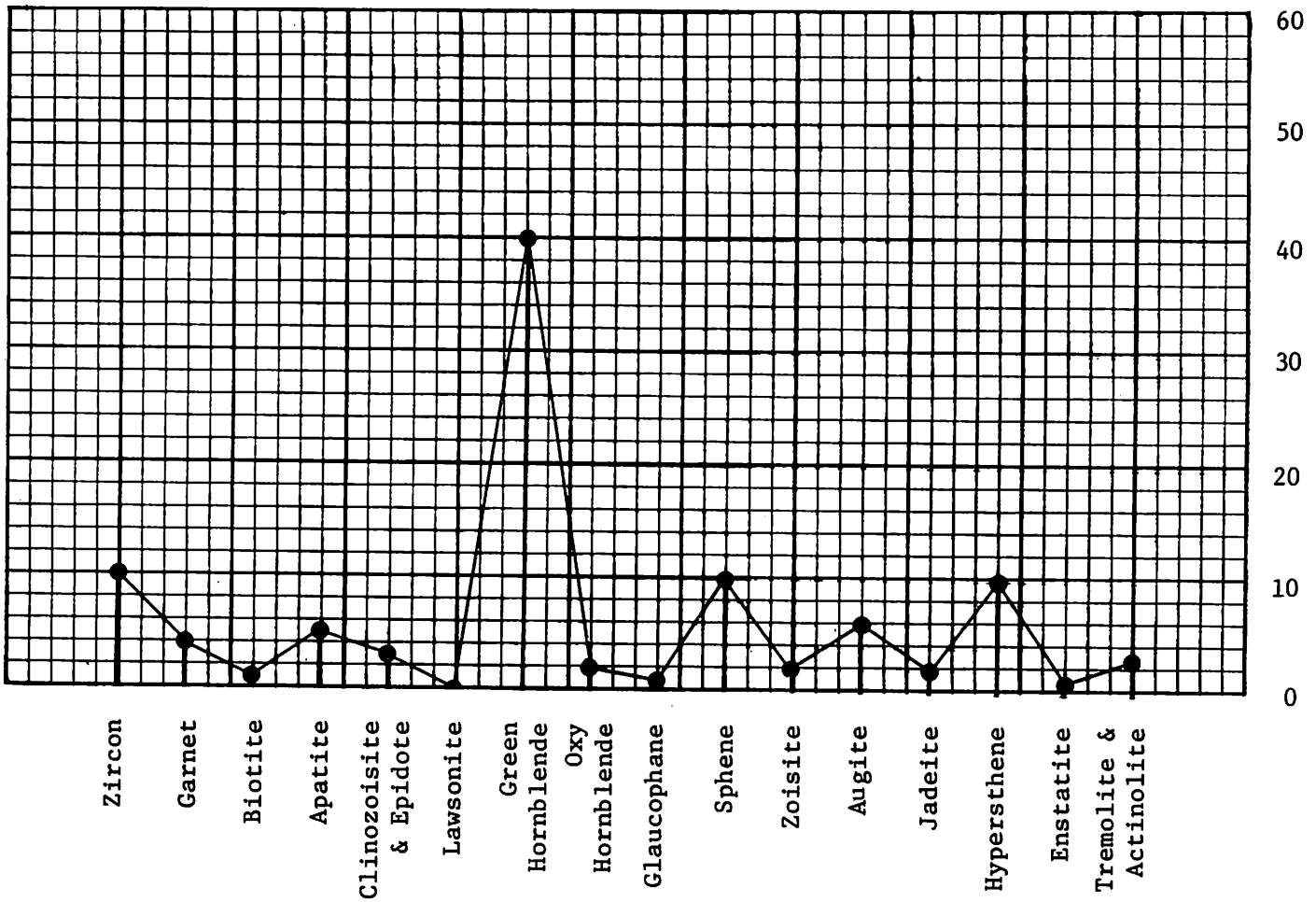
Wt. % of HM/SF 0.59

Total Grains Counted 153

% Transparent Grains 65.4

% Opaques 20.9

% Alterites and Unknowns 13.7



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	10
Picotite	6
Rock Frag.	3

Analyst C. Isselhardt

SAMPLE 2006

Location 37°52'48"N 122°38'13"W

Depth 16.48 meters 9.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 17.84

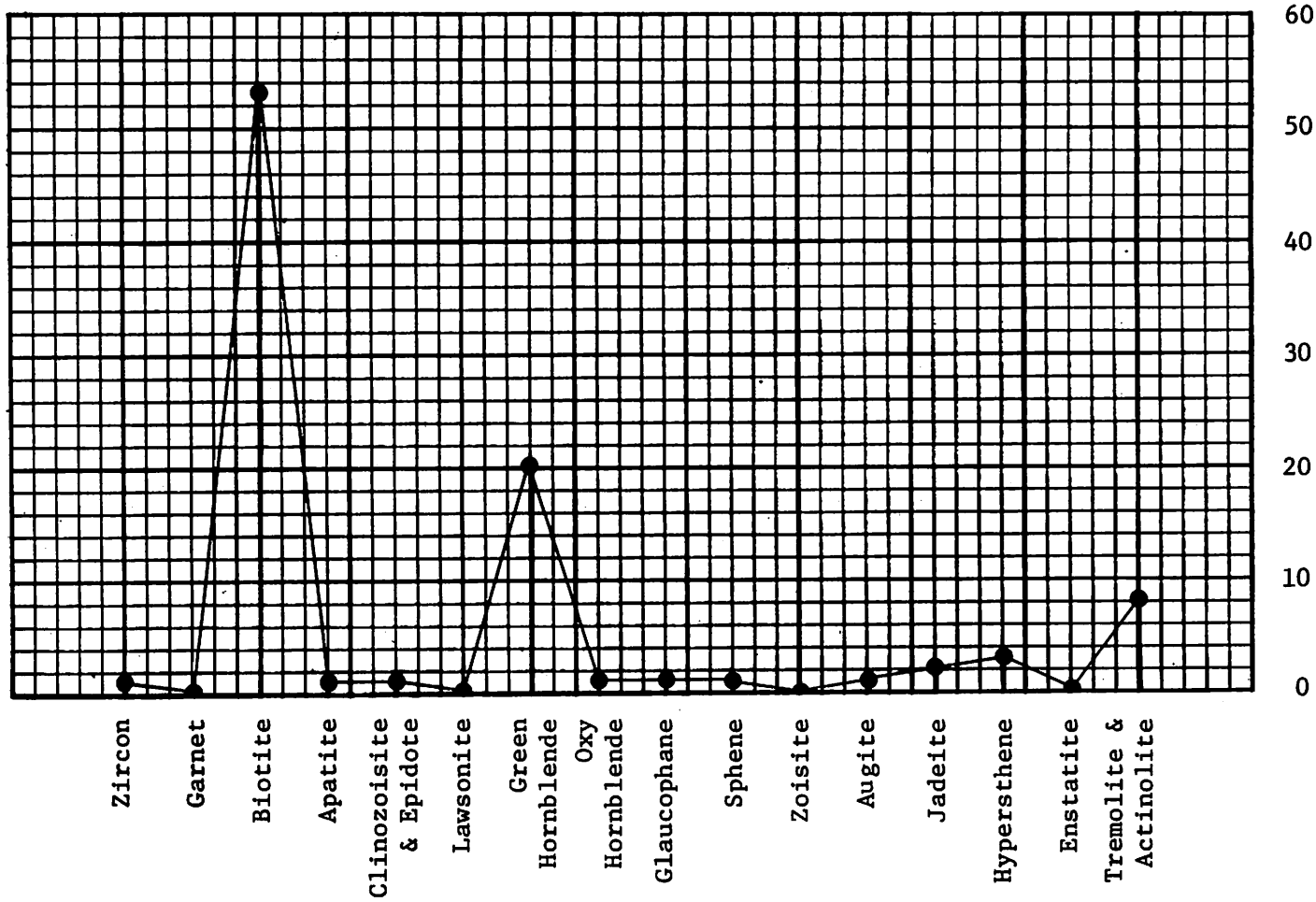
Wt. % of HM/SF 0.15

Total Grains Counted 281

% Transparent Grains 80

% Opaques 5

% Alterites and Unknowns 15



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	4
Chlorite	11

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	6
Picotite	1
Rock Frag.	6

Analyst L. Osuch

SAMPLE 2006

Location 37°52'48"N 122°38'13"W

Depth 16.48 meters 9.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 41.07

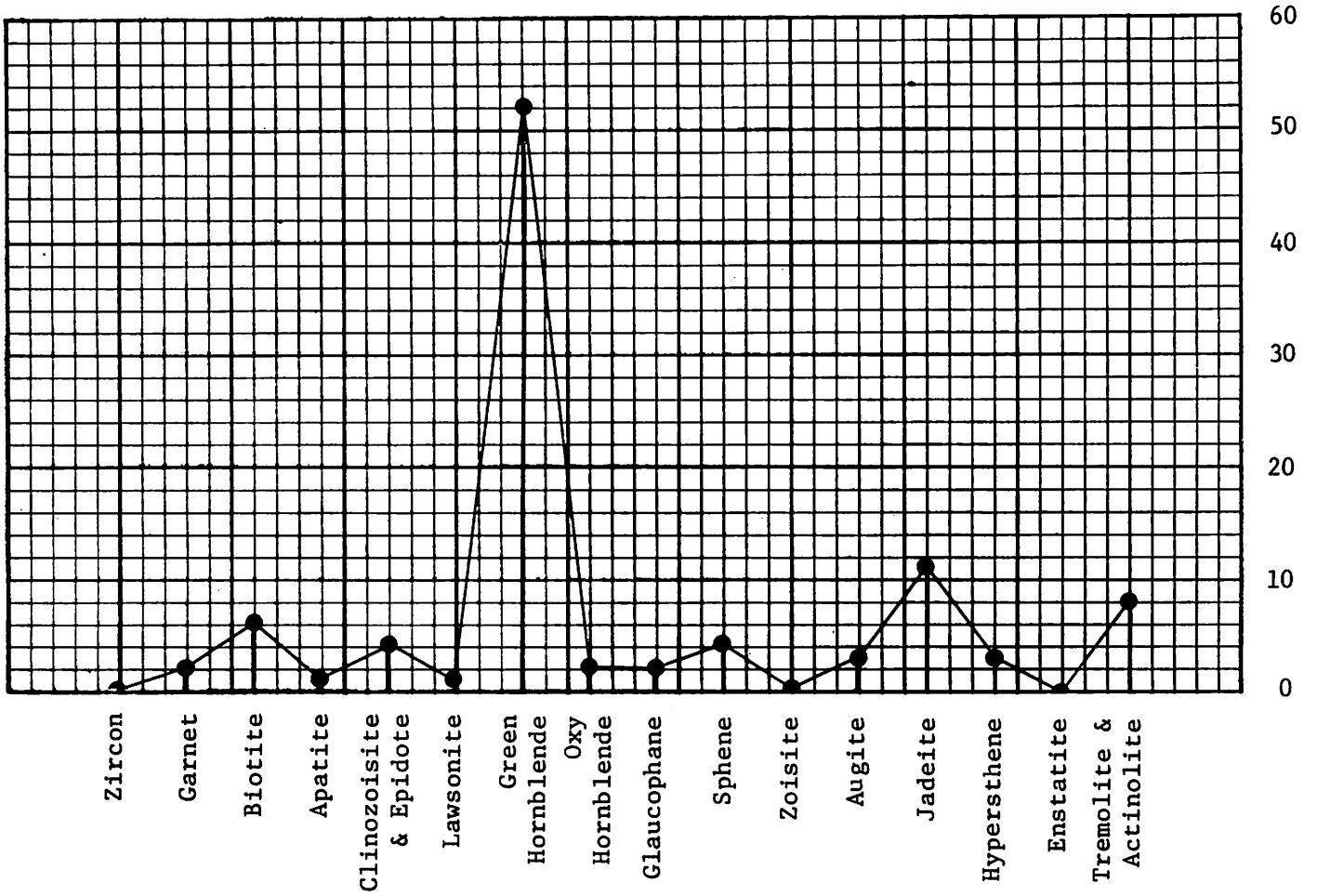
Wt. % of HM/SF 0.33

Total Grains Counted 199

% Transparent Grains 53

% Opaques 12

% Alterites and Unknowns 35



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	5
Magnetite	1
Rock Frag.	18

Analyst L. Osuch

SAMPLE 2006

Location 37°52'48"N 122°38'13"W

Depth 16.48 meters 9.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 19.67

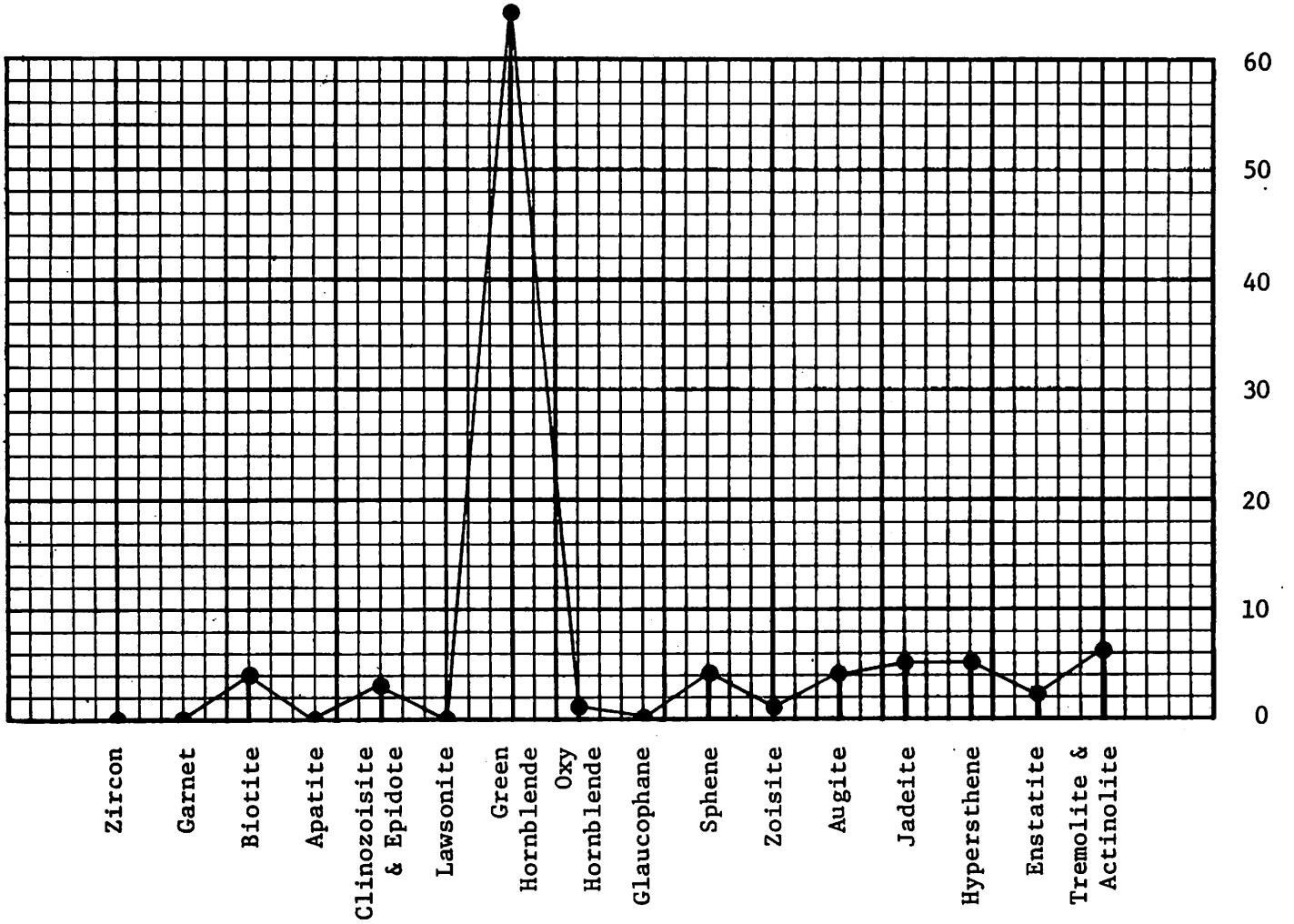
Wt. % of HM/SF 2.11

Total Grains Counted 162

% Transparent Grains 63

% Opaques 9

% Alterites and Unknowns 28



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	4
Picotite	2
Rock Frag.	7

Analyst L. Osuch

SAMPLE 2008

Location 37°52'33"N 122°38'24"W

Depth 17.38 meters 9.50 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 12.00

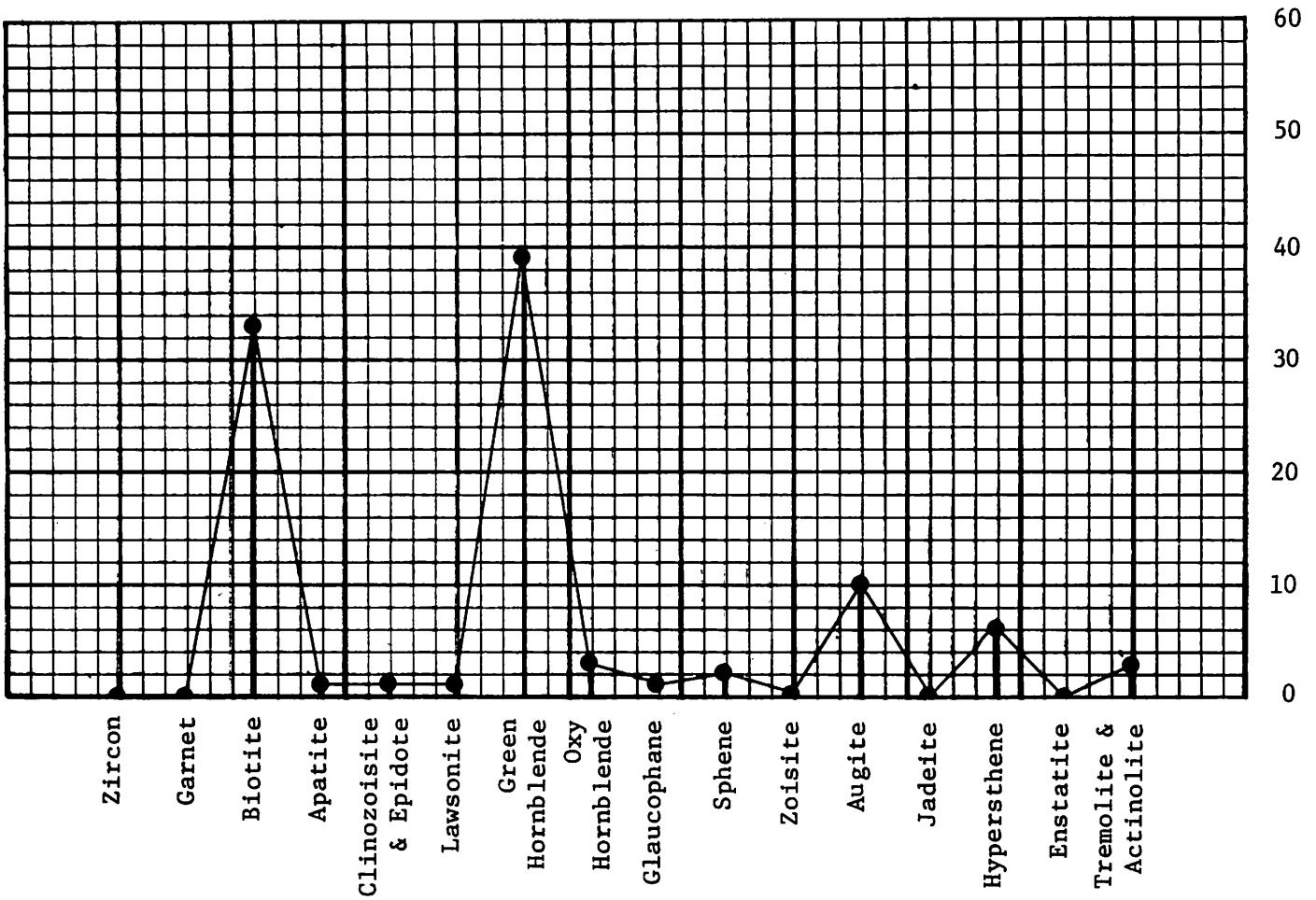
Wt. % of HM/SF 0.12

Total Grains Counted 274

% Transparent Grains 54.8

% Opaques 4.7

% Alterites and Unknowns 40.5



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	10
Rock Frag.	1

Analyst T. Yancey

SAMPLE 2008

Location 37°52'33"N 122°38'24"W

Depth 17.38 meters 9.50 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 40.70

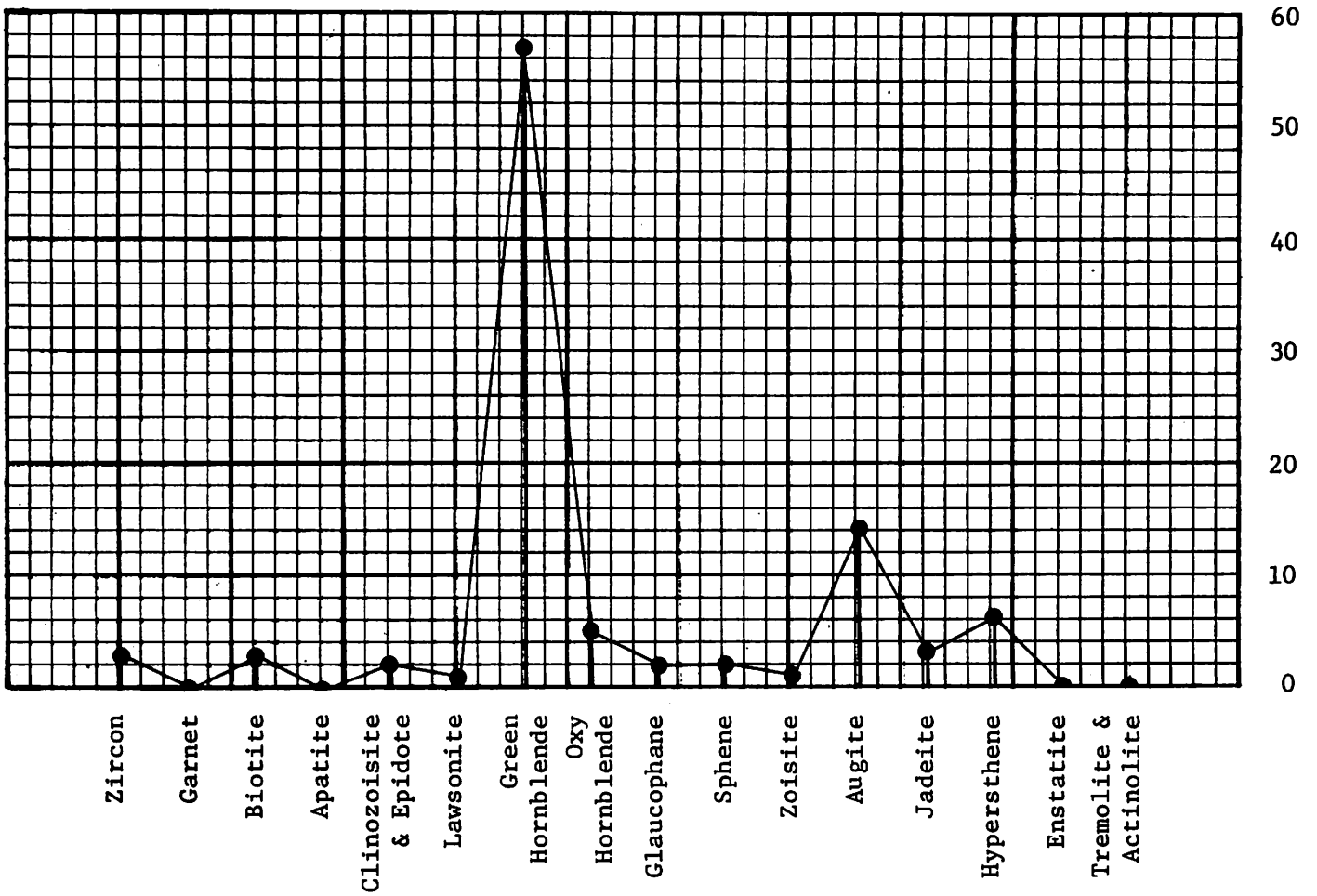
Wt. % of HM/SF 0.47

Total Grains Counted 184

% 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

Analyst T. Yancey

SAMPLE 2008

Location 37°52'33"N 122°38'24"W

Depth 17.38 meters 9.50 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 23.10

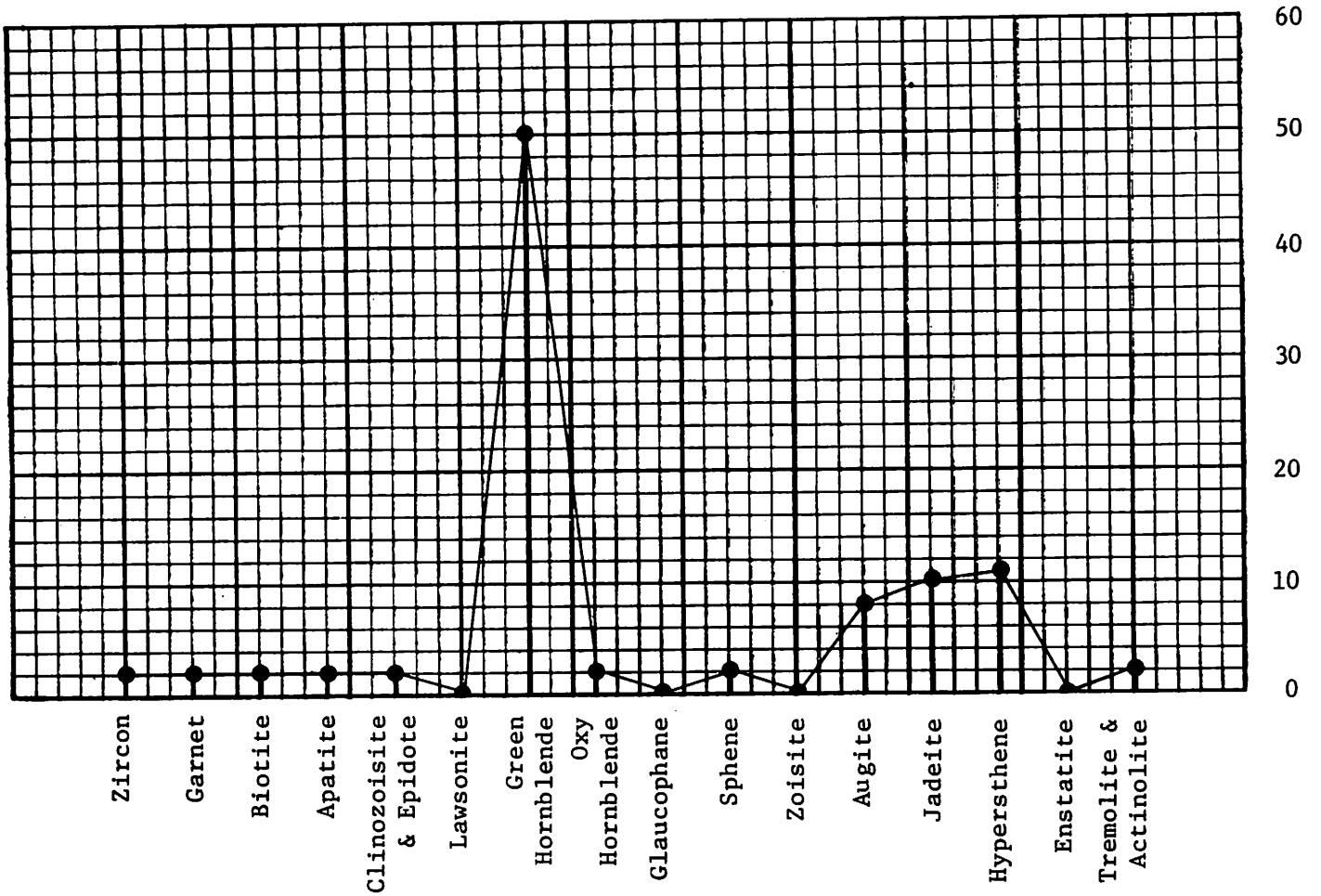
Wt. % of HM/SF 1.47

Total Grains Counted 173

% Transparent Grains 56.1

% Opaques 13.3

% Alterites and Unknowns 30.6



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Magnetite	18
Picotite	5

Analyst T. Yancey

SAMPLE 2009

Location 37°52'53"N 122°38'59"W

Depth 16.77 meters 9.17 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 20.62

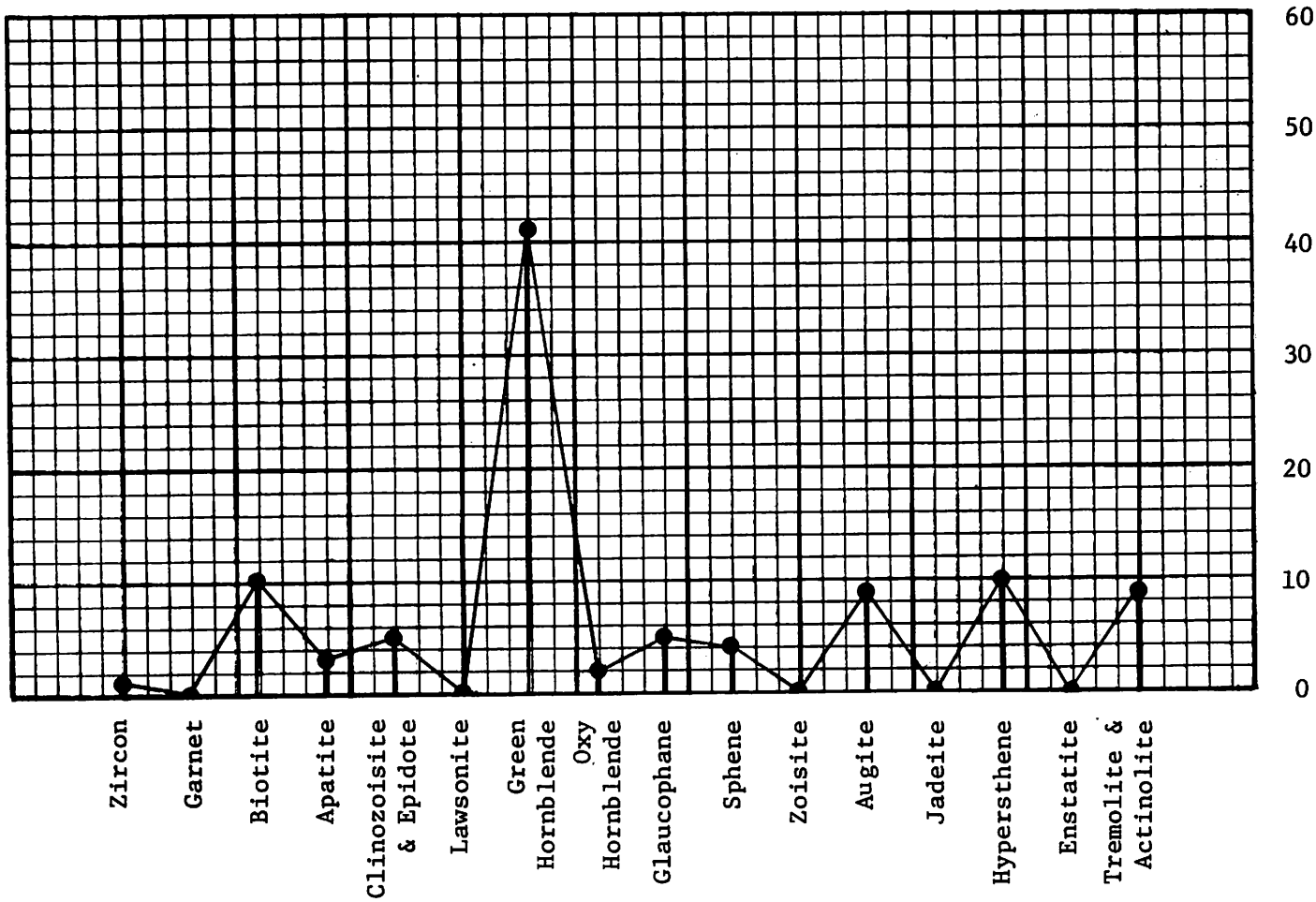
Wt. % of HM/SF 0.28

Total Grains Counted 170

% Transparent Grains 58.8

% Opaques 7.1

% Alterites and Unknowns 34.1



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

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

Analyst C. Isselhardt

SAMPLE 2009

Location 37°52'53"N 122"38'59"W

Depth 16.77 meters 9.17 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 44.80

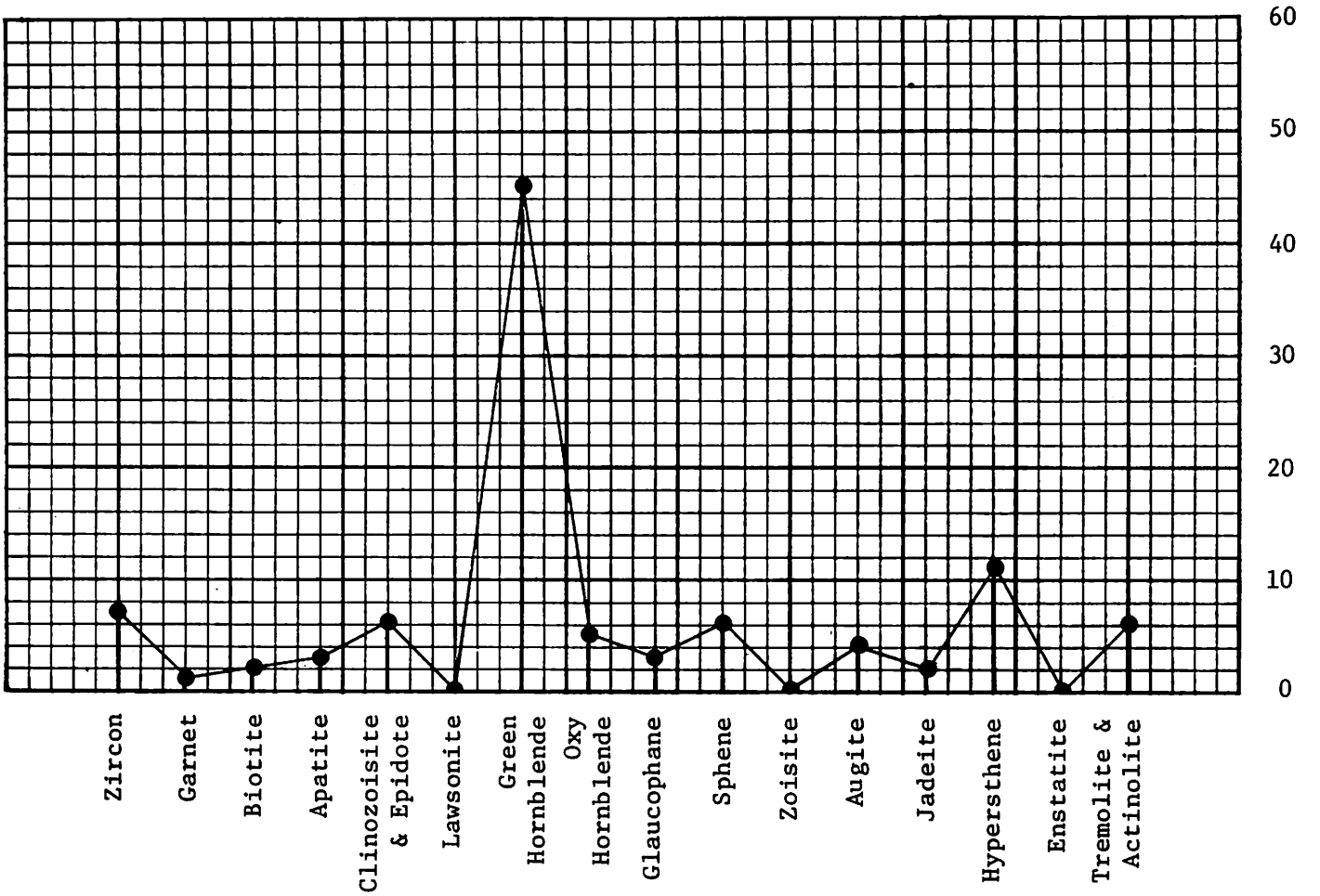
Wt. % of HM/SF 1.12

Total Grains Counted 169

% Transparent Grains 59.2

% Opaques 5.9

% Alterites and Unknowns 34.9



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	2
Picotite	2
Rock Frag.	5

Analyst C. Isselhardt

SAMPLE 2009

Location 37°52'53"N 122°38'59"W

Depth 16.77 meters 9.17 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 17.70

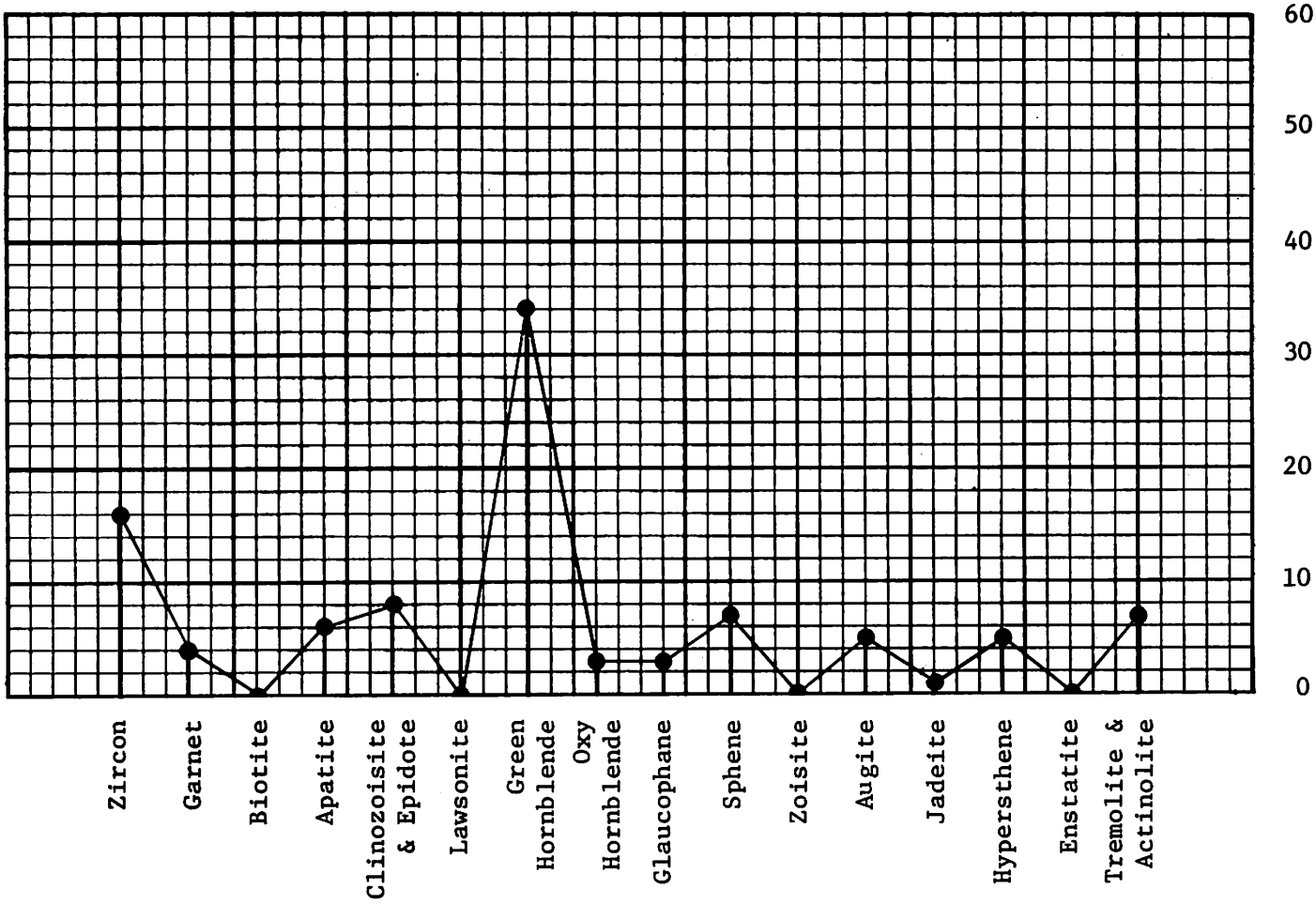
Wt. % of HM/SF 1.25

Total Grains Counted 179

% Transparent Grains 55.8

% Opaques 19.6

% Alterites and Unknowns 24.6



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	6
Magnetite	21
Picotite	3
Rock Frag.	5

Analyst C. Isselhardt

SAMPLE 2010

Location 37°53'8"N 122°39'29"W

Depth 14.63 meters 8.00 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 23.95

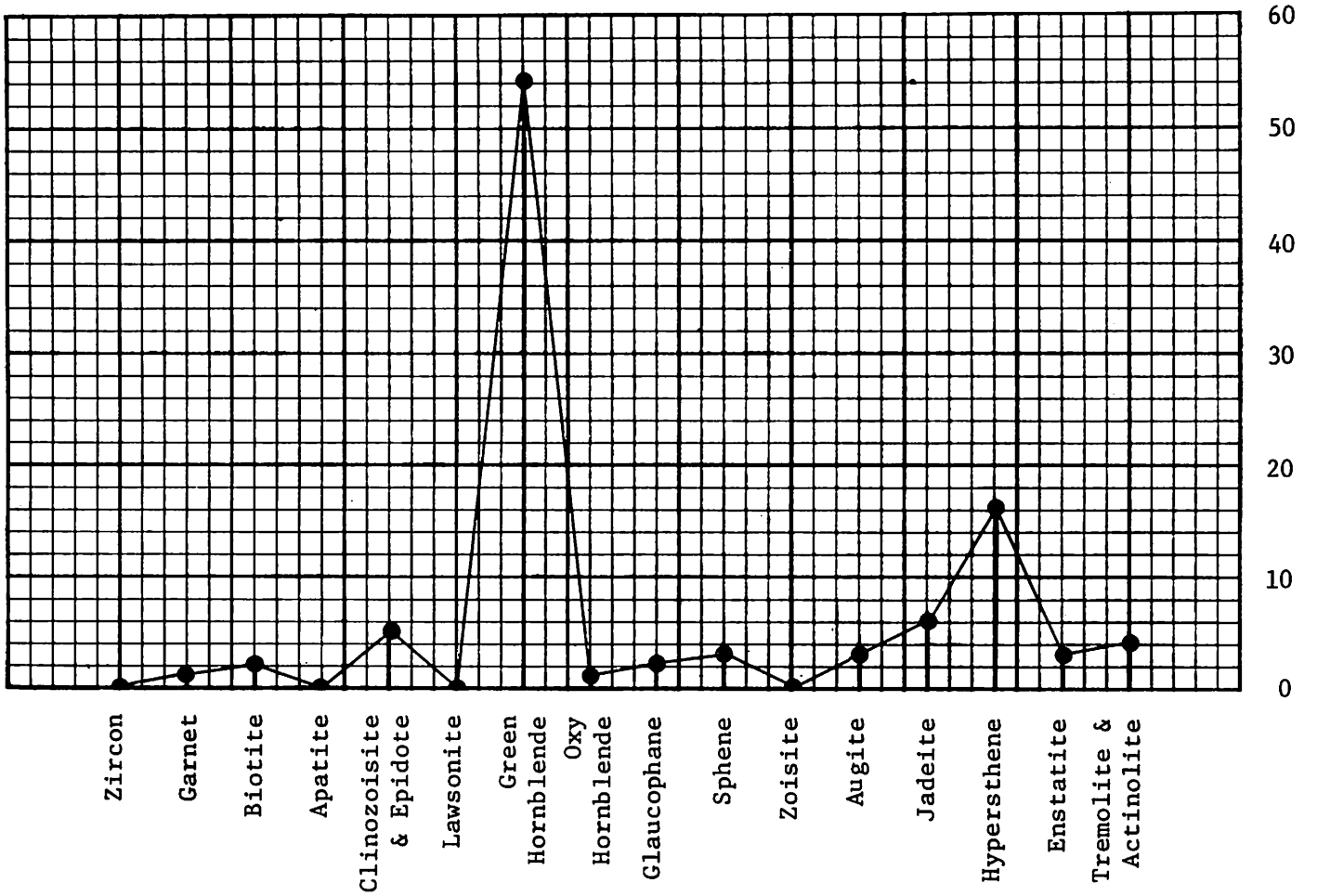
Wt. % of HM/SF 1.06

Total Grains Counted 141

% Transparent Grains 72

% Opaques 9

% Alterites and Unknowns 19



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	4
Picotite	2
Rock Frag.	5

Analyst L. Osuch

SAMPLE 2010

Location 37°53'8"N 122°39'29"W

Depth 14.63 meters 8.00 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 40.66

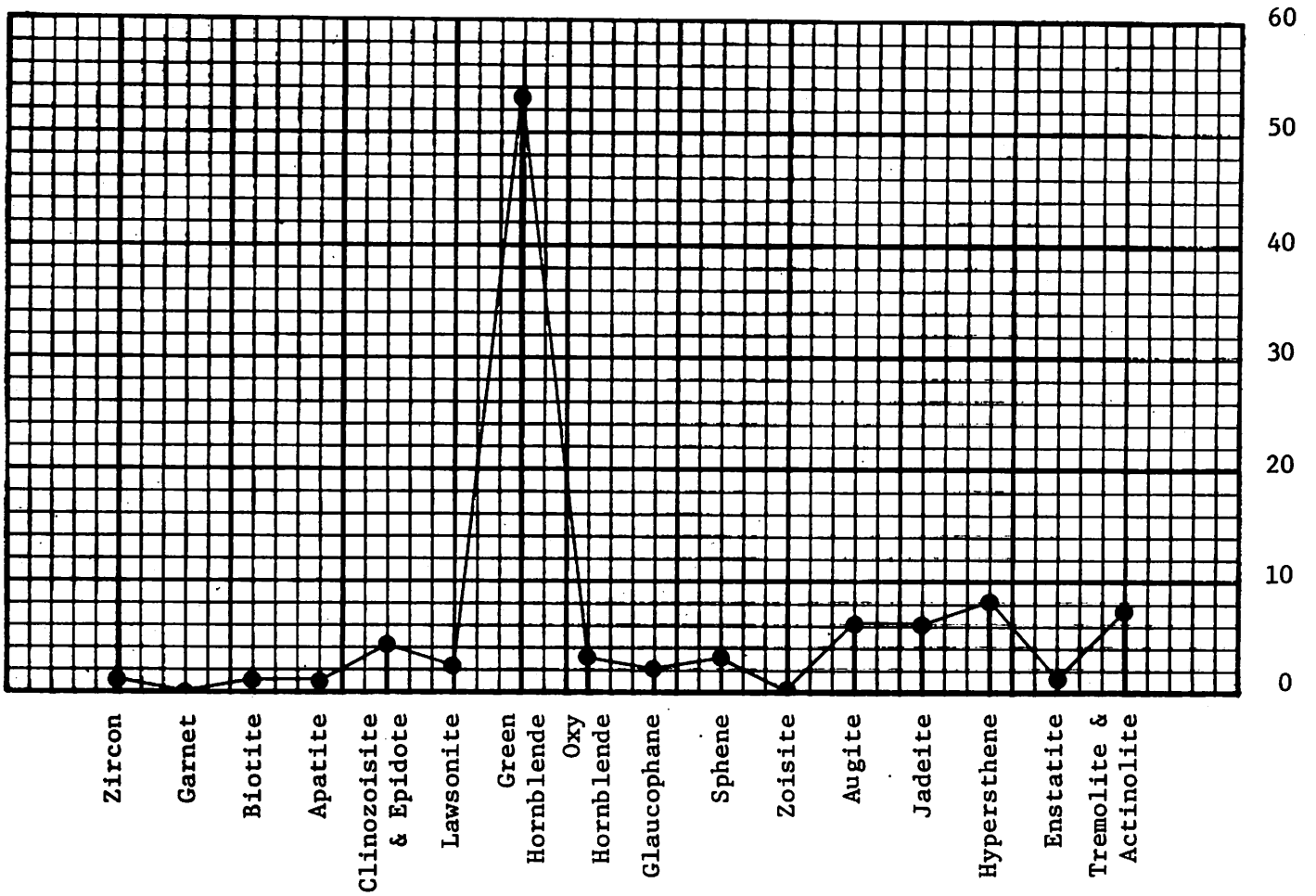
Wt. % of HM/SF 2.57

Total Grains Counted 139

% Transparent Grains 73

% Opaques 10

% Alterites and Unknowns 17



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	5
Picotite	2
Rock Frag.	5

Analyst L. Osuch

SAMPLE 2010

Location 37°53'8"N 122°39'29"W

Depth 14.63 meters 8.00 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 21.60

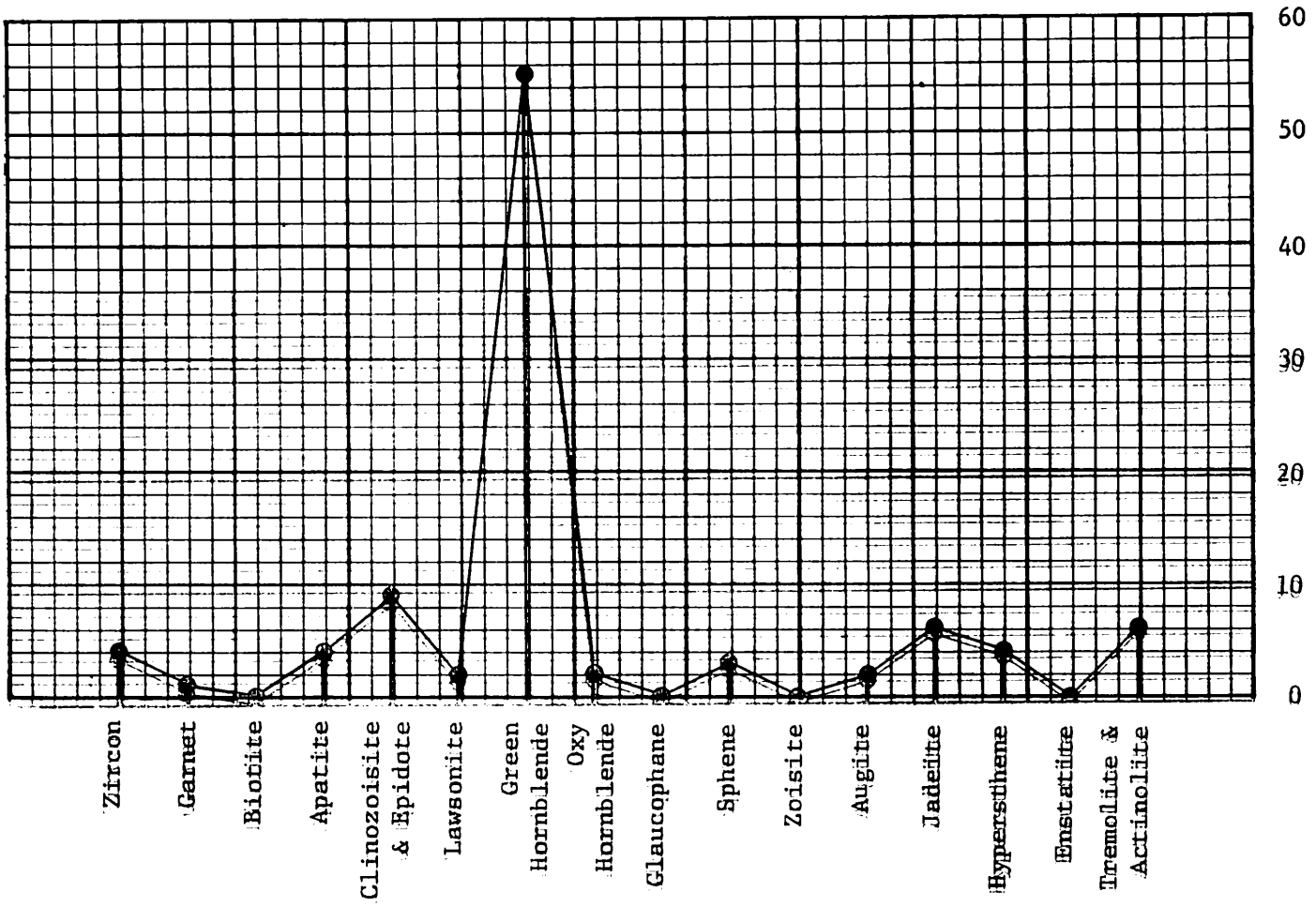
Wt. % of HM/SF 4.66

Total Grains Counted 153

% Transparent Grains 65

% Opaques 17

% Alterites and Unknowns 18



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	14
Picotite	3
Rock Frag.	6

Analyst L. Osuch

SAMPLE 2011

Location 37°52'56"N 122°39'52"W

Depth 13.72 meters 7.50 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 6.95

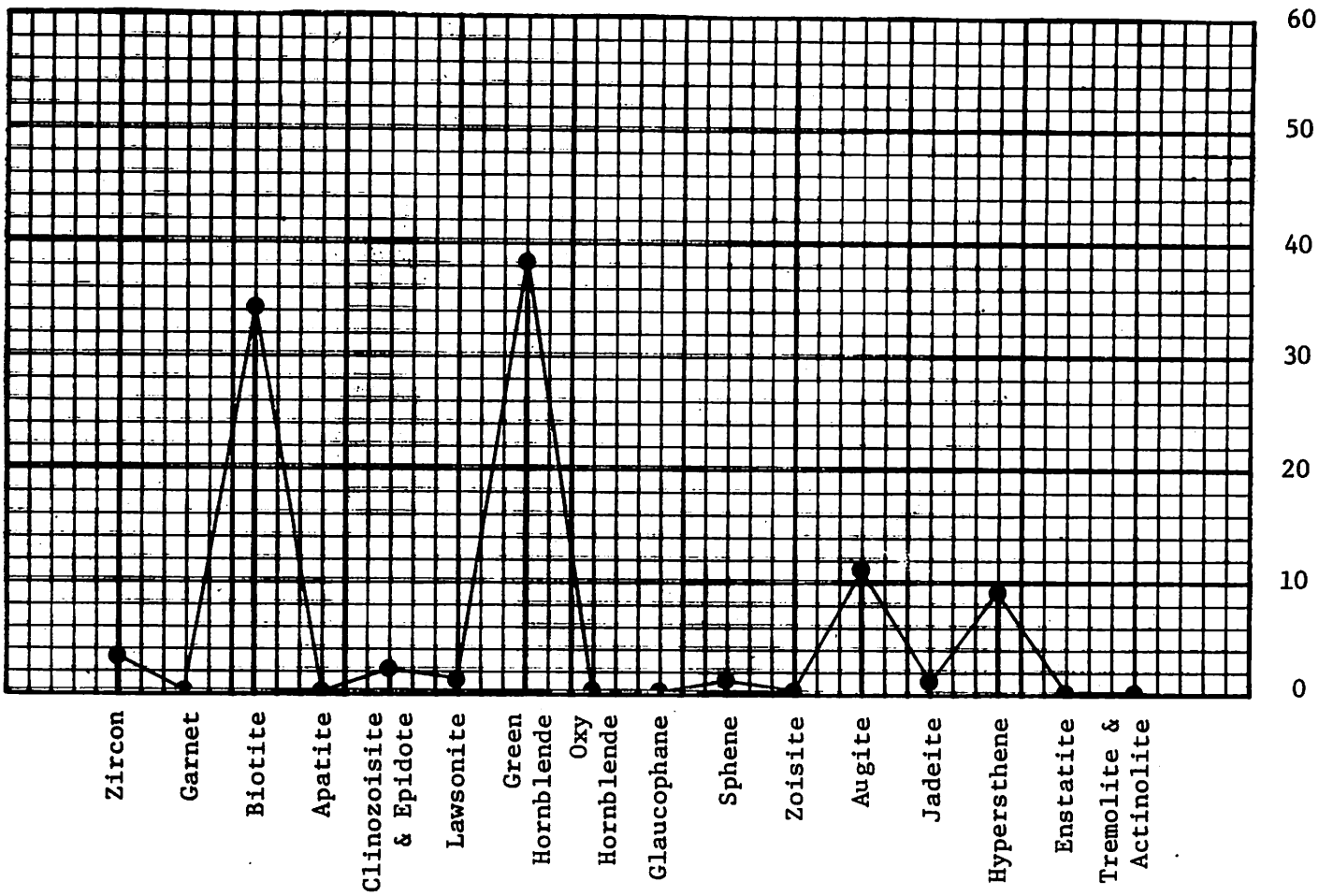
Wt. % of HM/SF 2.05

Total Grains Counted 277

% Transparent Grains 53.8

% Opaques 23.8

% Alterites and Unknowns 22.4



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	7
Magnetite	55
Picotite	2
Pyrite	2

Analyst T. Yancey

SAMPLE 2011

Location 37°52'56"N 122°39'52"W

Depth 13.72 meters 7.50 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 23.53

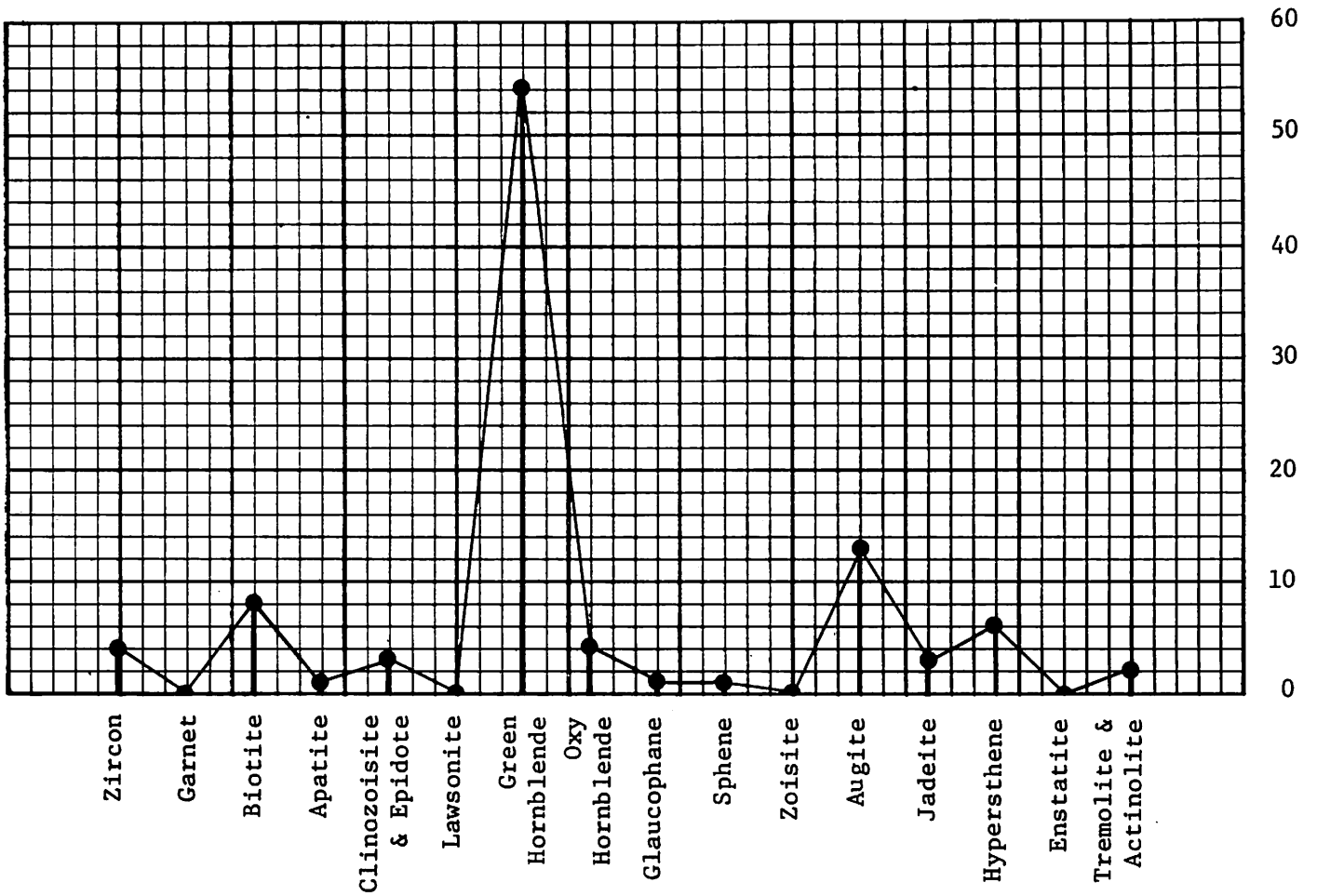
Wt. % of HM/SF 0.60

Total Grains Counted 231

% Transparent Grains 47.2

% Opaques 16.5

% Alterites and Unknowns 36.3



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	9
Magnetite	26
Picotite	1
Pyrite	2

Analyst T. Yancey

SAMPLE 2011

Location 37°52'56"N 122°39'52"W

Depth 13.72 meters 7.50 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 35.80

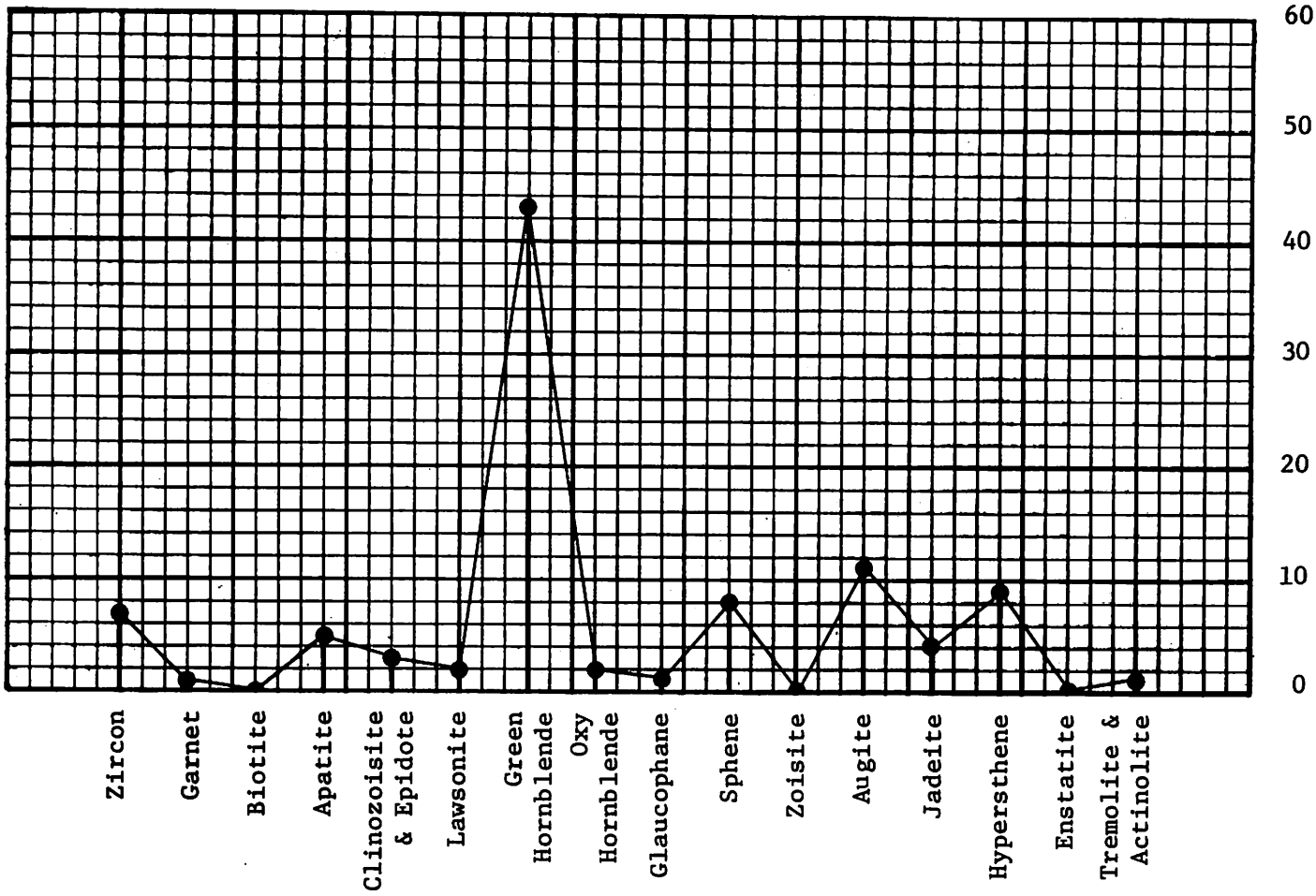
Wt. % of HM/SF 1.29

Total Grains Counted 204

% Transparent Grains 53.9

% Opaques 15.2

% Alterites and Unknowns 30.9



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	3
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	26
Picotite	2

Analyst T. Yancey

SAMPLE 2012

Location 37°52'39"N 122°39'20"W

Depth 16.47 meters 9.0 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 19.10

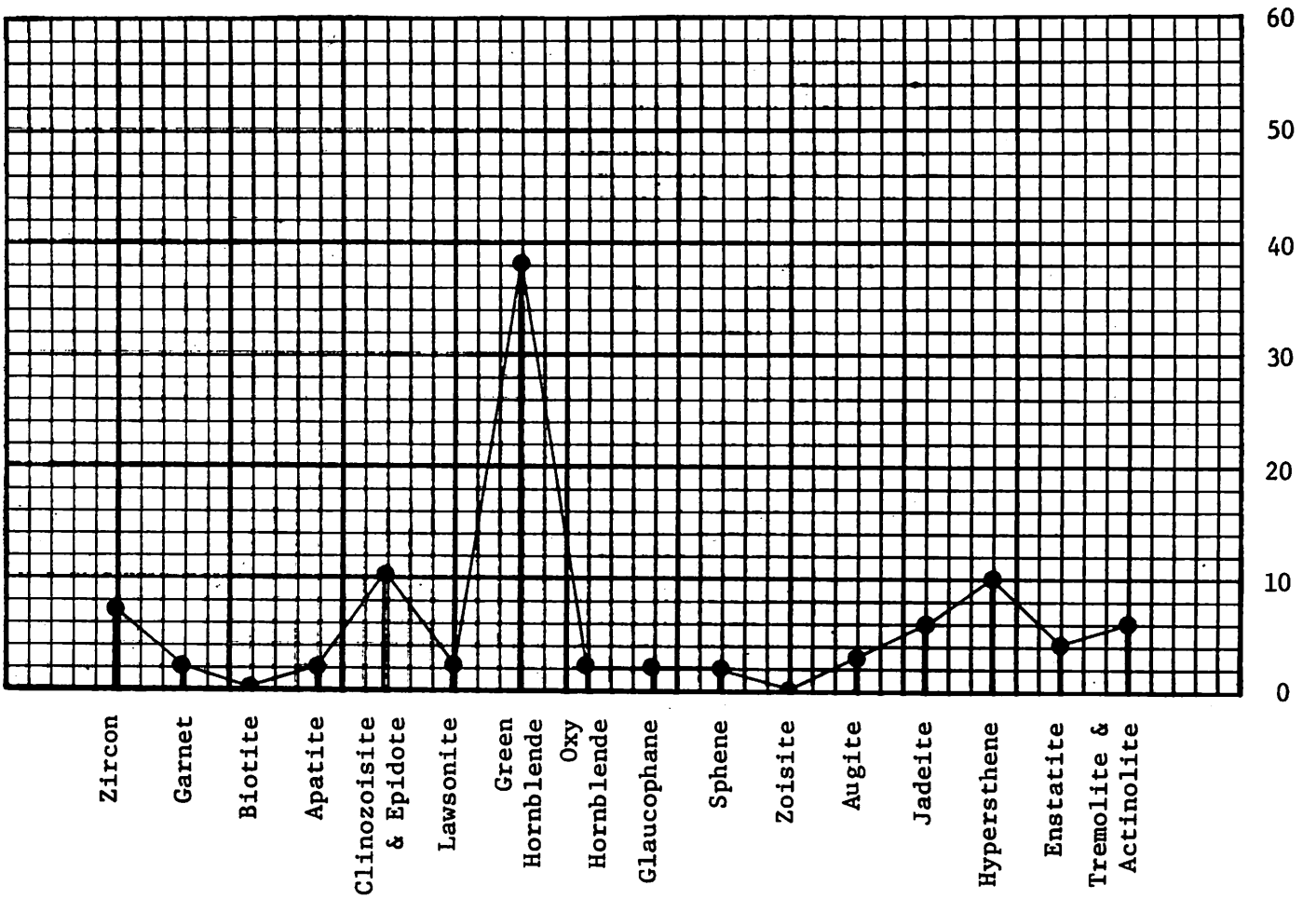
Wt. % of HM/SF 2.05

Total Grains Counted 195

% Transparent Grains 64.1

% Opaques 11.8

% Alterites and Unknowns 24.1



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	3
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	9
Rock Frag.	13

Analyst C. Isselhardt

SAMPLE 2012

Location 37°52'39"N 122°39'20"W

Depth 16.47 meters 9.0 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 26.80

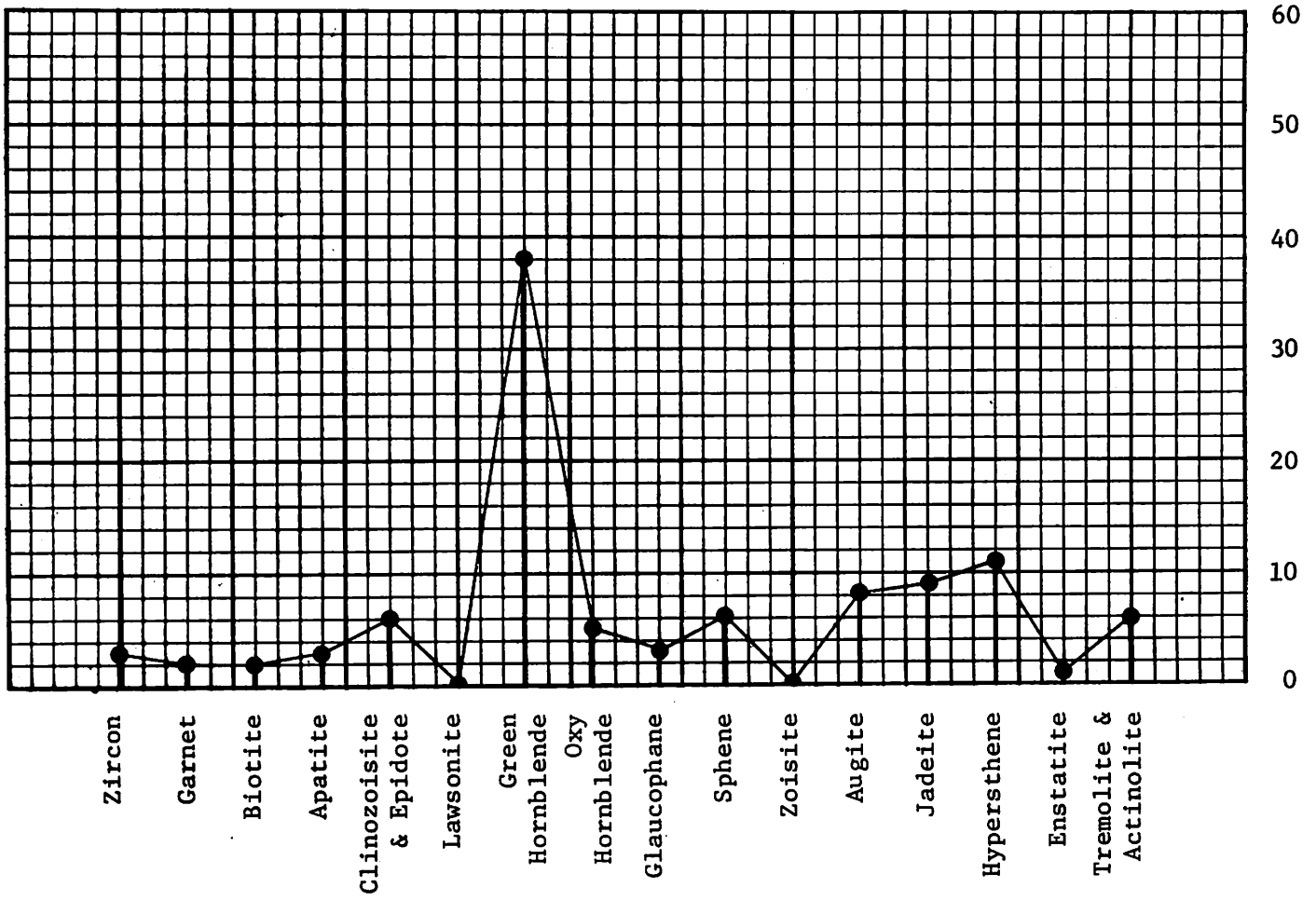
Wt. % of HM/SF 3.33

Total Grains Counted 189

% Transparent Grains 57.7

% Opaques 17.9

% Alterites and Unknowns 24.4



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	18
Picotite	4
Rock Frag.	10

Analyst C. Isselhardt

SAMPLE 2012

Location 37°52'39"N 122°39'20"W

Depth 16.47 meters 9.0 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 20.70

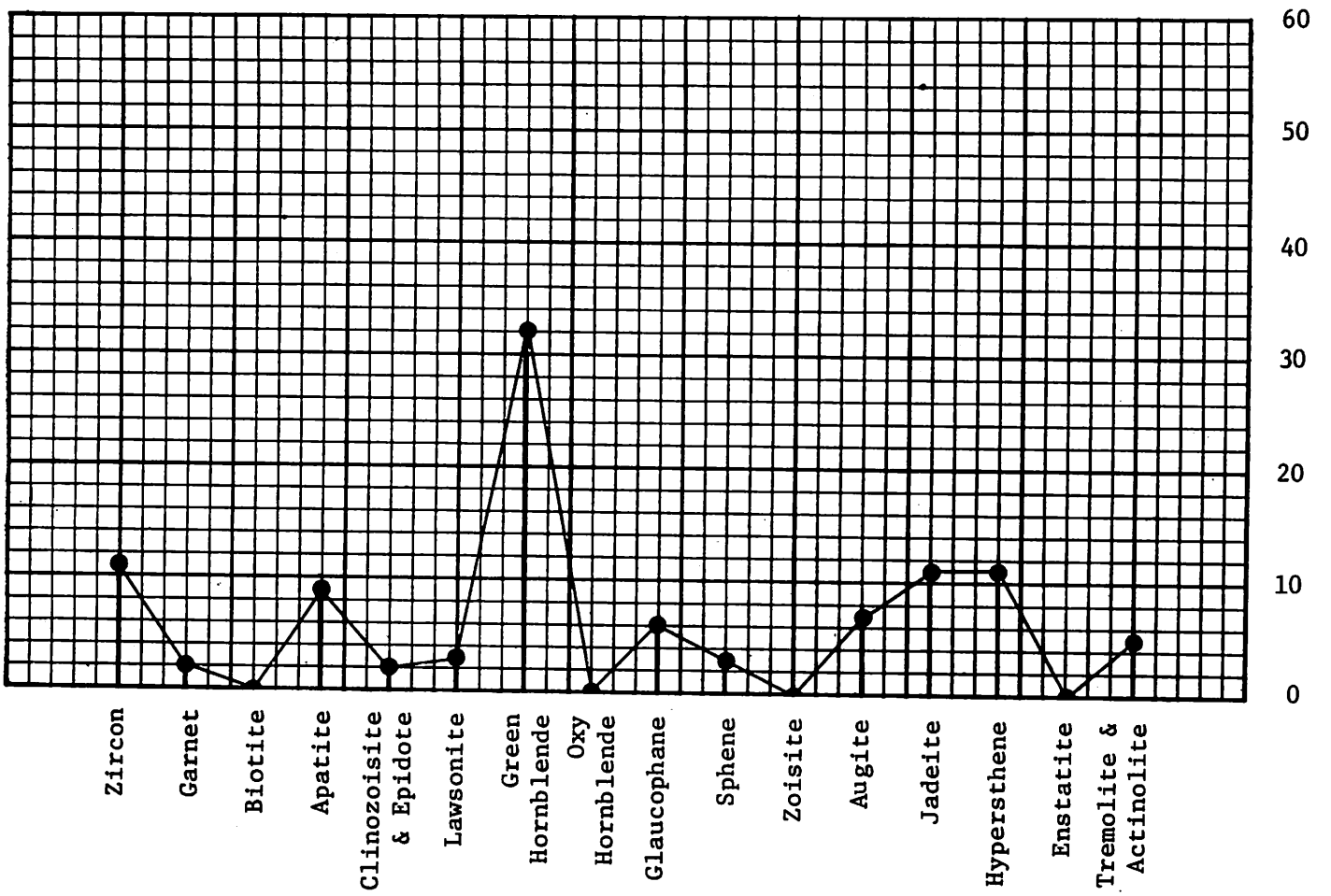
Wt. % of HM/SF 6.48

Total Grains Counted 186

% Transparent Grains 56.5

% Opaques 21.5

% Alterites and Unknowns 22.0



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	7
Magnetite	16
Picotite	6
Rock Frag.	11

Analyst C. Isselhardt

SAMPLE 2013

Location 37°52'28"N 122°38'42"W

Depth 17.69 meters 9.67 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 19.93

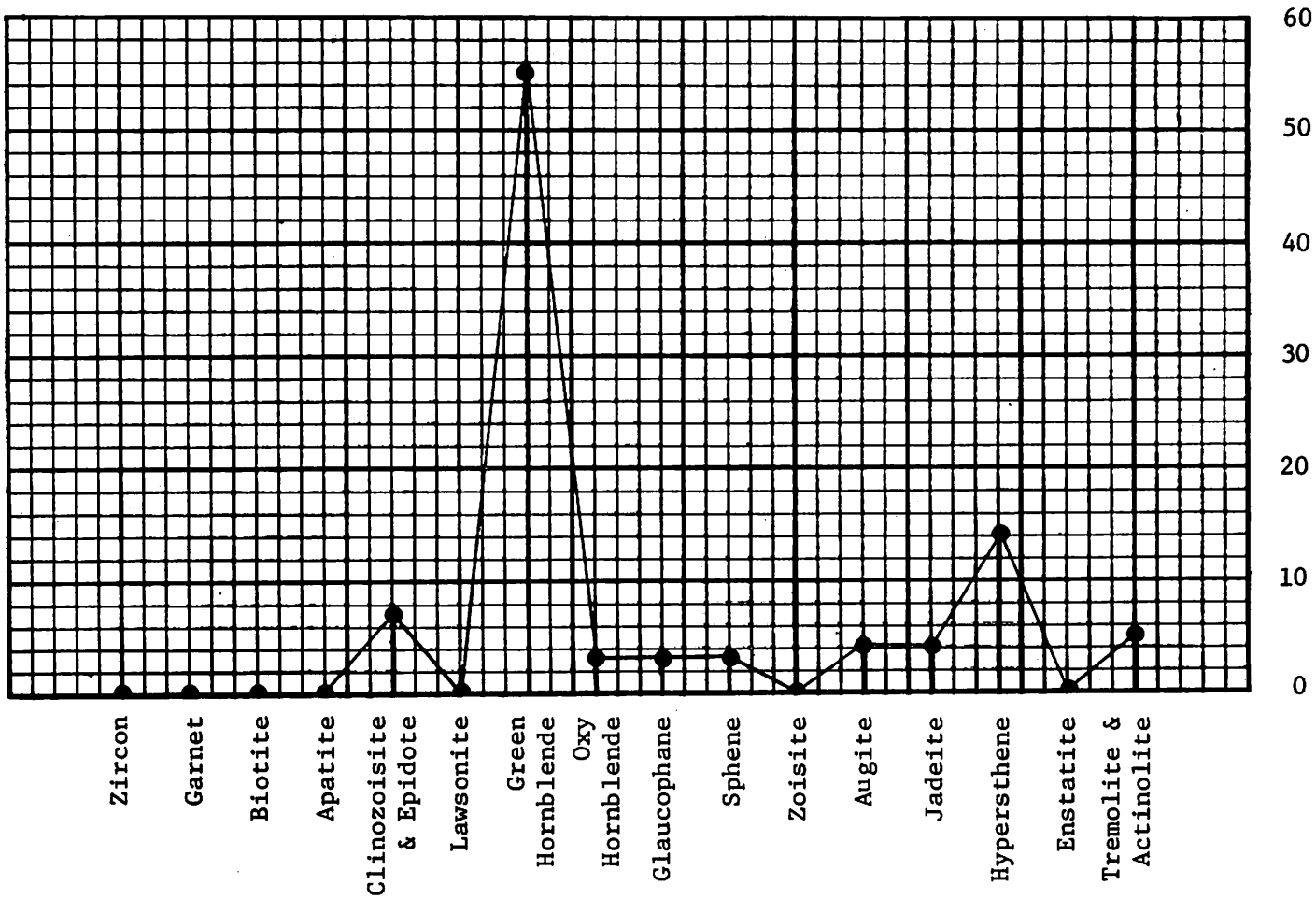
Wt. % of HM/SF 0.33

Total Grains Counted 189

% Transparent Grains 54

% Opaques 14

% Alterites and Unknowns 32



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	5
Rock Frag.	20

Analyst L. Osuch

SAMPLE 2013

Location 37°52'28"N 122°38'42"W

Depth 17.69 meters 9.67 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 36.90

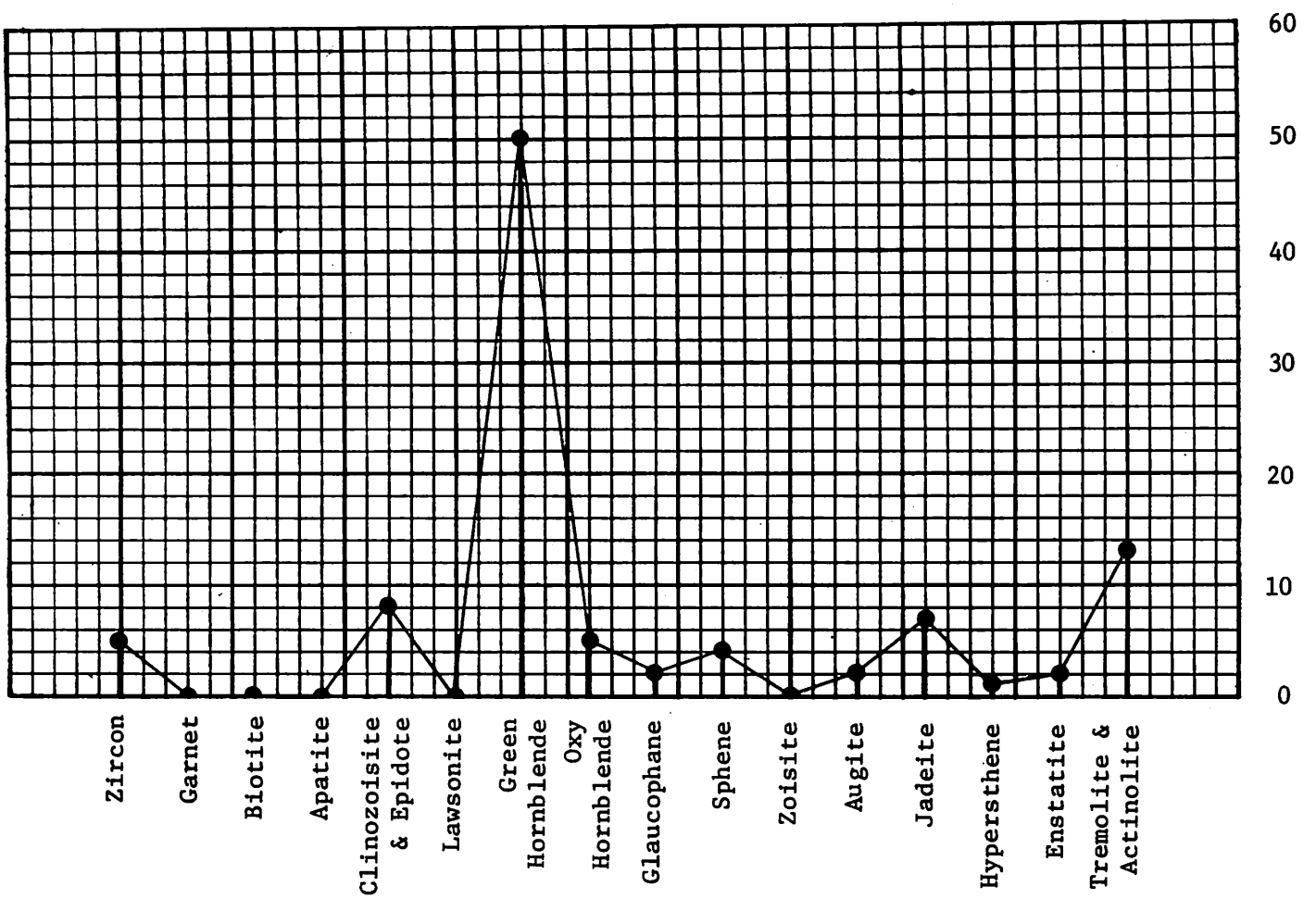
Wt. % of HM/SF 0.85

Total Grains Counted 194

% Transparent Grains 54

% Opaques 16

% Alterites and Unknowns 30



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	9
Picotite	1
Rock Frag.	20

Analyst L. Osuch

SAMPLE 2013

Location 37°52'28"N 122°38'42"W

Depth 17.69 meters 9.67 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 24.87

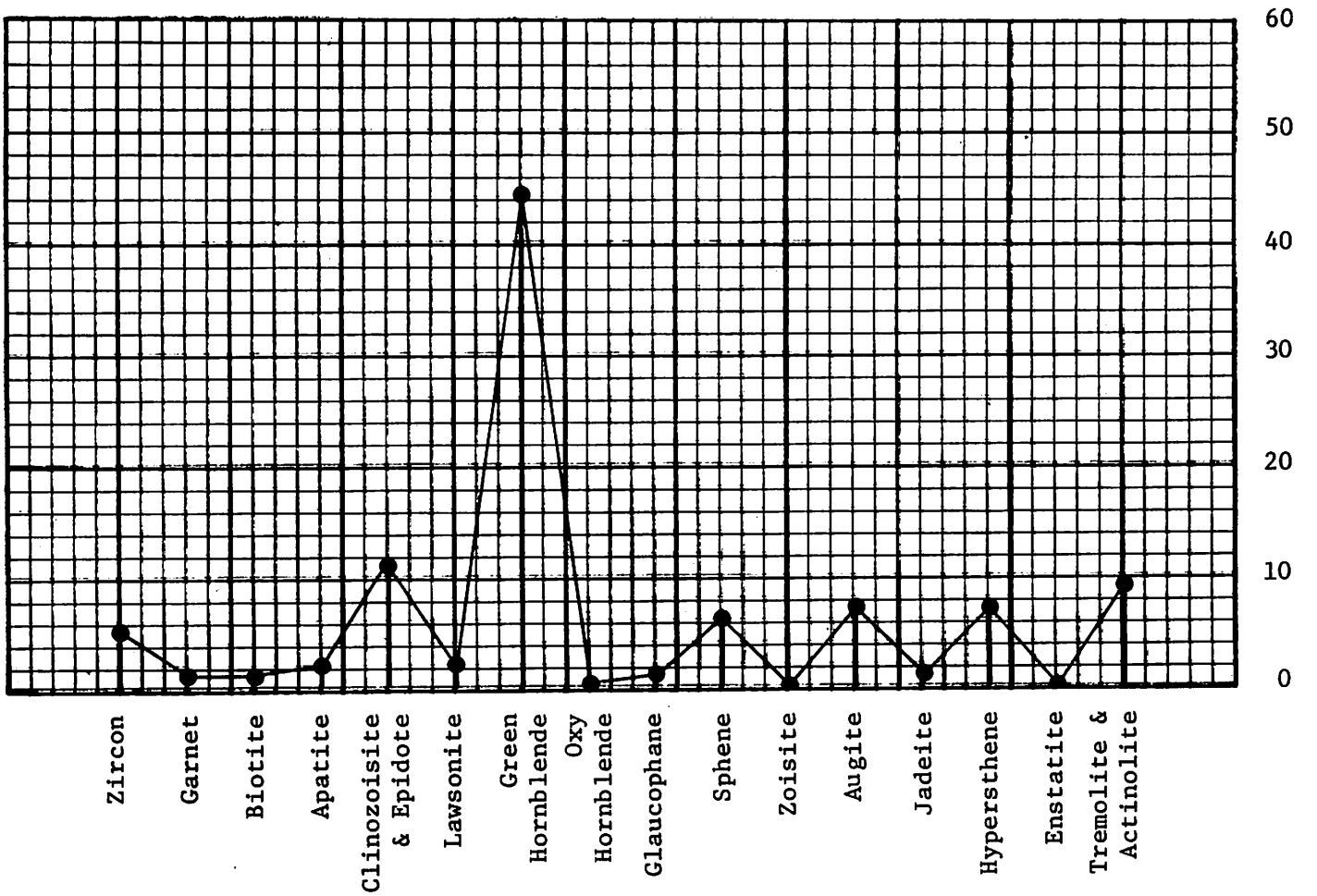
Wt. % of HM/SF 3.12

Total Grains Counted 174

% Transparent Grains 59

% Opaques 15

% Alterites and Unknowns 26



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2
Chlorite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	13
Picotite	3
Rock Frag.	9

Analyst L. Osuch

SAMPLE 2014

Location 37°52'04"N 122°37'40"W

Depth 18.00 meters 9.83 fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 23.08

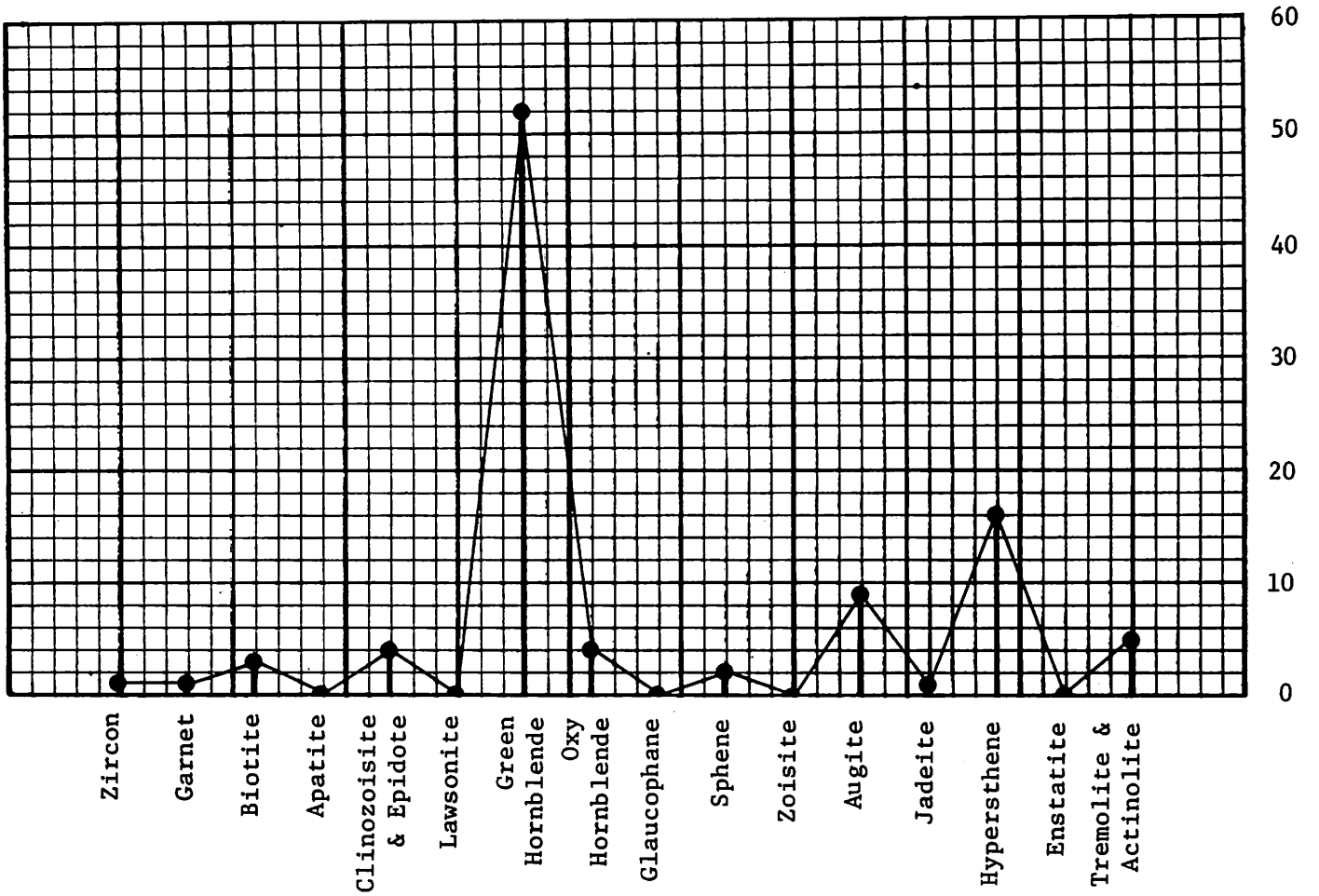
Wt. % of HM/SF 0.36

Total Grains Counted 158

% Transparent Grains 63.8

% Opaques 5.3

% Alterites and Unknowns 30.9



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth 18.00 meters 9.83 fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 33.20

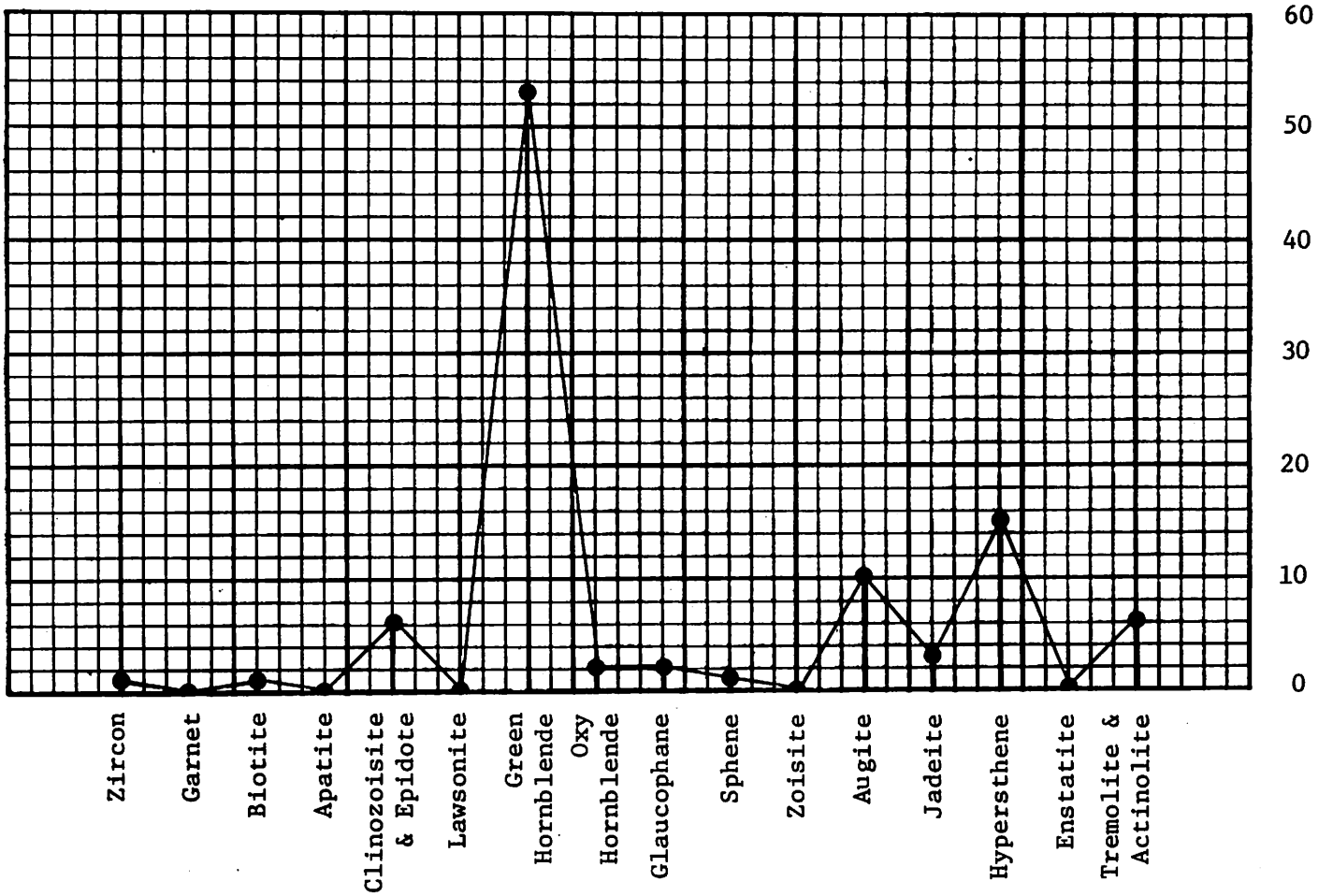
Wt. % of HM/SF 1.70

Total Grains Counted 165

% Transparent Grains 60.9

% Opaques 4.8

% Alterites and Unknowns 34.3



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	5
Picotite	1

Analyst T. Yancey

SAMPLE 2014

Location 37°52'04"N 122°37'40"W

Depth 18.00 meters 9.83 fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 24.43

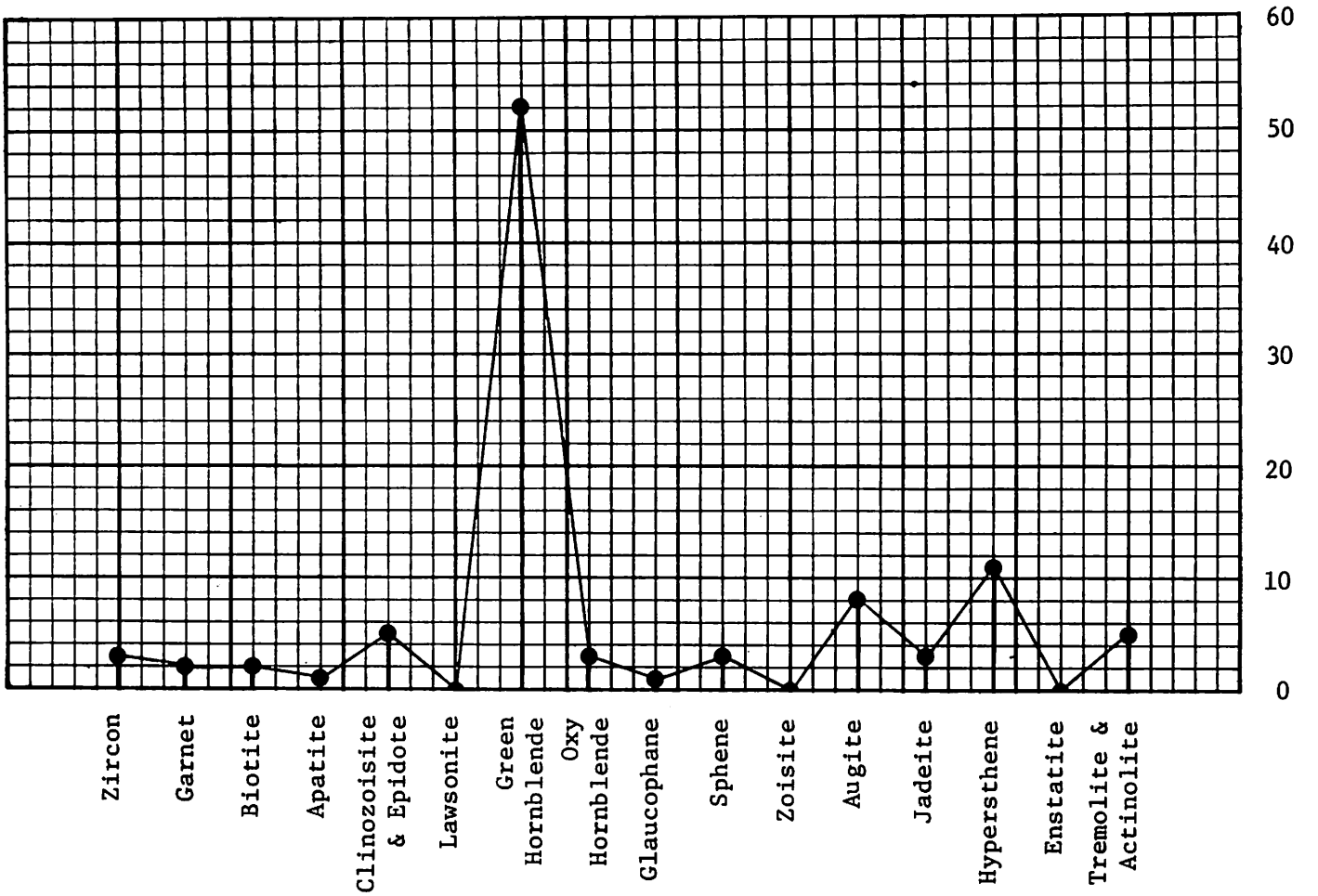
Wt. % of HM/SF 3.80

Total Grains Counted 168

% Transparent Grains 61.6

% Opaques 7.9

% Alterites and Unknowns 30.5



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	1
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean high tide level meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 5.73

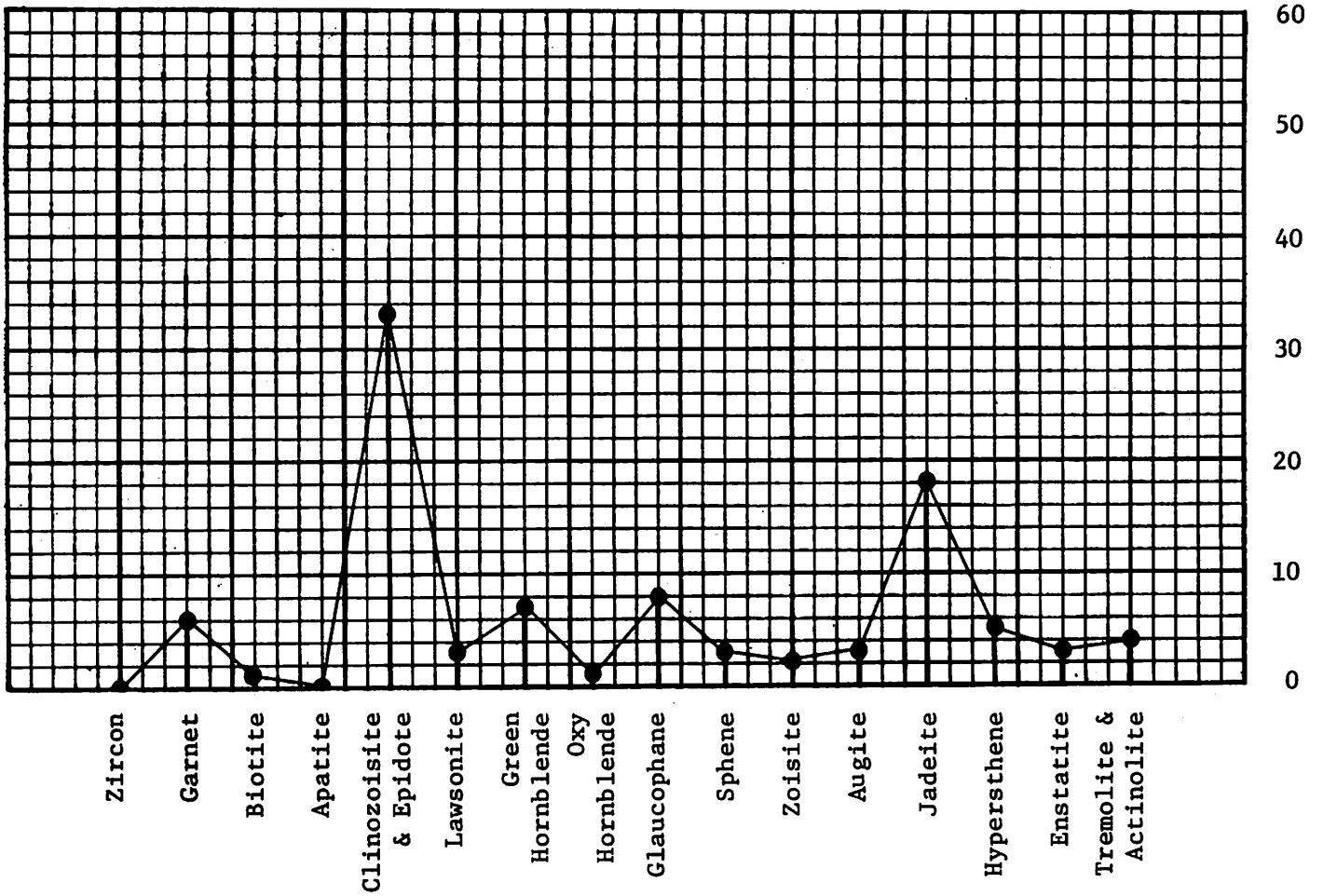
Wt. % of HM/SF 4.66

Total Grains Counted 289

% Transparent Grains 35

% Opaques 31

% Alterites and Unknowns 34



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Pumpellyite	1
Topaz	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	52
Magnetite	8
Pyrite	1
Rock Frag.	29

Analyst L. Osuch

SAMPLE 2015

Location 37°53'40"N 122°41'58"W

Depth mean high tide level meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.67

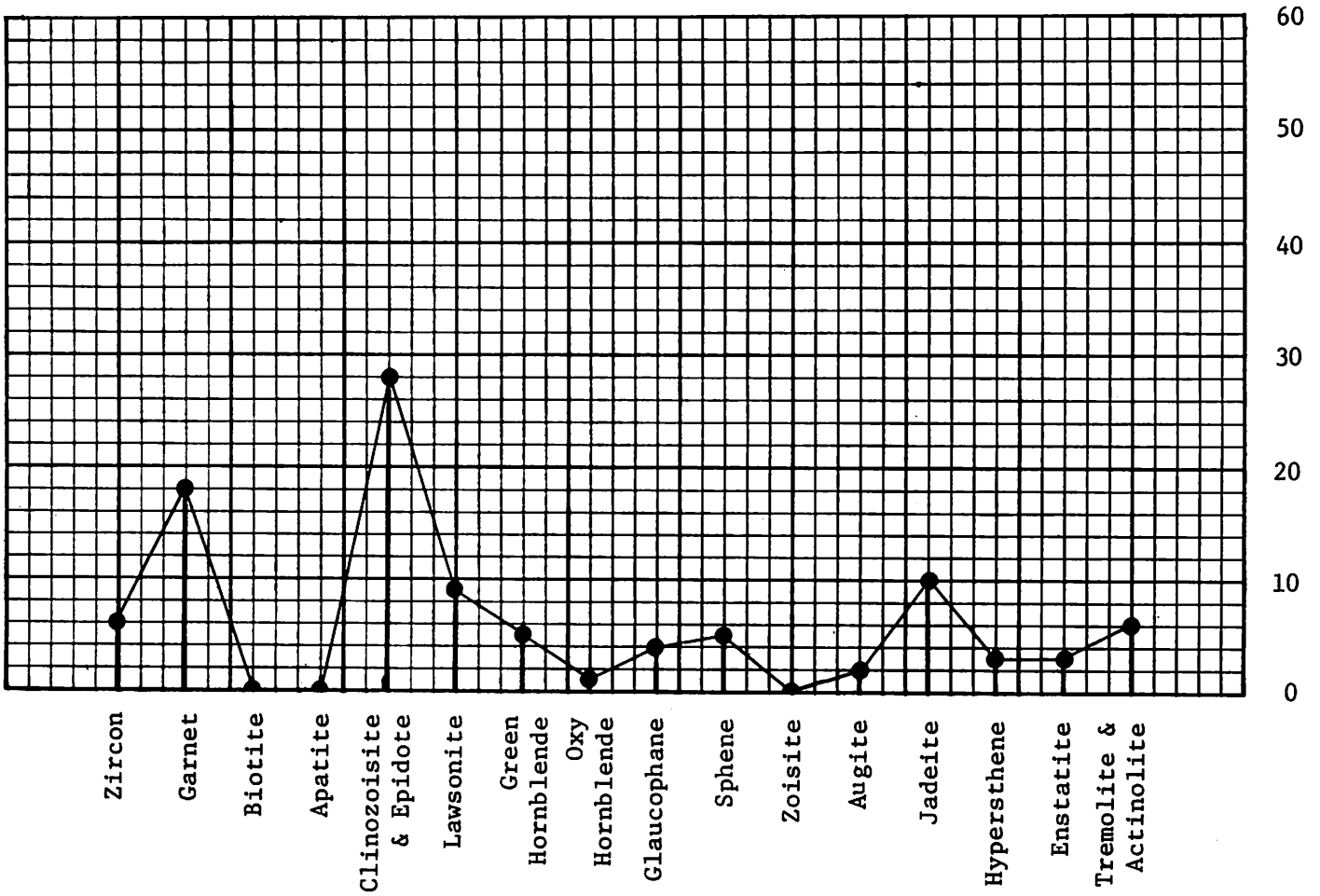
Wt. % of HM/SF 17.56

Total Grains Counted 368

% Transparent Grains 28

% Opaques 60

% Alterites and Unknowns 12



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean high tide level meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.13

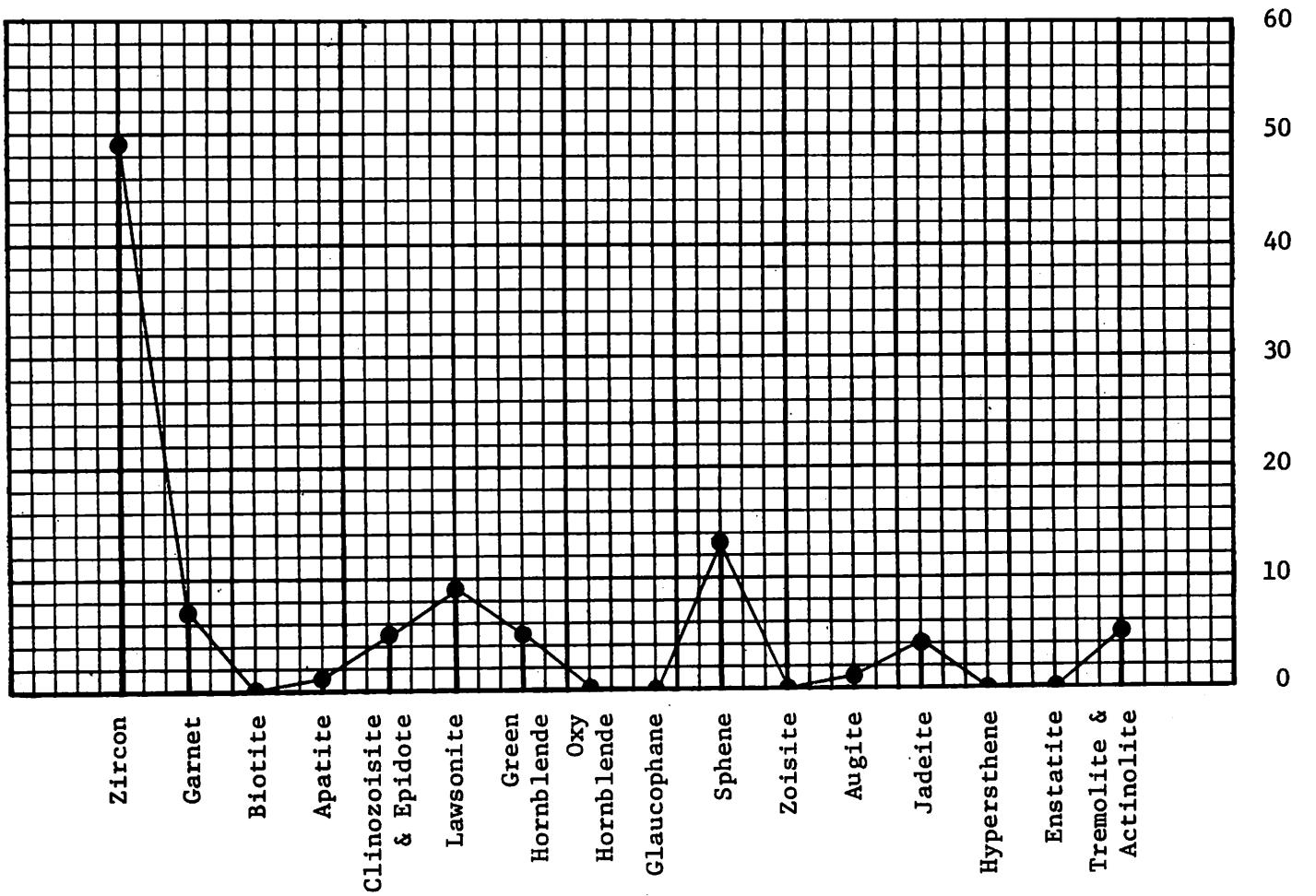
Wt. % of HM/SF 12.40

Total Grains Counted 387

% Transparent Grains 26

% Opaques 68

% Alterites and Unknowns 6



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth ____ mean tide meters ____ fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 1.05

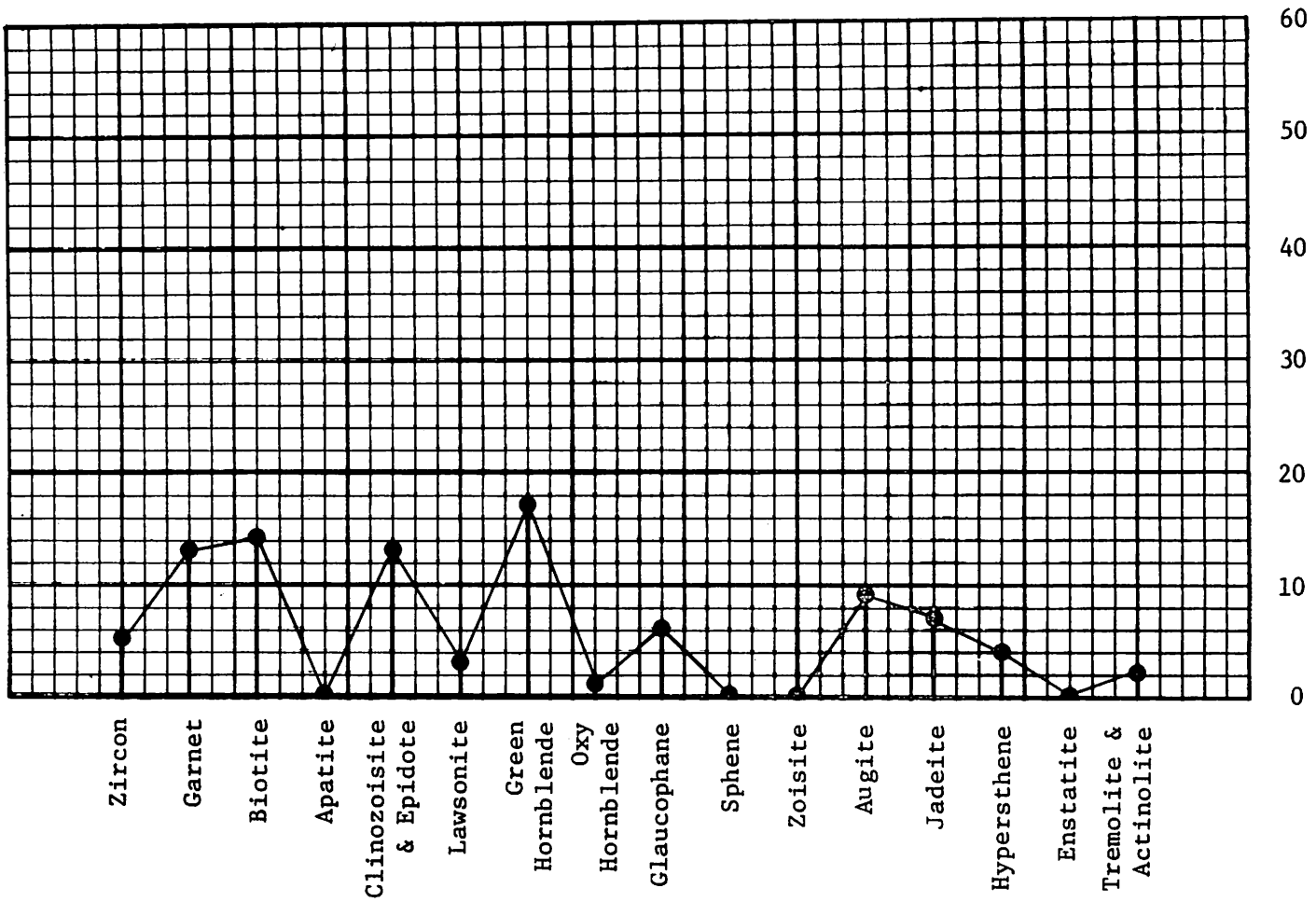
Wt. % of HM/SF 1.60

Total Grains Counted 535

% Transparent Grains 20.2

% Opaques 29.9

% Alterites and Unknowns 49.9



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	5
Carbonate	3
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	93
Magnetite	41
Picotite	7
Pyrite	19

Analyst T. Yancey

SAMPLE 2016

Location 37°53'39"N 122°41'58"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.41

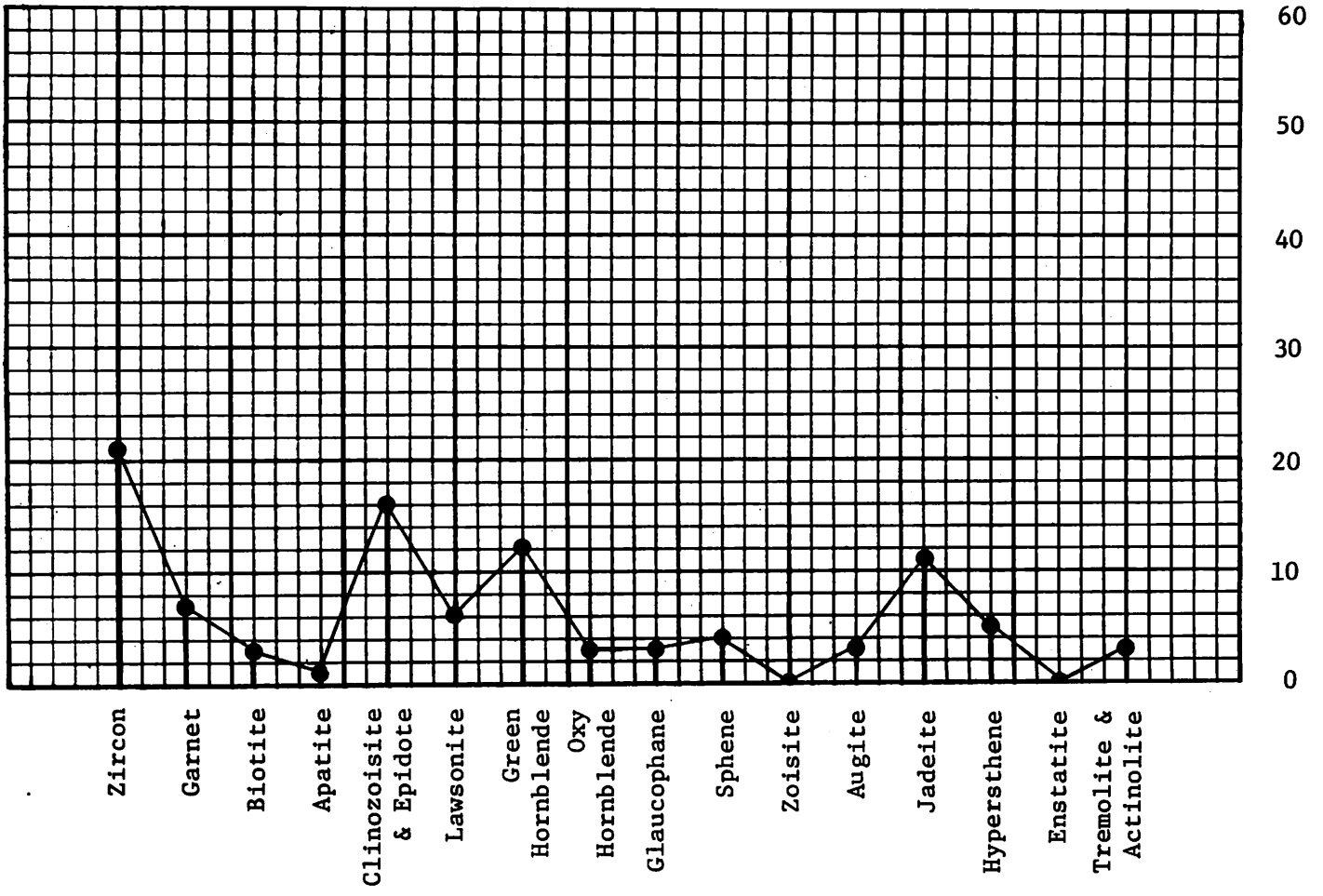
Wt. % of HM/SF 1.69

Total Grains Counted 293

% Transparent Grains 27.6

% Opaques 41.3

% Alterites and Unknowns 31.1



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1
Pumpellyite	1
Tourmaline	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	25
Magnetite	54
Picotite	21
Pyrite	21

Analyst T. Yancey

SAMPLE 2016

Location 37°53'39"N 122°41'58"W

Depth mean tide meters _____ fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.29

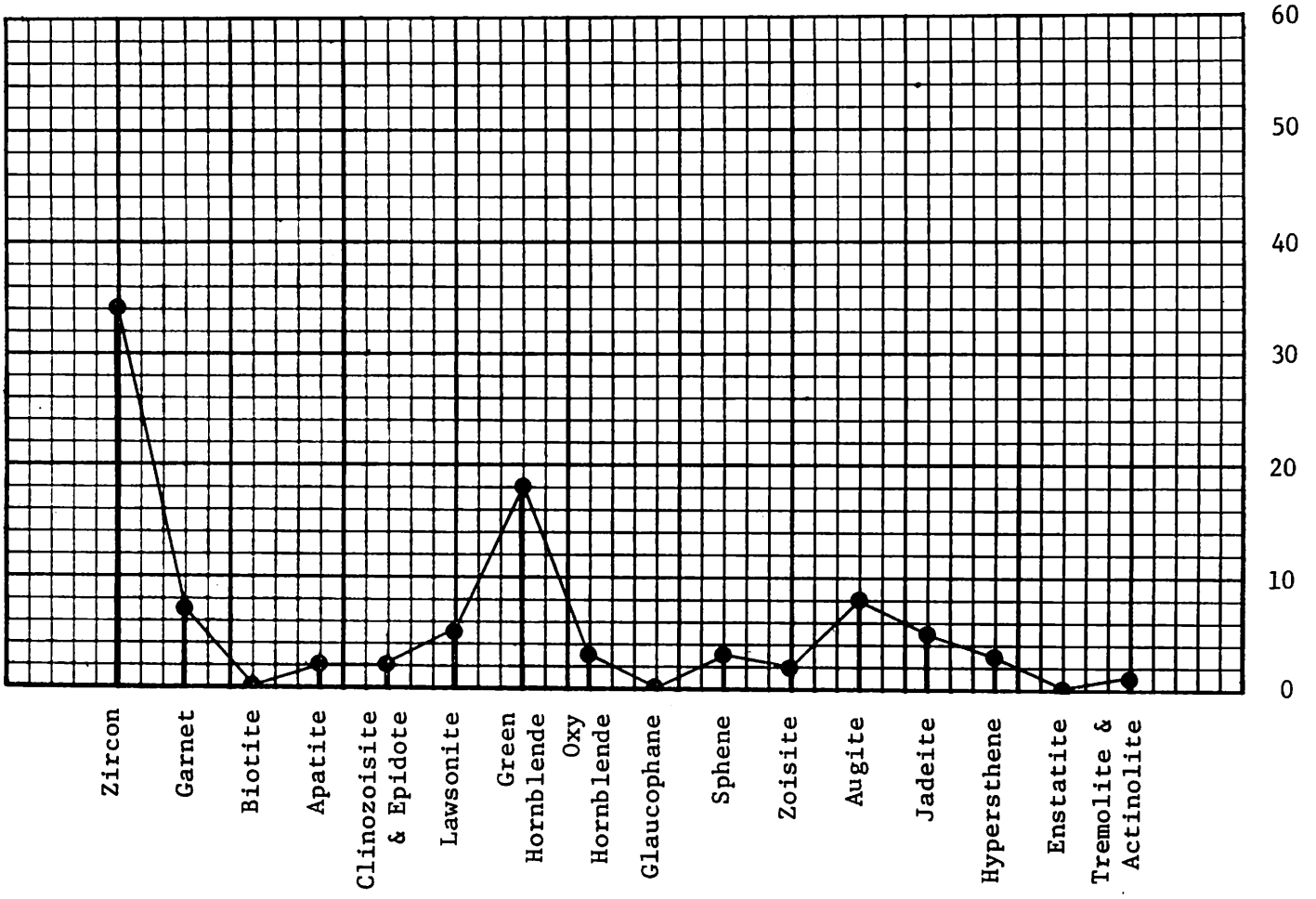
Wt. % of HM/SF 0.81

Total Grains Counted 277

% Transparent Grains 35.0

% Opaques 45.5

% Alterites and Unknowns 19.5



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	3
Carbonate	2
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	24
Magnetite	69
Picotite	3
Pyrite	30

Analyst T. Yancey

SAMPLE 2017

Location 37°53'47"N 122°41'54"W

Depth high tide level meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 4.54

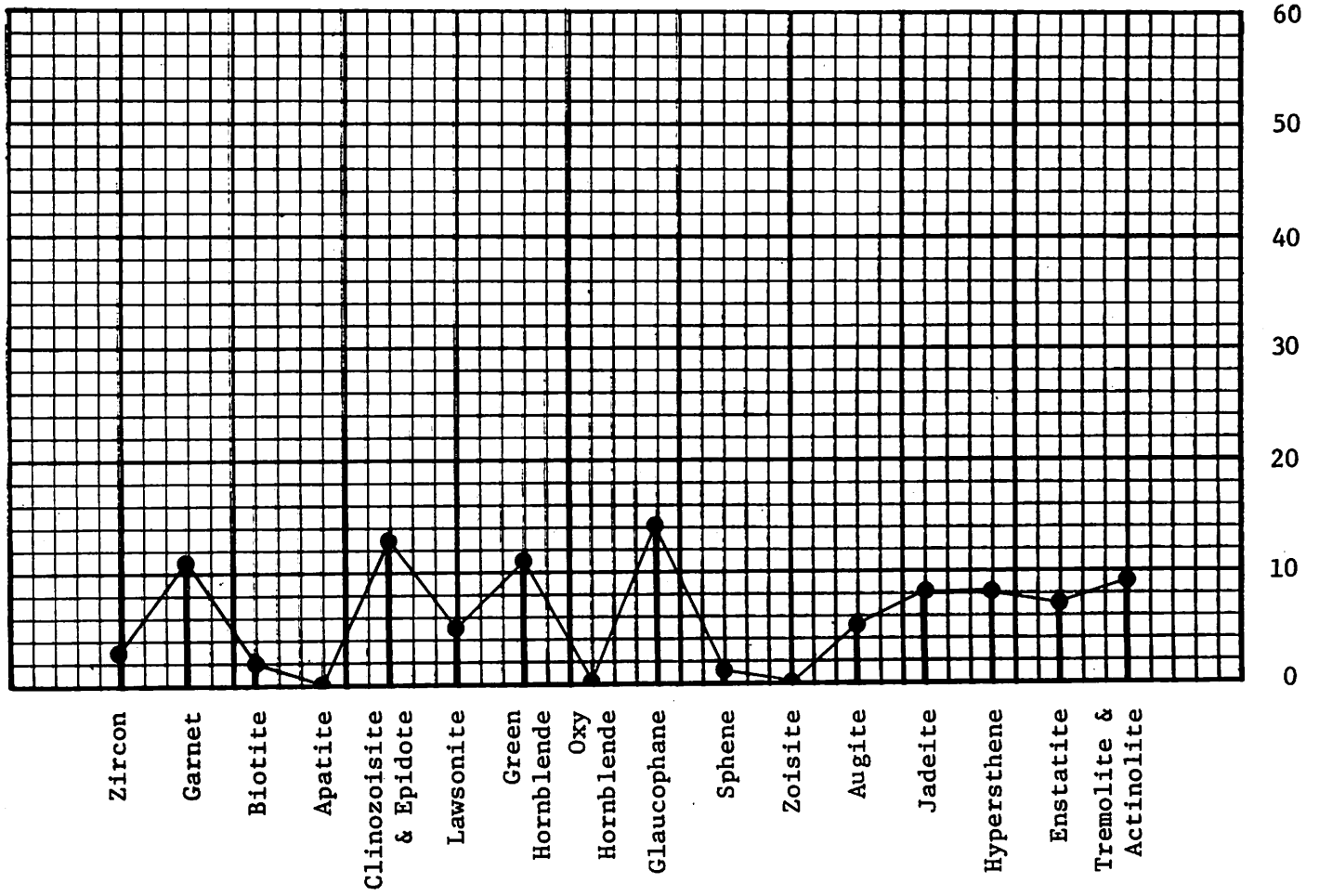
Wt. % of HM/SF 2.82

Total Grains Counted 235

% Transparent Grains 42.5

% Opaques 16.6

% Alterites and Unknowns 40.9



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Chlorite	2
Carbonate	5

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	19
Magnetite	6
Pyrite	5
Rock Frag.	9

Analyst C. Isselhardt

SAMPLE 2017

Location 37°53'47"N 122°41'54"W

Depth high tide meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.25

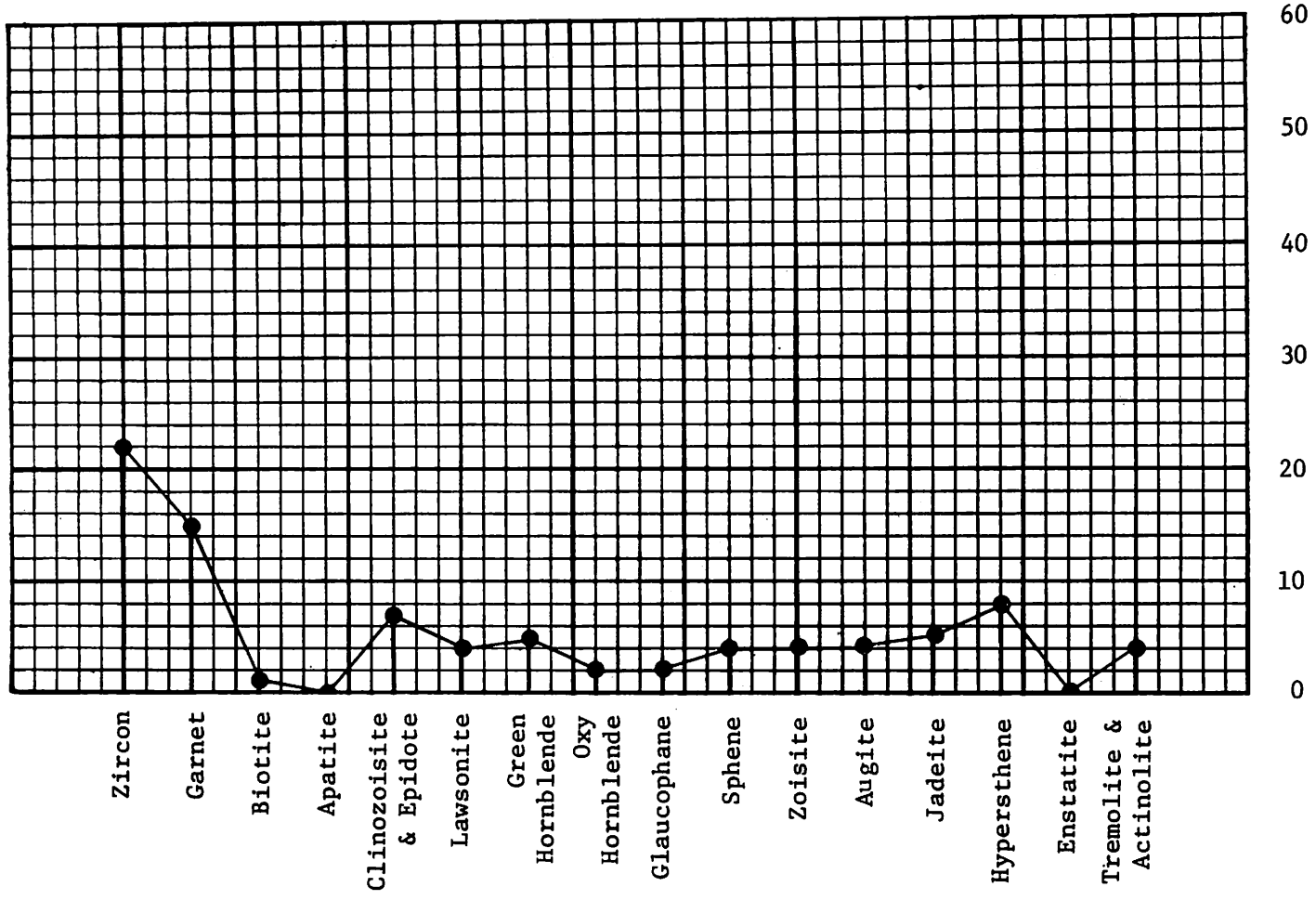
Wt. % of HM/SF 11.8

Total Grains Counted 249

% Transparent Grains 42

% Opaques 32

% Alterites and Unknowns 26



Other Transparent Minerals

Mineral	No. Grains Counted
Pumpellyite	2
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	25
Magnetite	43
Picotite	13
Rock Frag.	12

Analyst C. Isselhardt

SAMPLE 2017

Location 37°53'47"N 122°41'54"W

Depth high tide meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.19

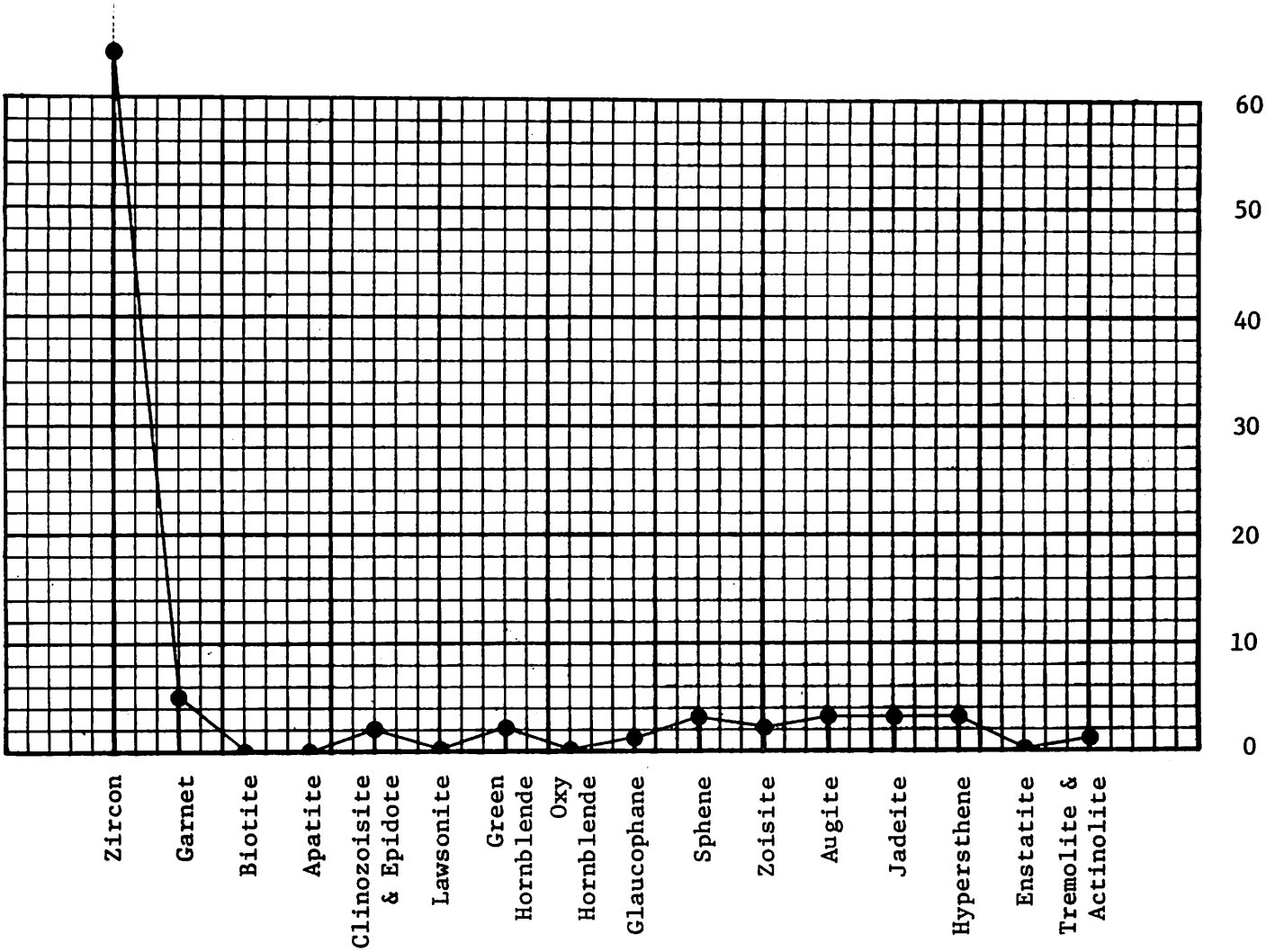
Wt. % of HM/SF 0.96

Total Grains Counted 280

% Transparent Grains 44

% Opaques 49

% Alterites and Unknowns 7



Other Transparent Minerals		Other Opaque Minerals	
Mineral	No. Grains Counted	Mineral	No. Grains Counted
		Hematite	40
		Magnetite	92
		Picotite	19
		Rock Frag.	6

Analyst C. Isselhardt

SAMPLE 2018

Location 37"53'45"N 122°41'46"W

Depth mean tide meters _____ fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 9.75

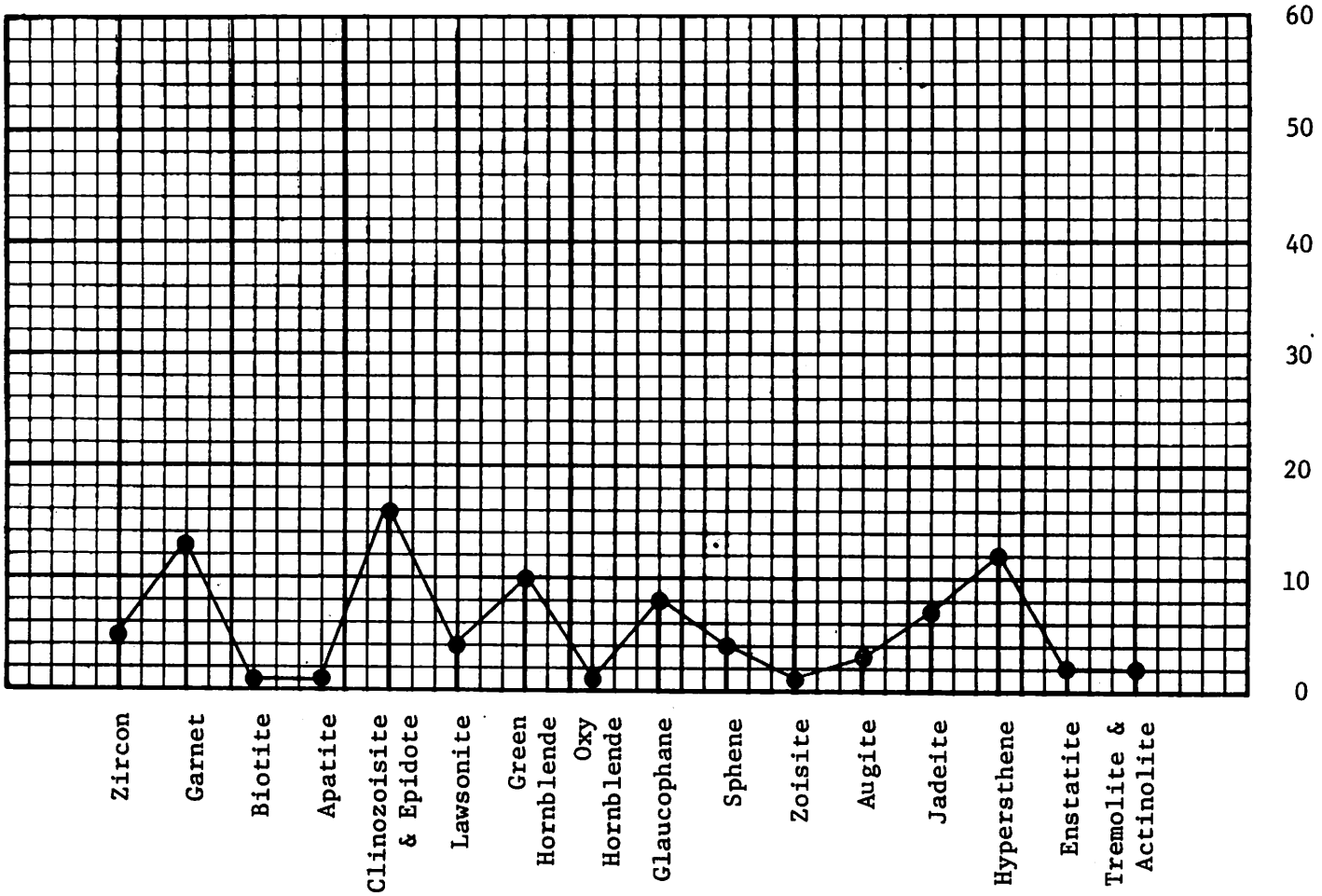
Wt. % of HM/SF 1.03

Total Grains Counted 491

% Transparent Grains 18.9

% Opaques 17.9

% Alterites and Unknowns 63.2



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3
Pumpellyite	3
Chlorite	1
Tourmaline	1

Other Opaque Minerals

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

Analyst C. Isselhardt

SAMPLE 2018

Location 37°53'45"N 122°41'46"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 1.43

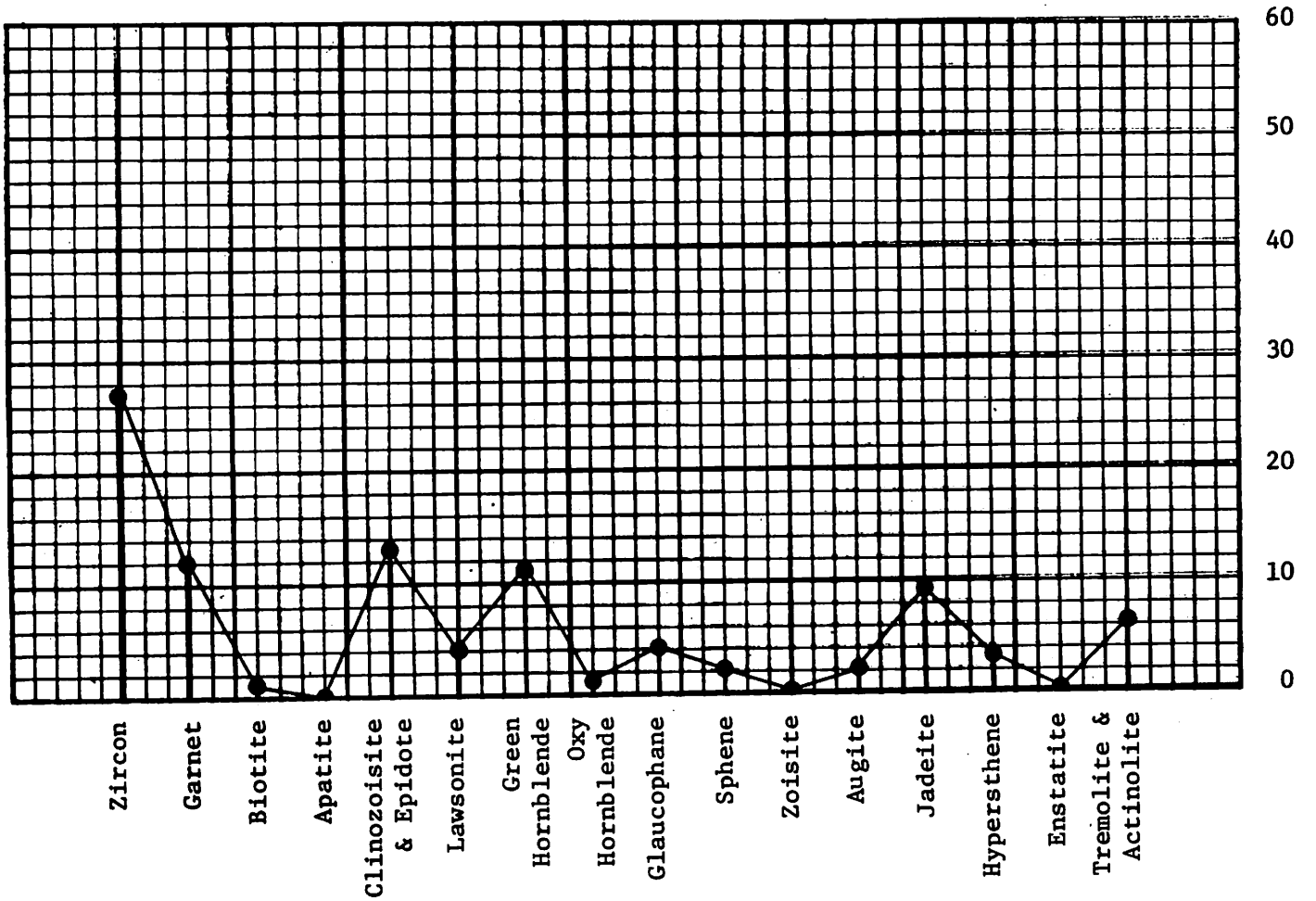
Wt. % of HM/SF 2.67

Total Grains Counted 323

% Transparent Grains 24.8

% Opaques 44.9

% Alterites and Unknowns 30.3



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2
Pumpellyite	1

Other Opaque Minerals

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

Analyst C. Isselhardt

SAMPLE 2018

Location 37°53'45"N 122°41'46"W

Depth mean tide meters _____ fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.23

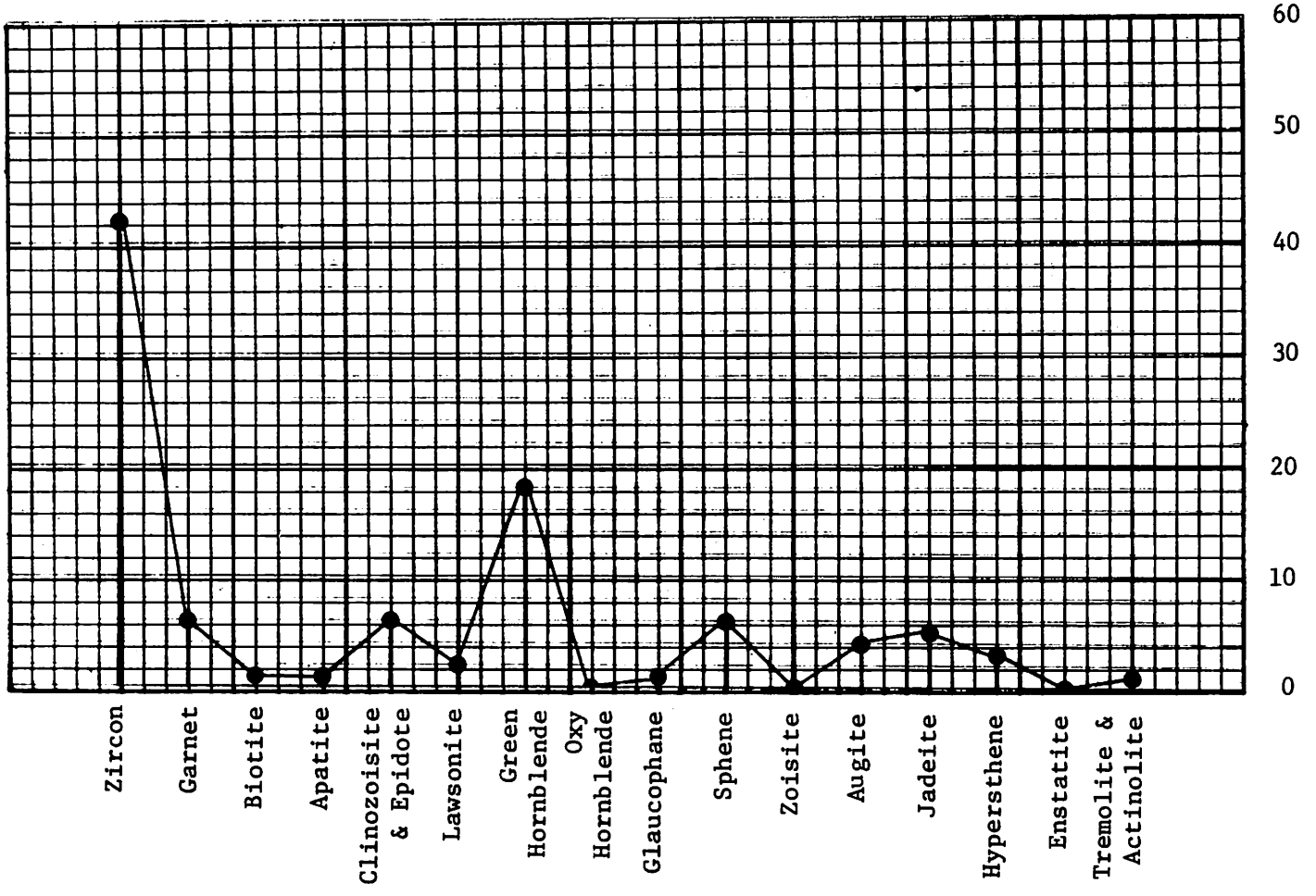
Wt. % of HM/SF 2.43

Total Grains Counted 368

% Transparent Grains 27.7

% Opaques 49.5

% Alterites and Unknowns 22.8



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	1

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean tide meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 36.90

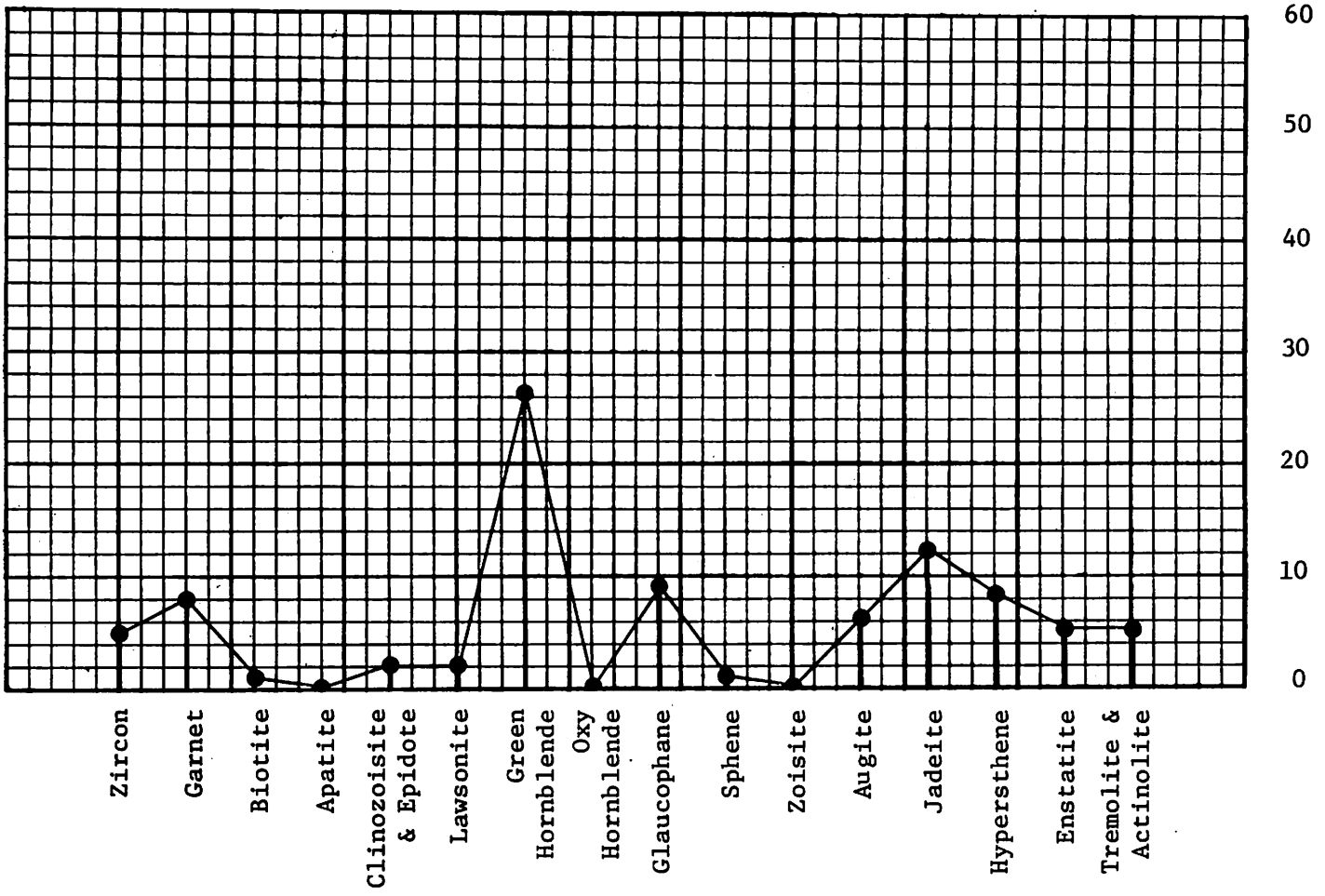
Wt. % of HM/SF 0.31

Total Grains Counted 460

% Transparent Grains 18.9

% Opaques 25.2

% Alterites and Unknowns 55.9



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	4
Carbonate	3
Pumpellyite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	53
Magnetite	39
Picotite	15
Pyrite	9

Analyst T. Yancey

SAMPLE 2019

Location 37°54'07"N 122°41'28"W

Depth mean tide meters _____ fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 6.30

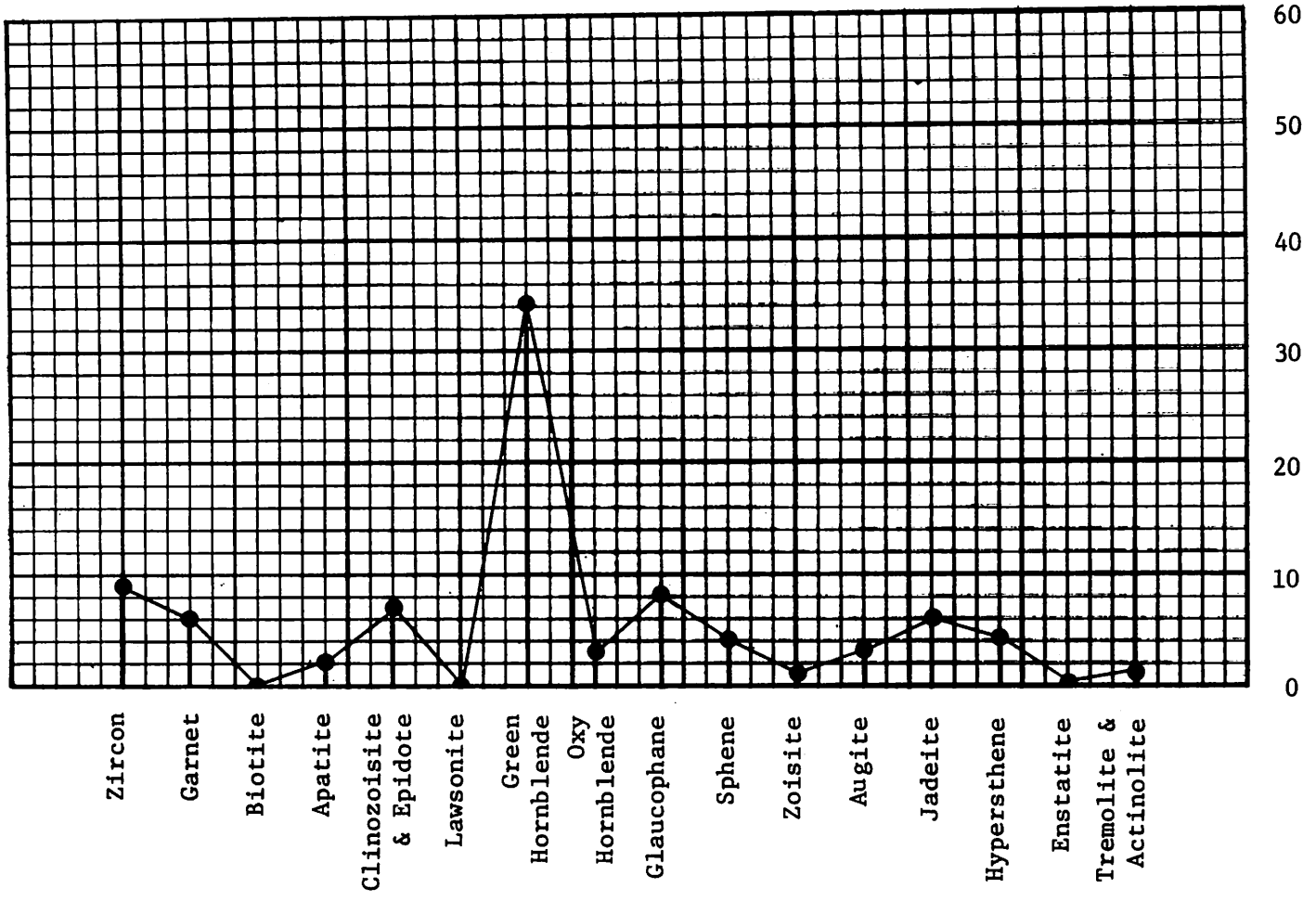
Wt. % of HM/SF 2.94

Total Grains Counted 380

% Transparent Grains 23.9

% Opaques 14.5

% Alterites and Unknowns 61.6



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	3
Carbonate	6
Pumpellyite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	12
Magnetite	28
Picotite	9
Pyrite	6

Analyst T. Yancey

SAMPLE 2019

Location 37°54'07"N 122°41'28"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.45

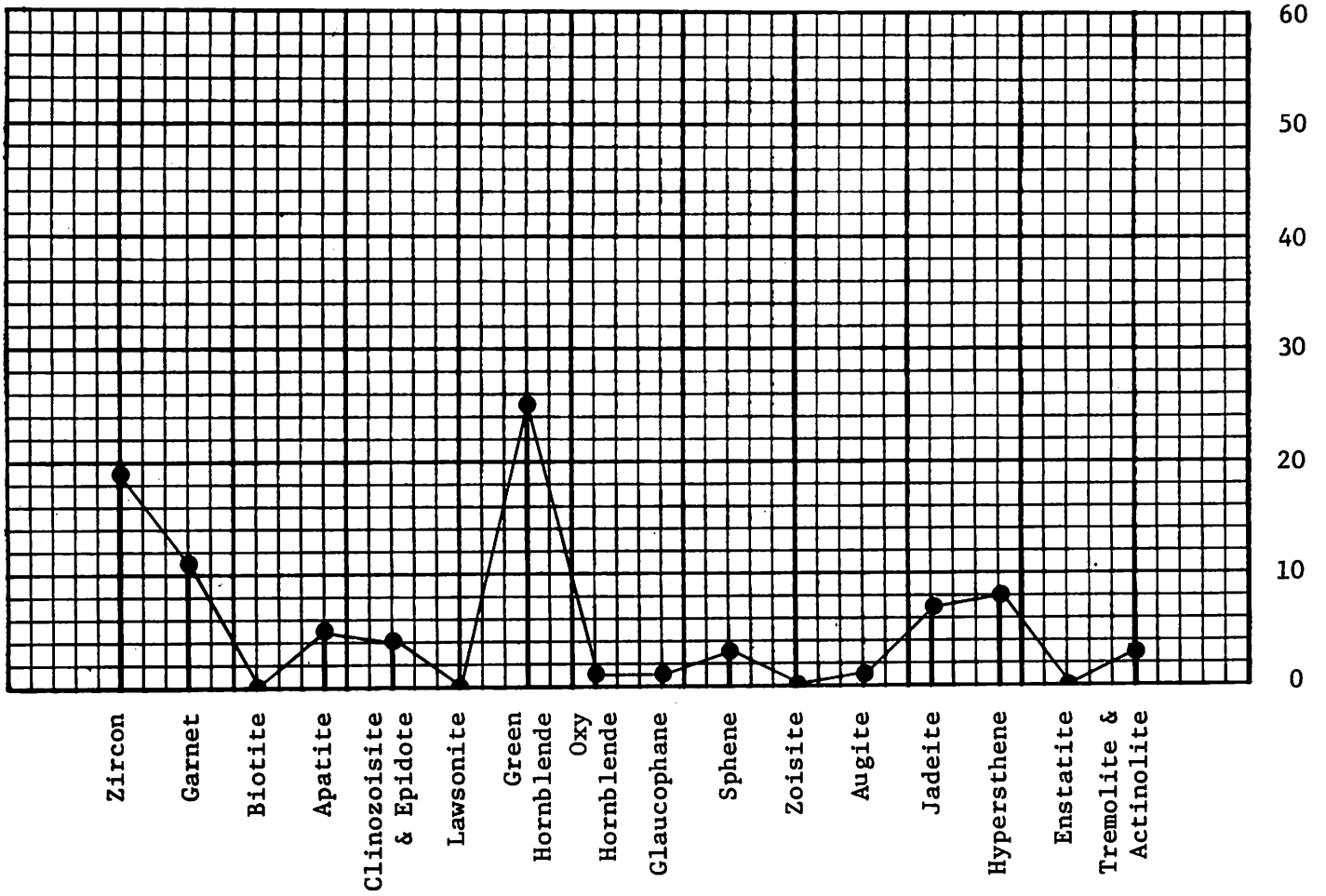
Wt. % of HM/SF 9.94

Total Grains Counted 218

% Transparent Grains 33.9

% Opaques 39.9

% Alterites and Unknowns 26.2



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	3
Carbonate	3
Tourmaline	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	8
Magnetite	44
Picotite	26
Pyrite	9

Analyst T. Yancey

SAMPLE 2020

Location 37°54'4"N 122°41'27"W

Depth low tide meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 40.7

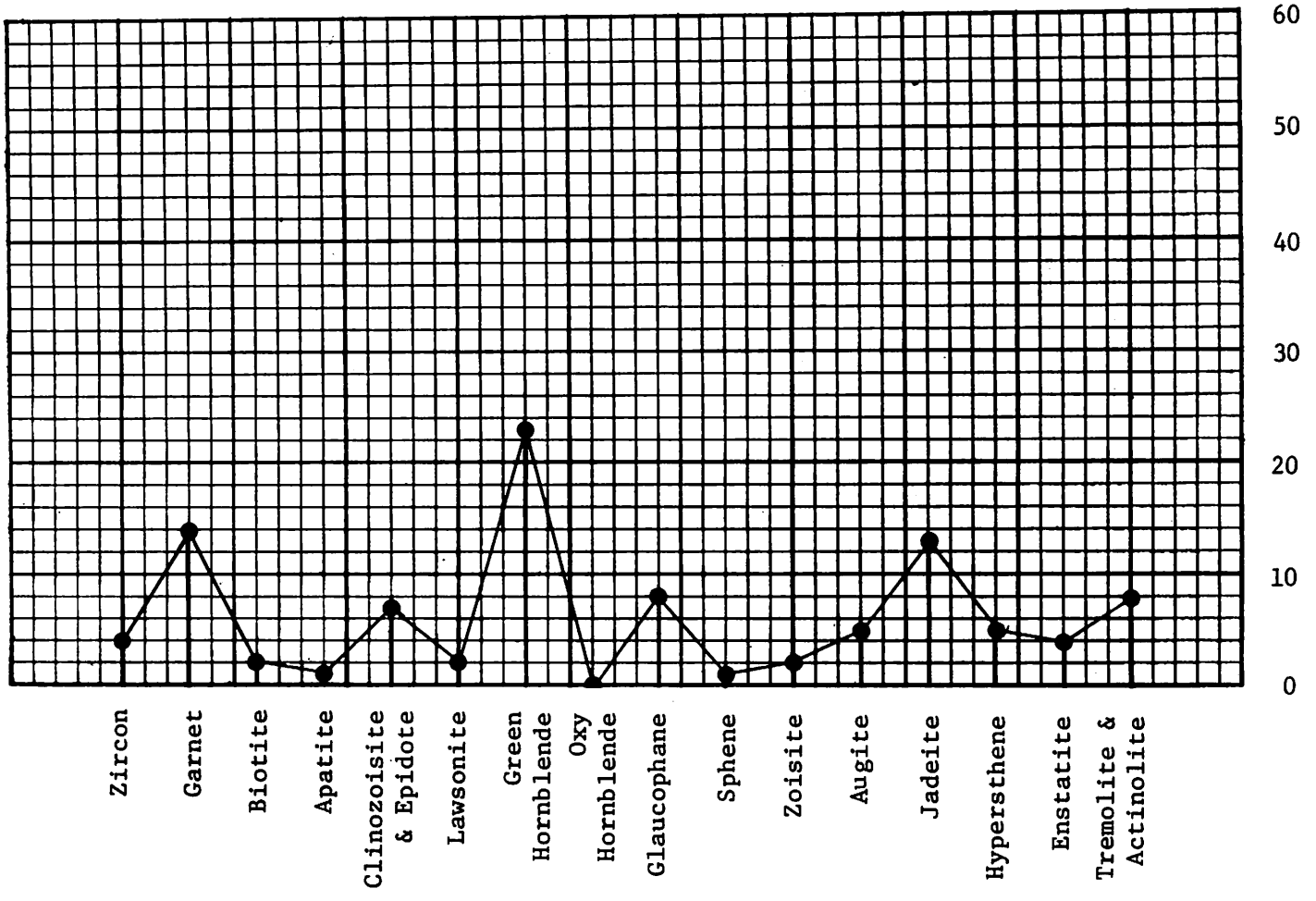
Wt. % of HM/SF 0.42

Total Grains Counted 286

% Transparent Grains 38

% Opaques 17

% Alterites and Unknowns 45



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	4
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth low tide meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 6.46

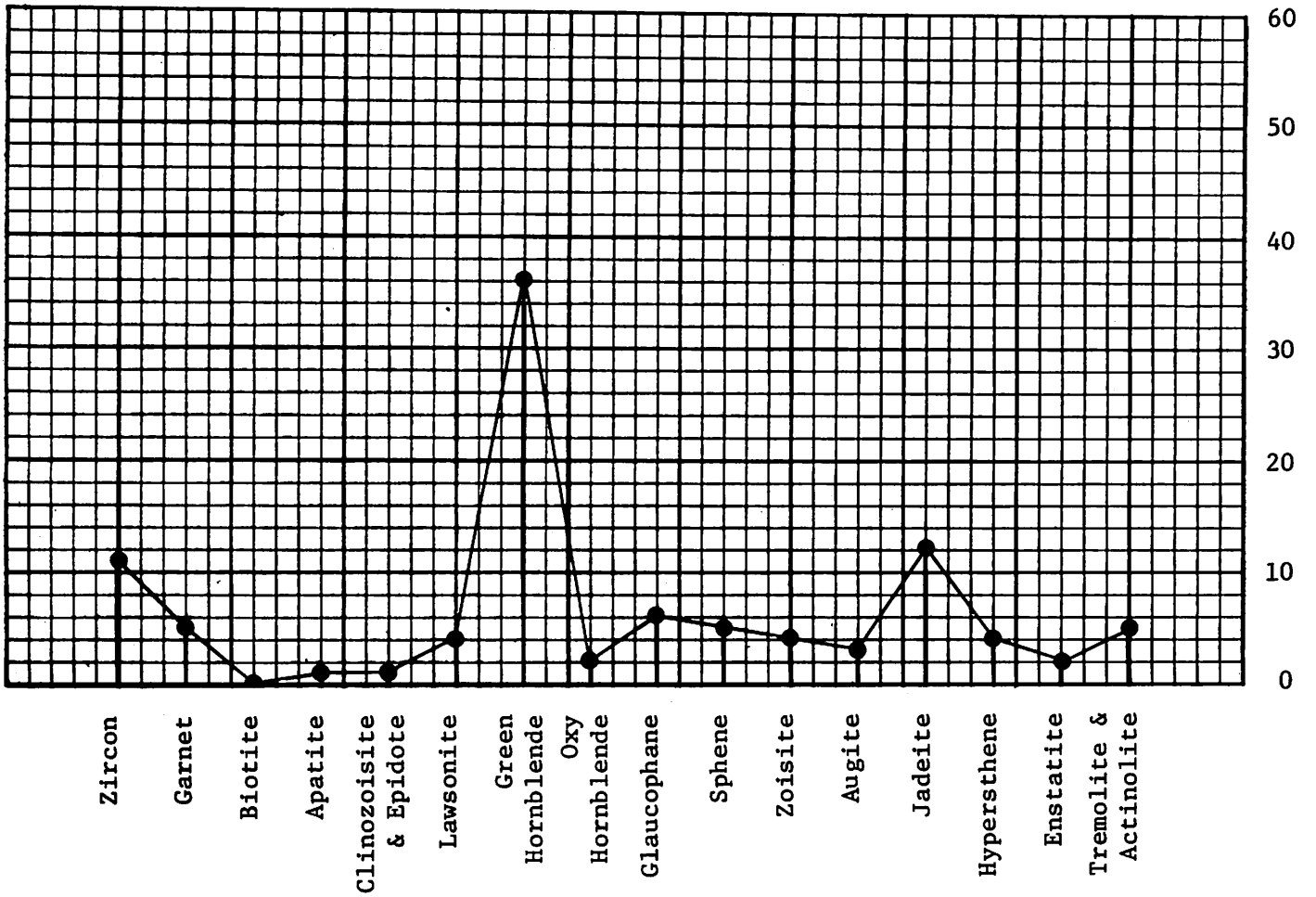
Wt. % of HM/SF 2.61

Total Grains Counted 221

% Transparent Grains 50.6

% Opaques 11.4

% Alterites and Unknowns 38



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth low tide meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.434

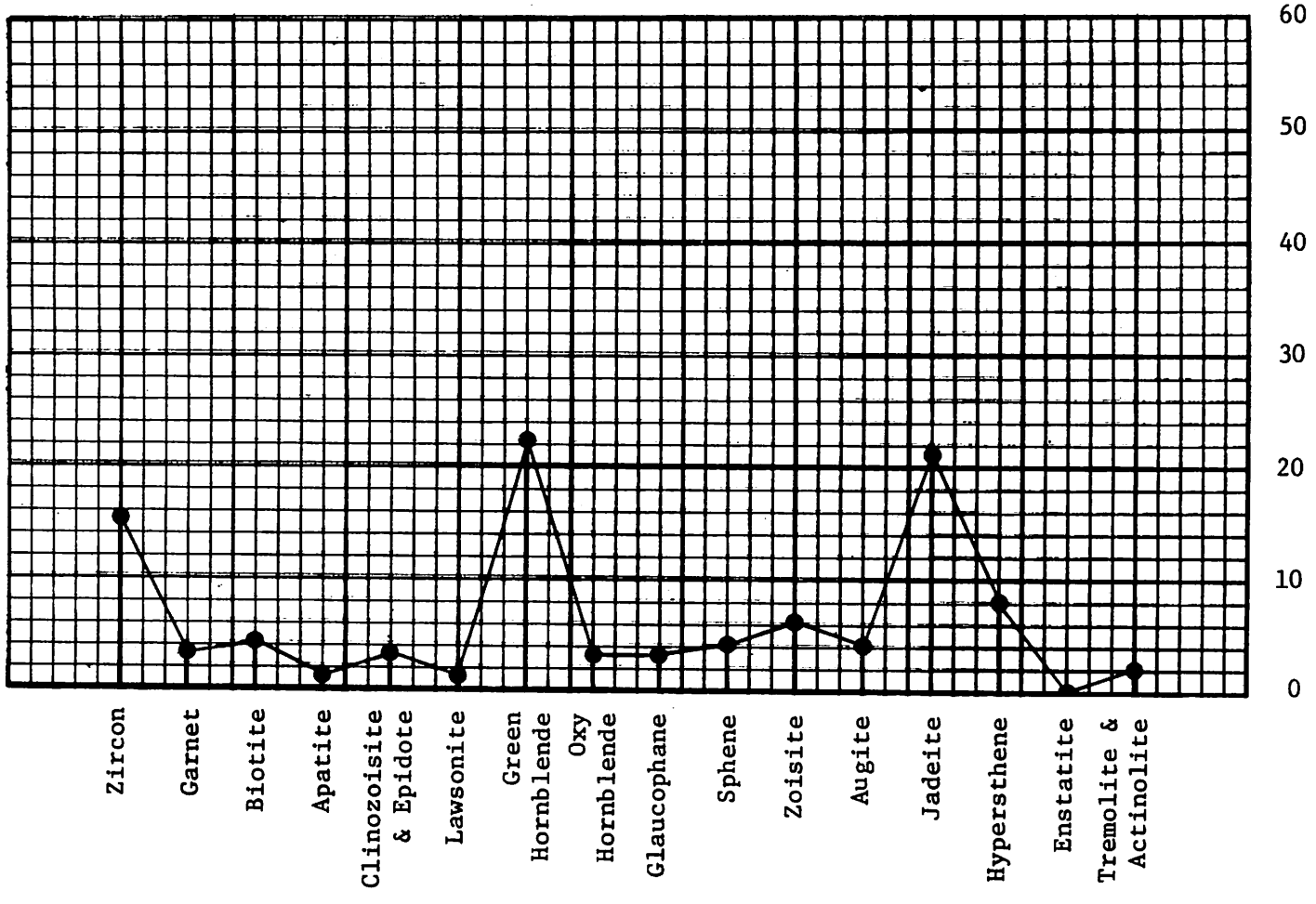
Wt. % of HM/SF 9.40

Total Grains Counted 323

% Transparent Grains 50.8

% Opaques 37.4

% Alterites and Unknowns 11.8



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	55
Picotite	17
Pyrite	4
Rock Frag.	36

Analyst C. Isselhardt

SAMPLE 2021

Location 37°54'8"N 122°41'15"W

Depth mean tide level meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 58.75

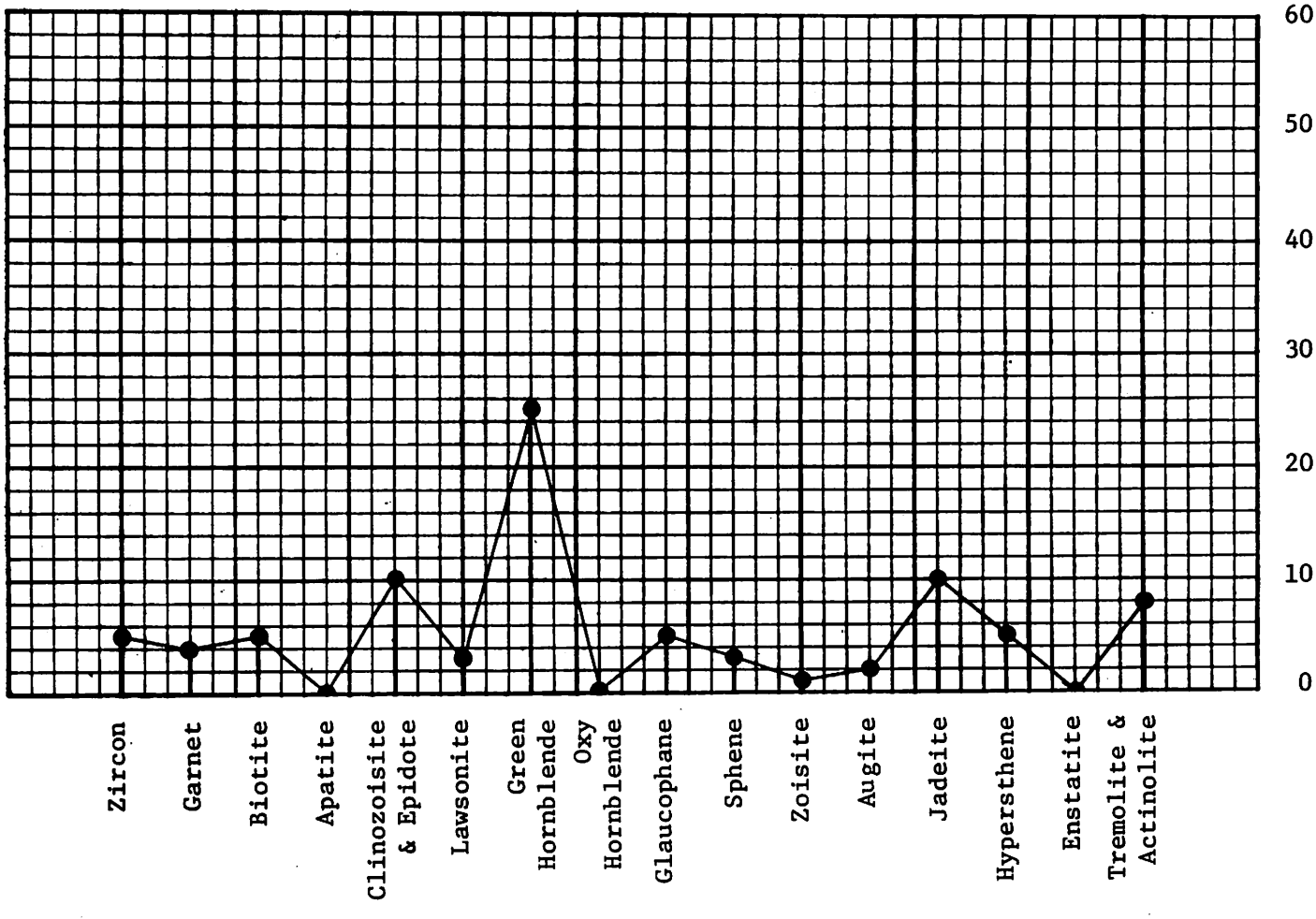
Wt. % of HM/SF 0.24

Total Grains Counted 278

% Transparent Grains 36

% Opaques 26

% Alterites and Unknowns 38



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	4
Carbonate	10

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean tide level meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 6.79

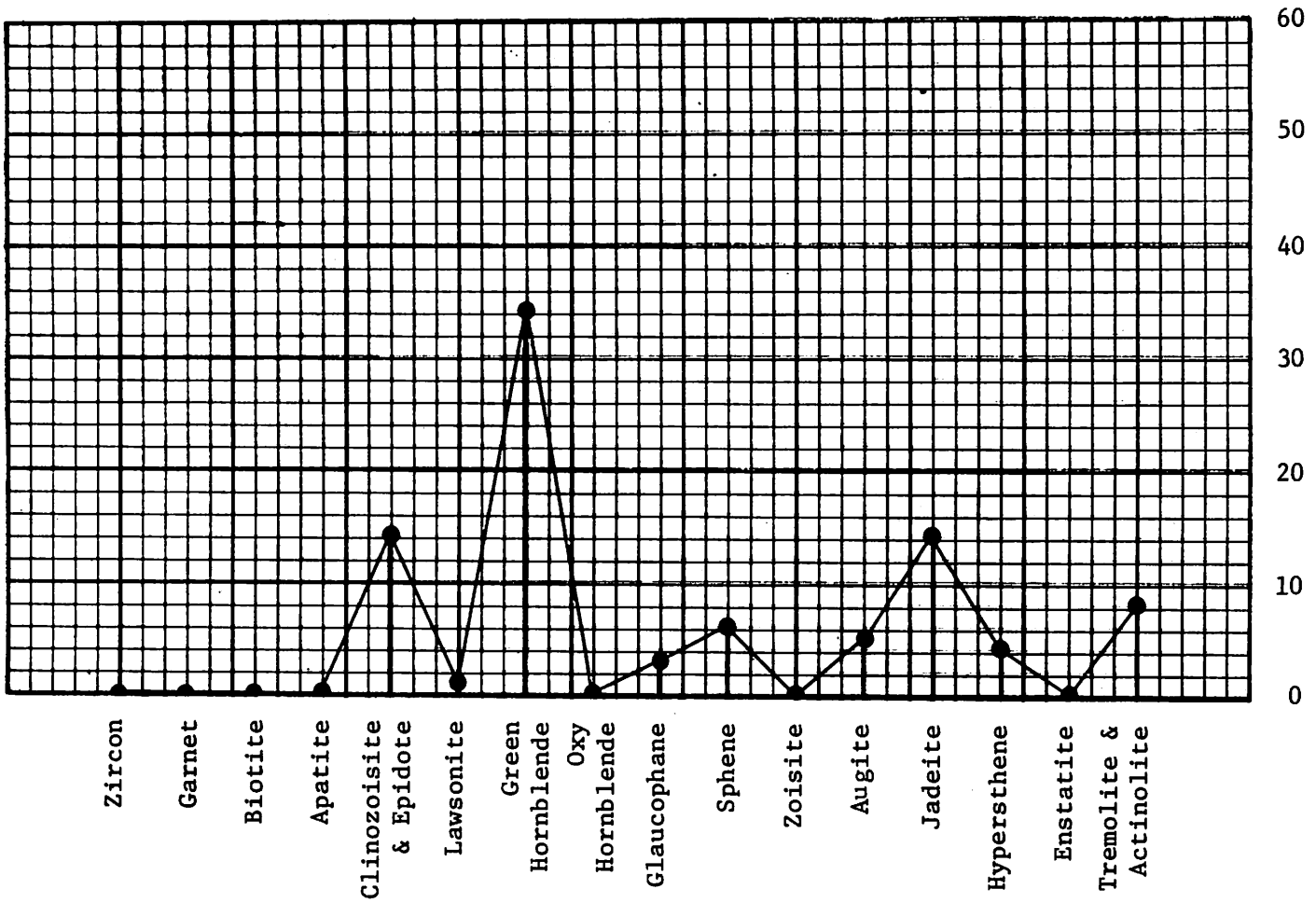
Wt. % of HM/SF 2.96

Total Grains Counted 186

% Transparent Grains 54

% Opaques 22

% Alterites and Unknowns 24



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	2
Carbonate	9

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	12
Magnetite	2
Pyrite	3
Rock Frag.	25

Analyst L. Osuch

SAMPLE 2021

Location 37°54'8"N 122°41'15"W

Depth mean tide level meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.24

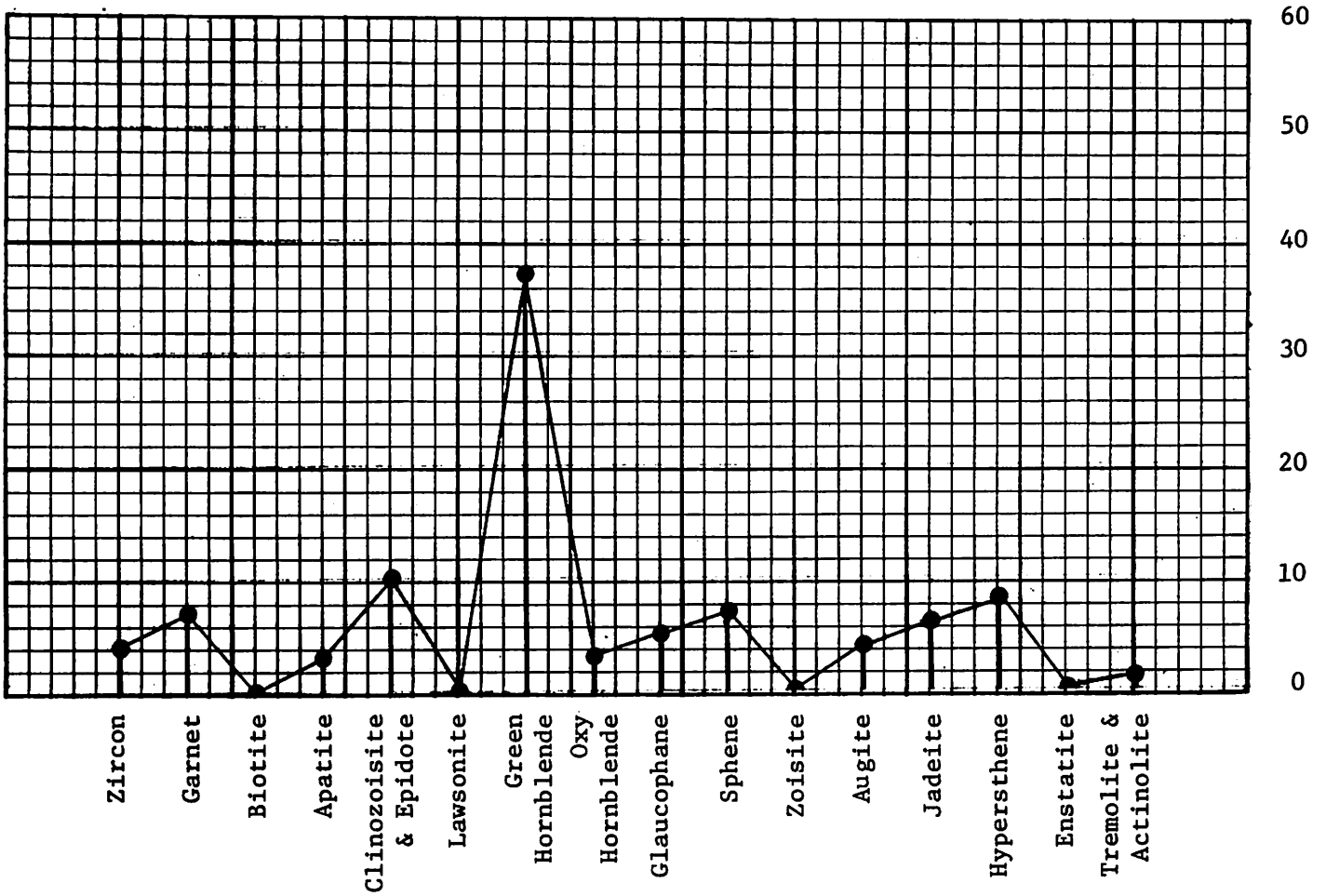
Wt. % of HM/SF 20.90

Total Grains Counted 178

% Transparent Grains 56

% Opaques 19

% Alterites and Unknowns 25



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	2
Carbonate	3

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean tide meters fathoms

Size Fraction (SF) 0.175 → 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 22.1

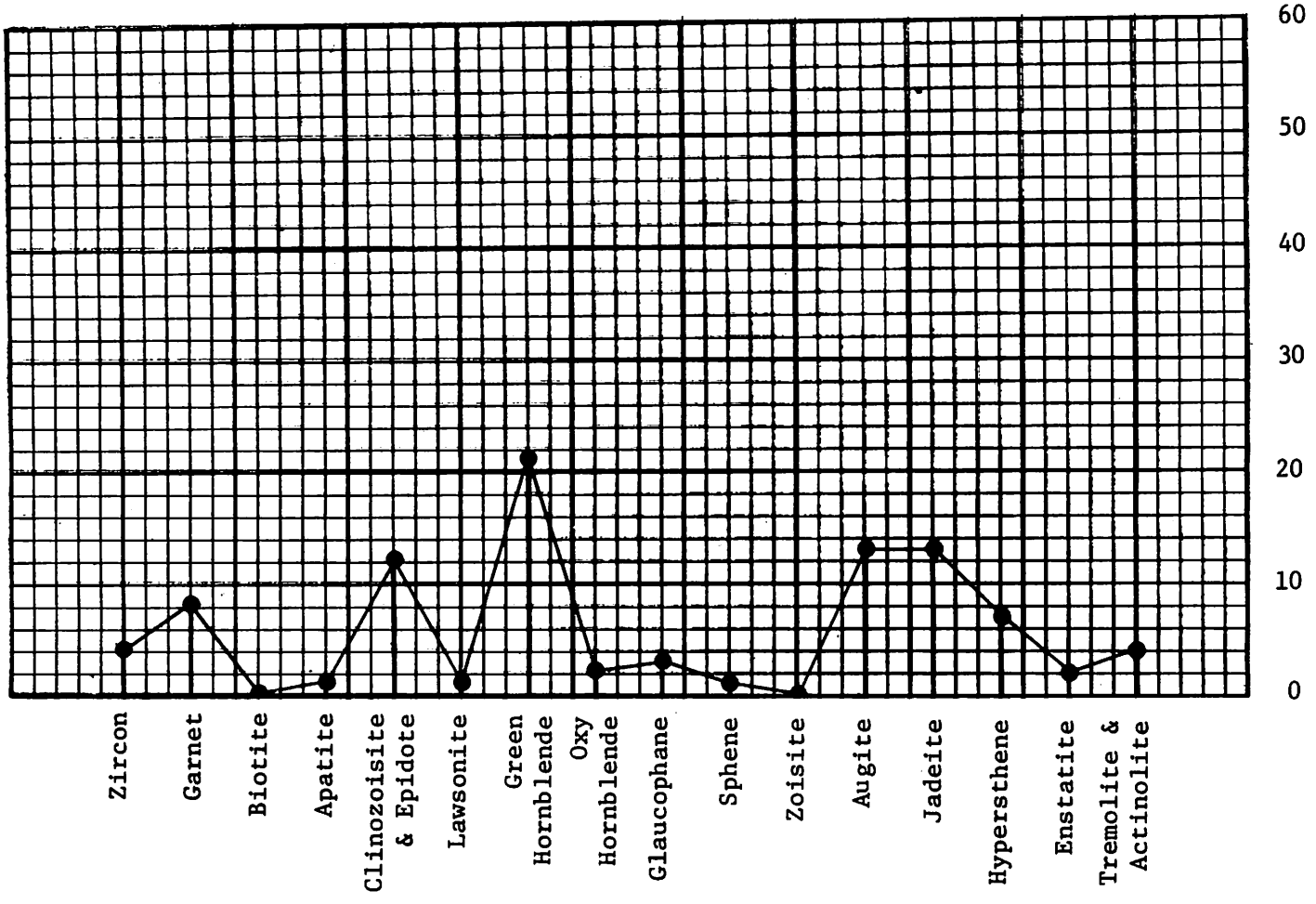
Wt. % of HM/SF 1.54

Total Grains Counted 425

% Transparent Grains 22.6

% Opaques 17.2

% Alterites and Unknowns 60.2



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	2
Carbonate	5
Pumpellyite	1

Other Opaque Minerals

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

Analyst T. Yancey

SAMPLE 2022

Location 37°54'20"N · 122°40'47"W

Depth mean tide meters _____ fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 1.64

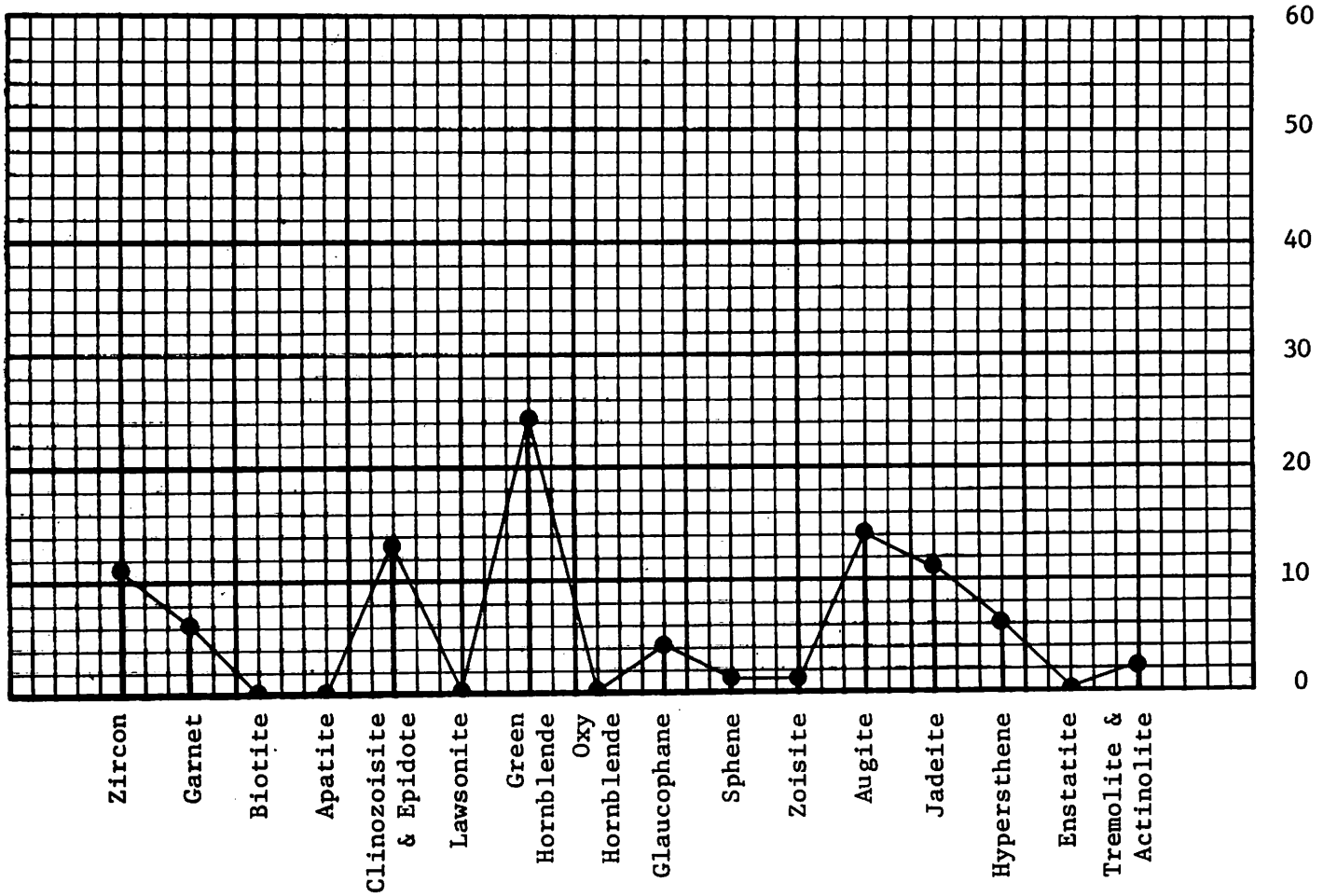
Wt. % of HM/SF 13.62

Total Grains Counted 236

% Transparent Grains 35.5

% Opaques 21.2

% Alterites and Unknowns 43.3



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Chlorite	1
Carbonate	3
Pumpellyite	1

Other Opaque Minerals

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

Analyst T. Yancey

SAMPLE 2022

Location 37°54'20"N 122°40'47"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.06

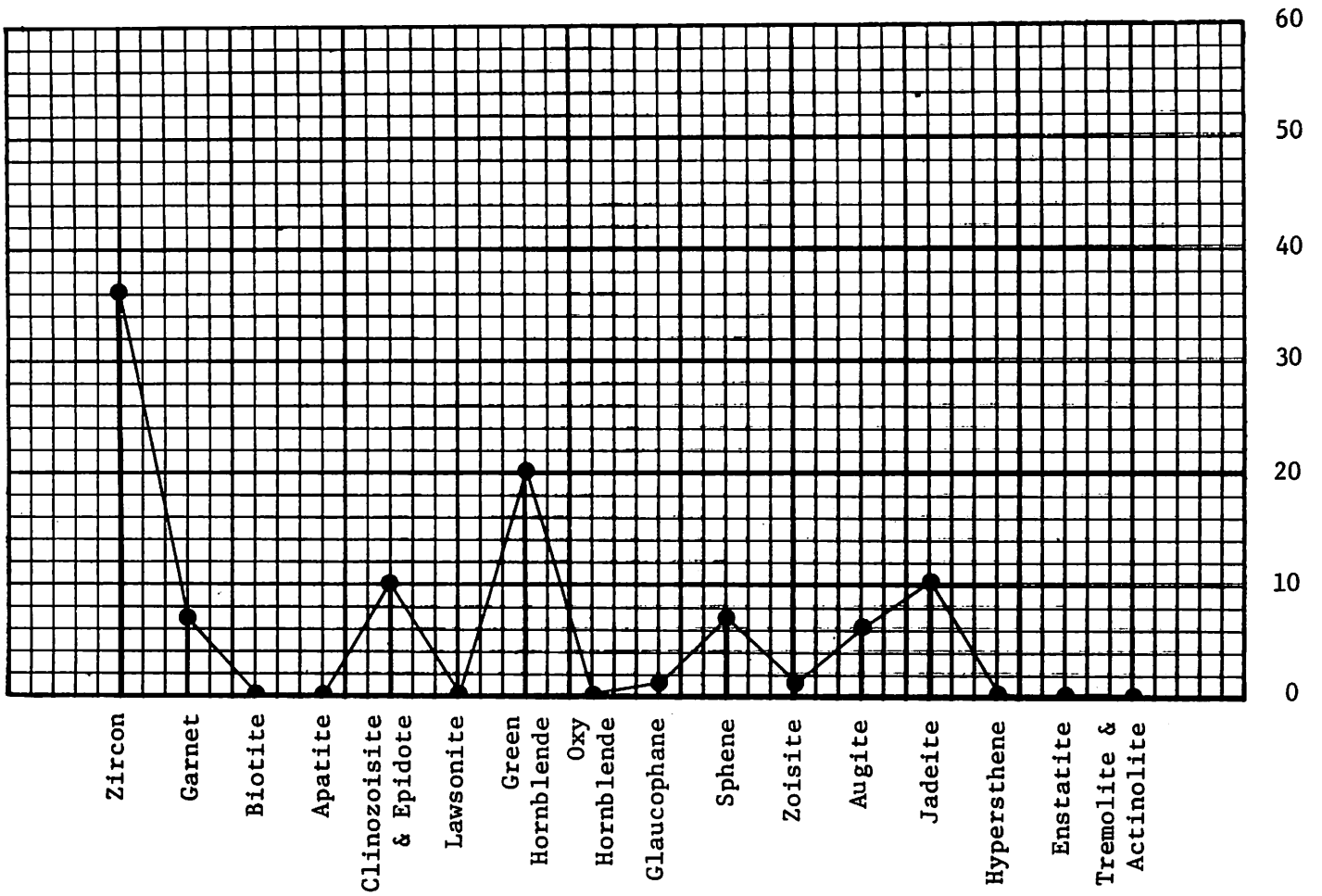
Wt. % of HM/SF 86.6

Total Grains Counted 200

% Transparent Grains 35.0

% Opaques 44.0

% Alterites and Unknowns 21.0



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean tide meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 15.2

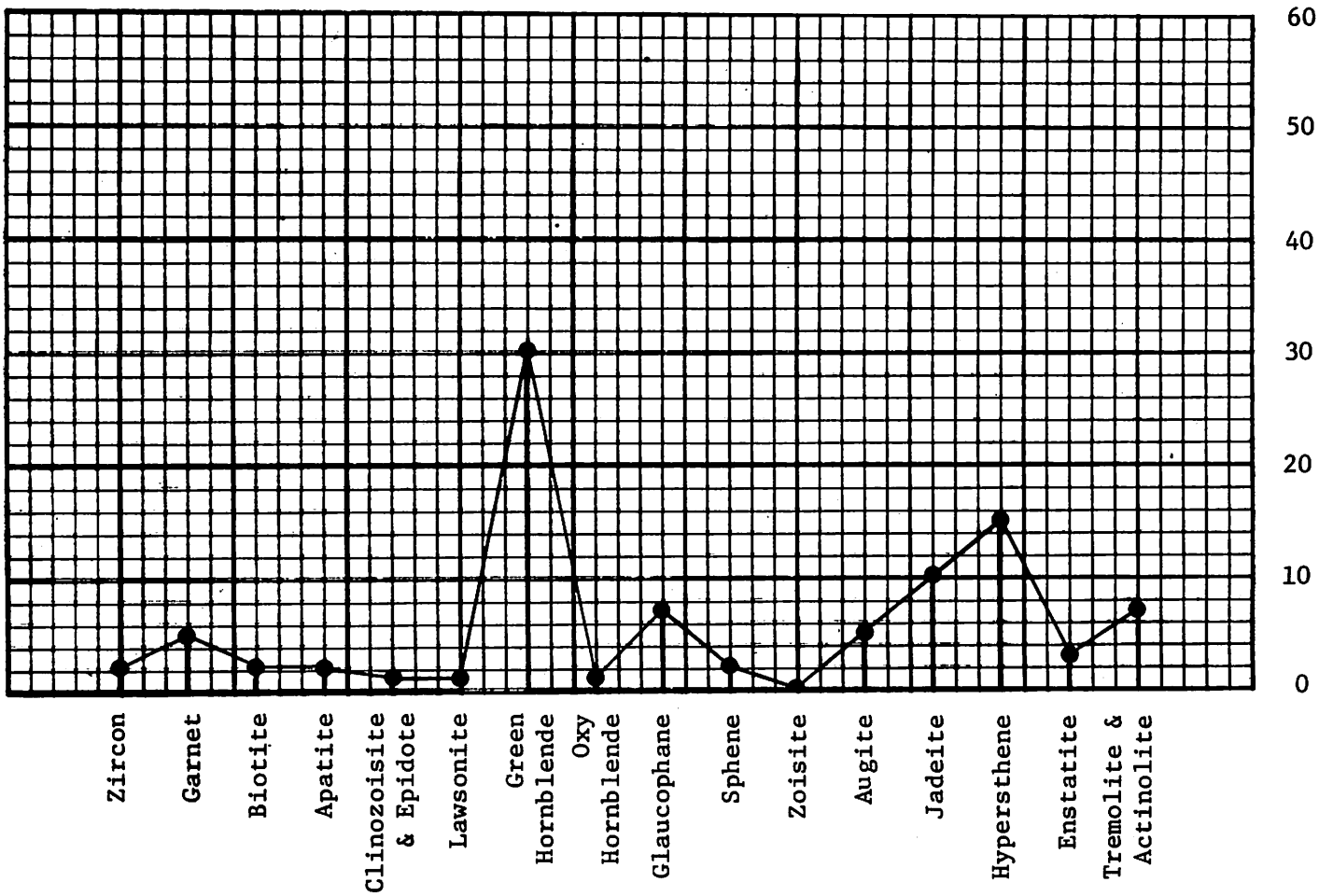
Wt. % of HM/SF 0.38

Total Grains Counted 327

% Transparent Grains 37.5

% Opaques 12.3

% Alterites and Unknowns 50.2



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	2
Carbonate	6

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	22
Magnetite	4
Pyrite	1
Rock Frag.	13

Analyst C. Isselhardt

SAMPLE 2023

Location 37°54'28"N 122°40'52"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 1.14

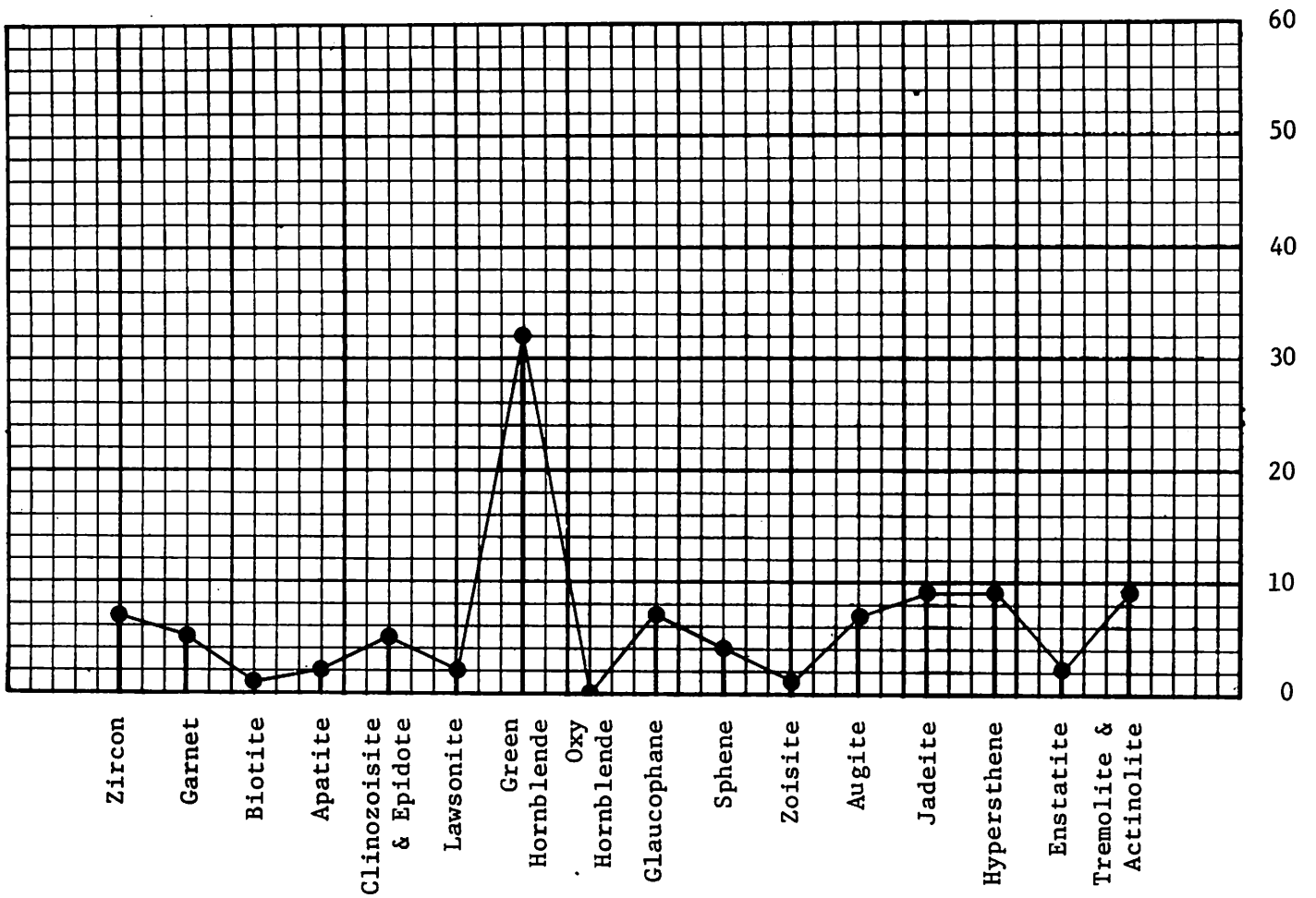
Wt. % of HM/SF 6.42

Total Grains Counted 302

% Transparent Grains 40.9

% Opaques 16.8

% Alterites and Unknowns 42.3



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	11
Magnetite	16
Picotite	10
Rock Frag.	14

Analyst C. Isselhardt

SAMPLE 2023

Location 37°54'28"N 122°40'52"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.031

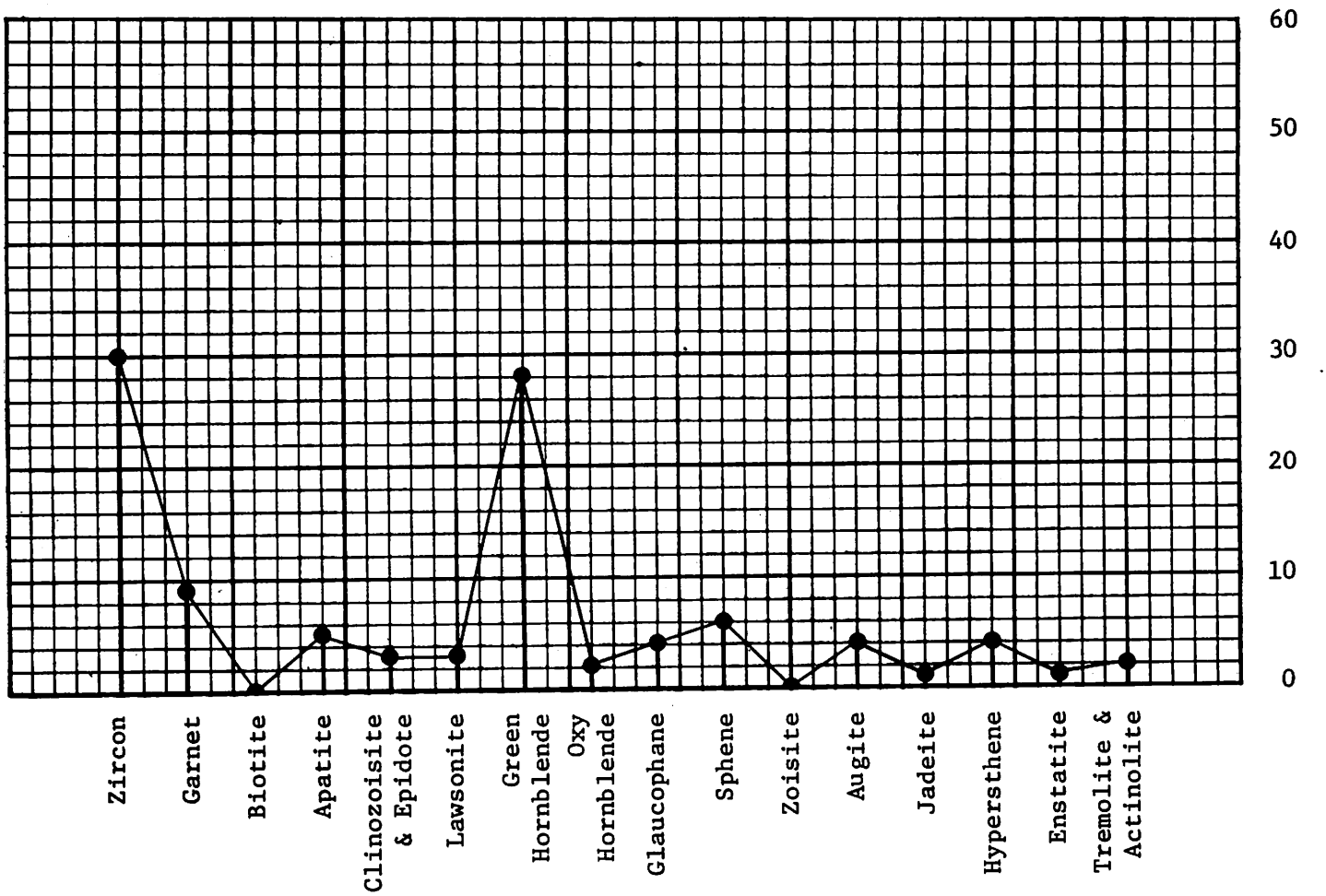
Wt. % of HM/SF 37.5

Total Grains Counted 222

% Transparent Grains 5.13

% Opaques 37

% Alterites and Unknowns 11.7



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	3
Magnetite	47
Picotite	19
Gold	2
Rock Frag.	11

Analyst C. Isselhardt

SAMPLE 2024

Location 37°54'27"N 122°40'49"W

Depth low tide level meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 22.50

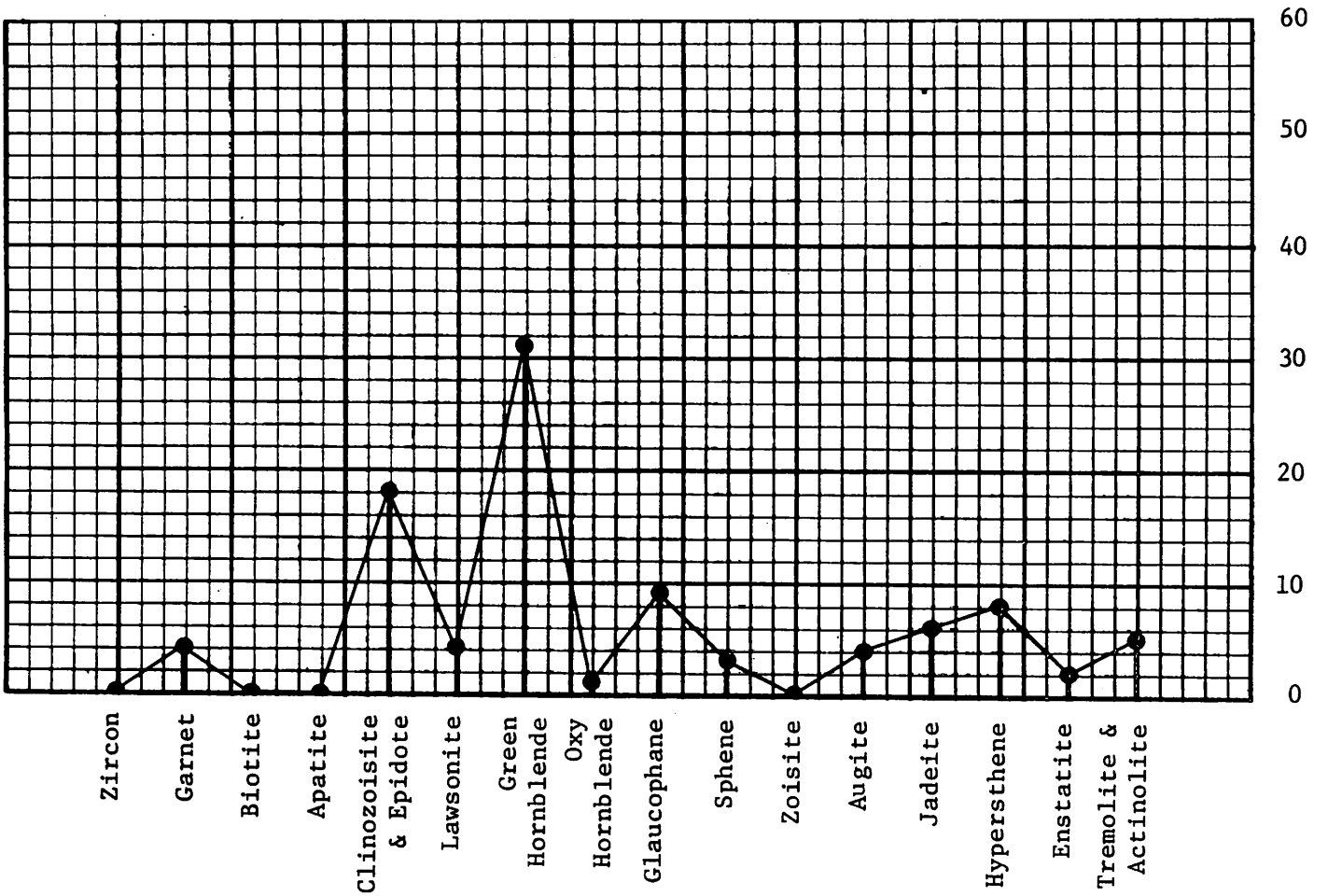
Wt. % of HM/SF 1.56

Total Grains Counted 243

% Transparent Grains 41

% Opaques 12

% Alterites and Unknowns 47



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	4
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	14
Magnetite	3
Picotite	2
Rock Frag.	9

Analyst L. Osuch

SAMPLE 2024

Location 37°54'27"N 122°40'49"W

Depth low tide level meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 2.04

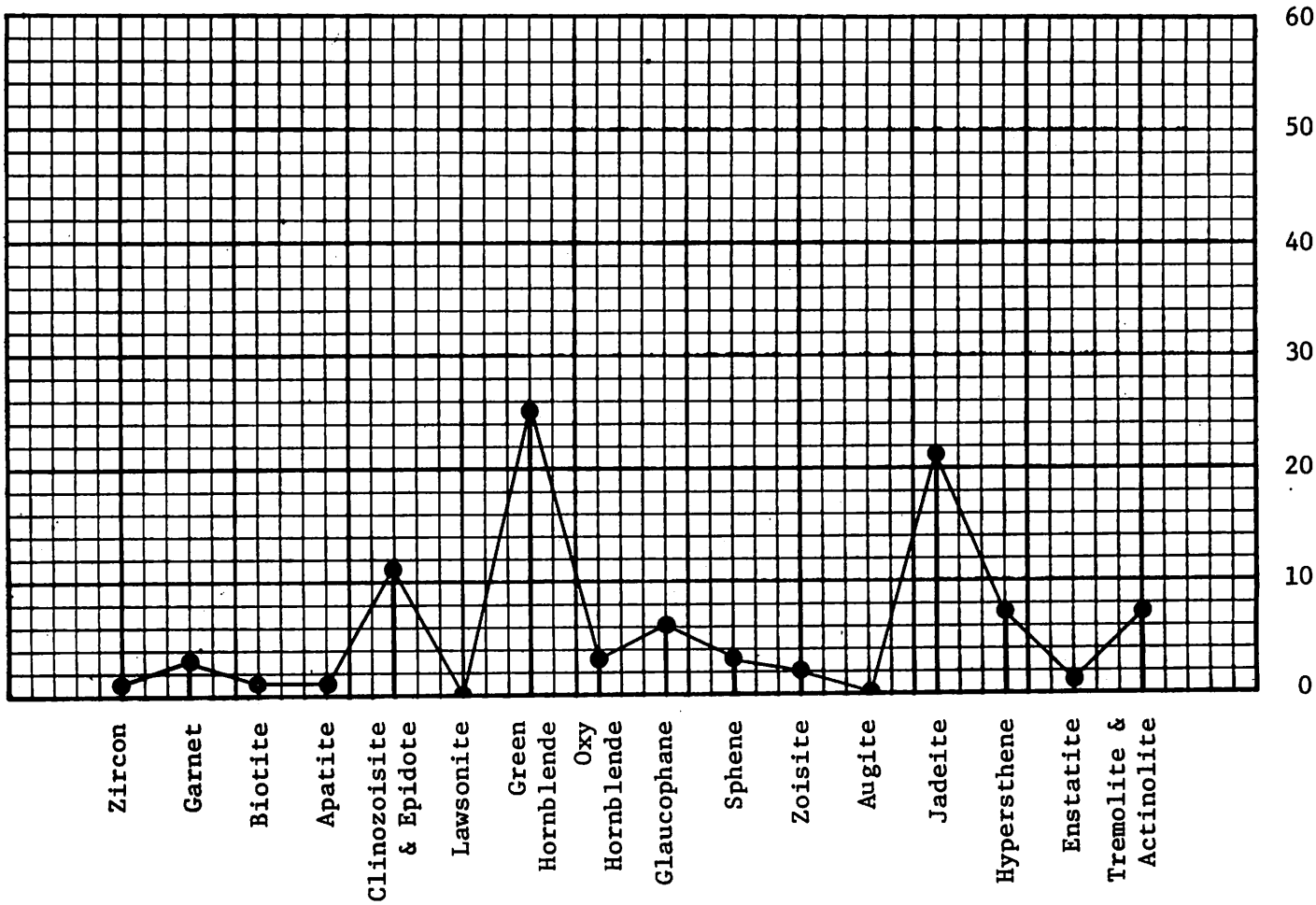
Wt. % of HM/SF 11.35

Total Grains Counted 232

% Transparent Grains 43

% Opaques 13

% Alterites and Unknowns 44



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	7
Pumpellyite	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	2
Magnetite	13
Picotite	4
Rock Frag.	11

Analyst L. Osuch

SAMPLE 2024

Location 37°54'27"N 122°40'49"W

Depth low tide level meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.10

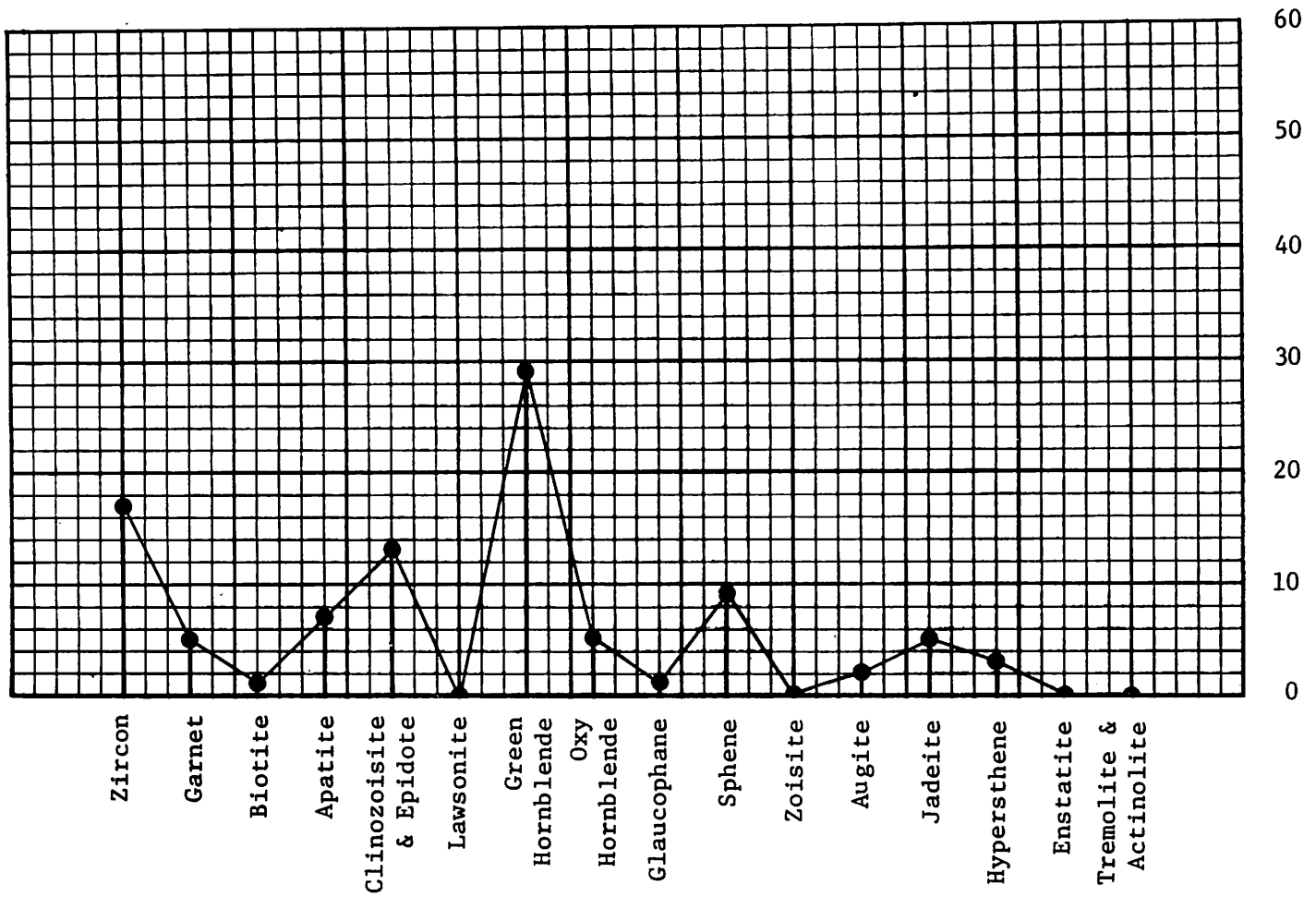
Wt. % of HM/SF 57.70

Total Grains Counted 251

% Transparent Grains 40

% Opaques 41

% Alterites and Unknowns 19



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean tide meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 16.95

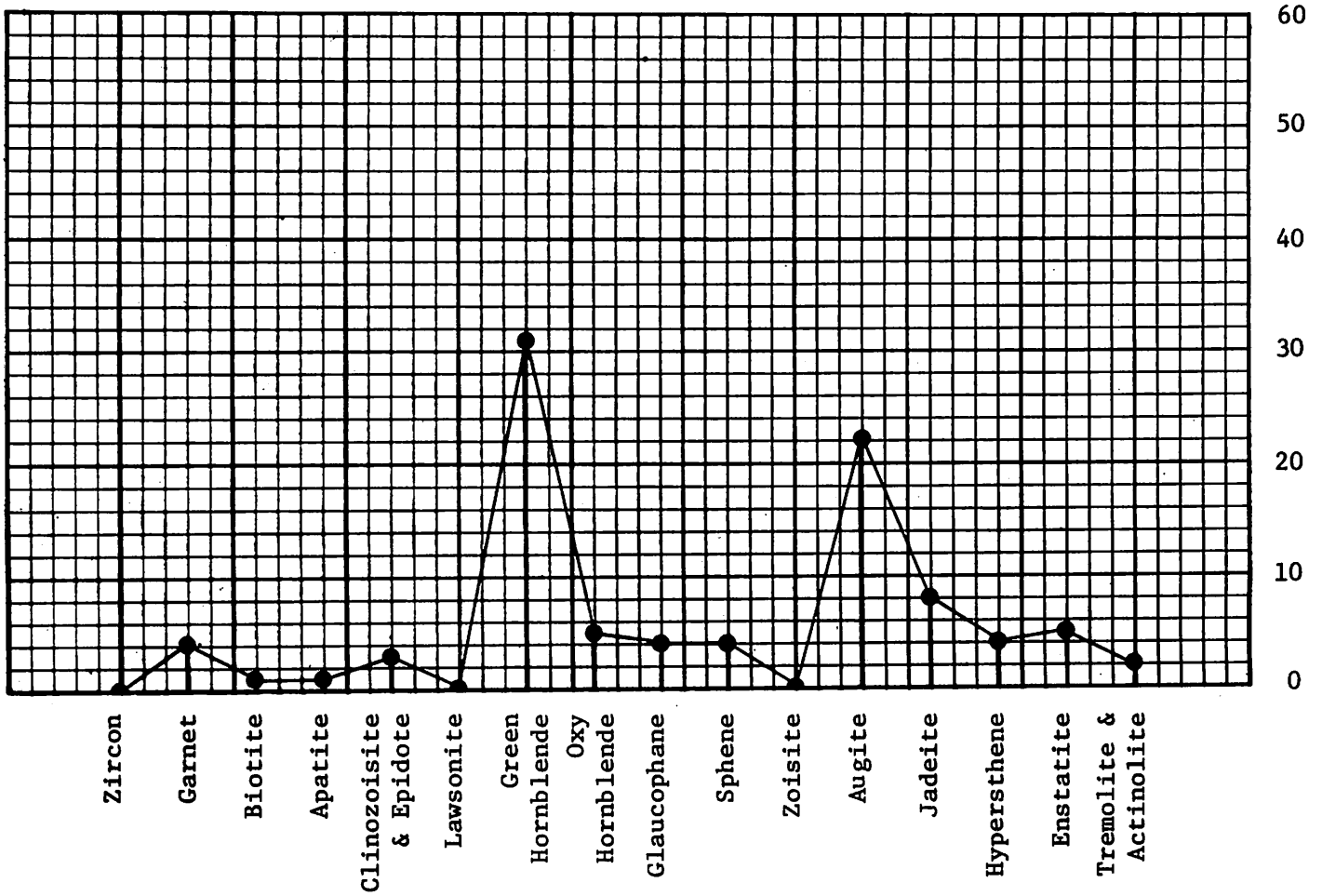
Wt. % of HM/SF 0.60

Total Grains Counted 320

% Transparent Grains 31.3

% Opaques 8.7

% Alterites and Unknowns 60.0



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	1
Chlorite	1
Carbonate	3
Tourmaline	1

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	17
Magnetite	4
Pyrite	1
Rock Frag.	5
Collophane	1

Analyst T. Yancey

SAMPLE 2025

Location 37°54'23"N 122°40'55"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 1.09

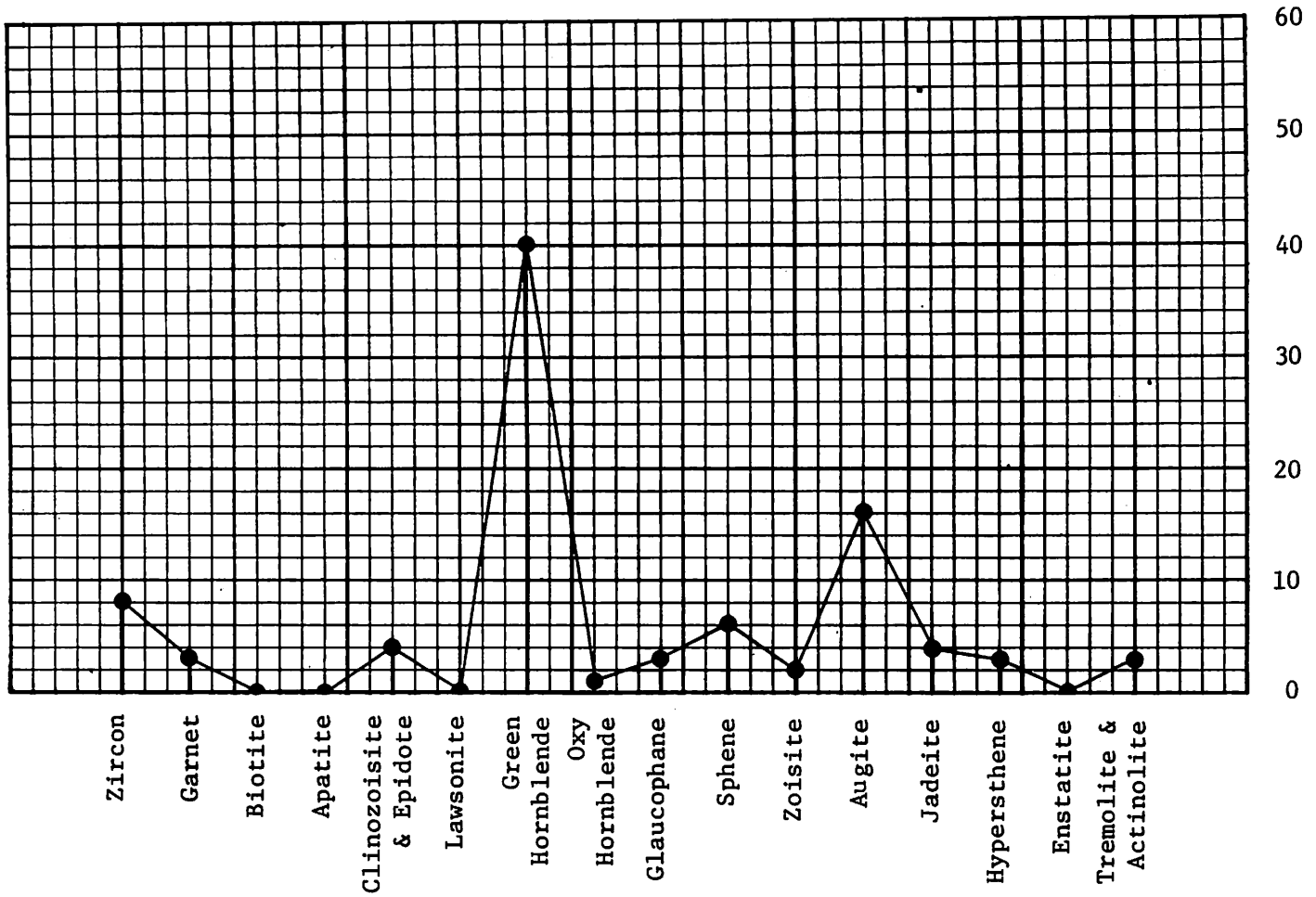
Wt. % of HM/SF 7.07

Total Grains Counted 260

% Transparent Grains 36.5

% Opaques 14.2

% Alterites and Unknowns 49.3



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	3
Pumpellite	2

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean tide meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.03

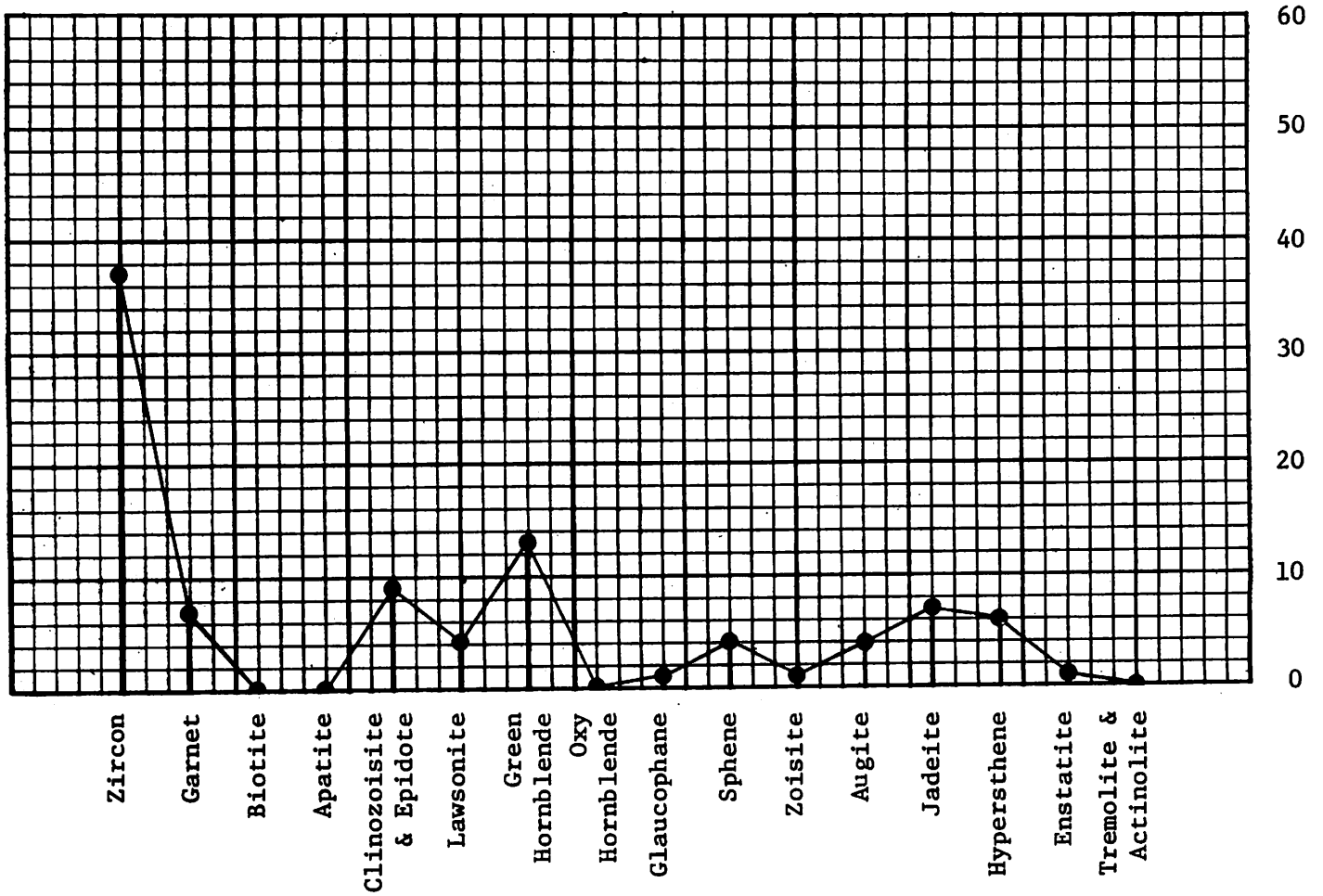
Wt. % of HM/SF 58.2

Total Grains Counted 224

% Transparent Grains 31.3

% Opaques 47.3

% Alterites and Unknowns 21.4



Other Transparent Minerals

Mineral	No. Grains Counted
Rutile	2
Tourmaline	1

Other Opaque Minerals

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

Analyst T. Yancey

SAMPLE 2026

Location 37°54'17"N 122°41'3"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.175 - 0.124 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 32.99

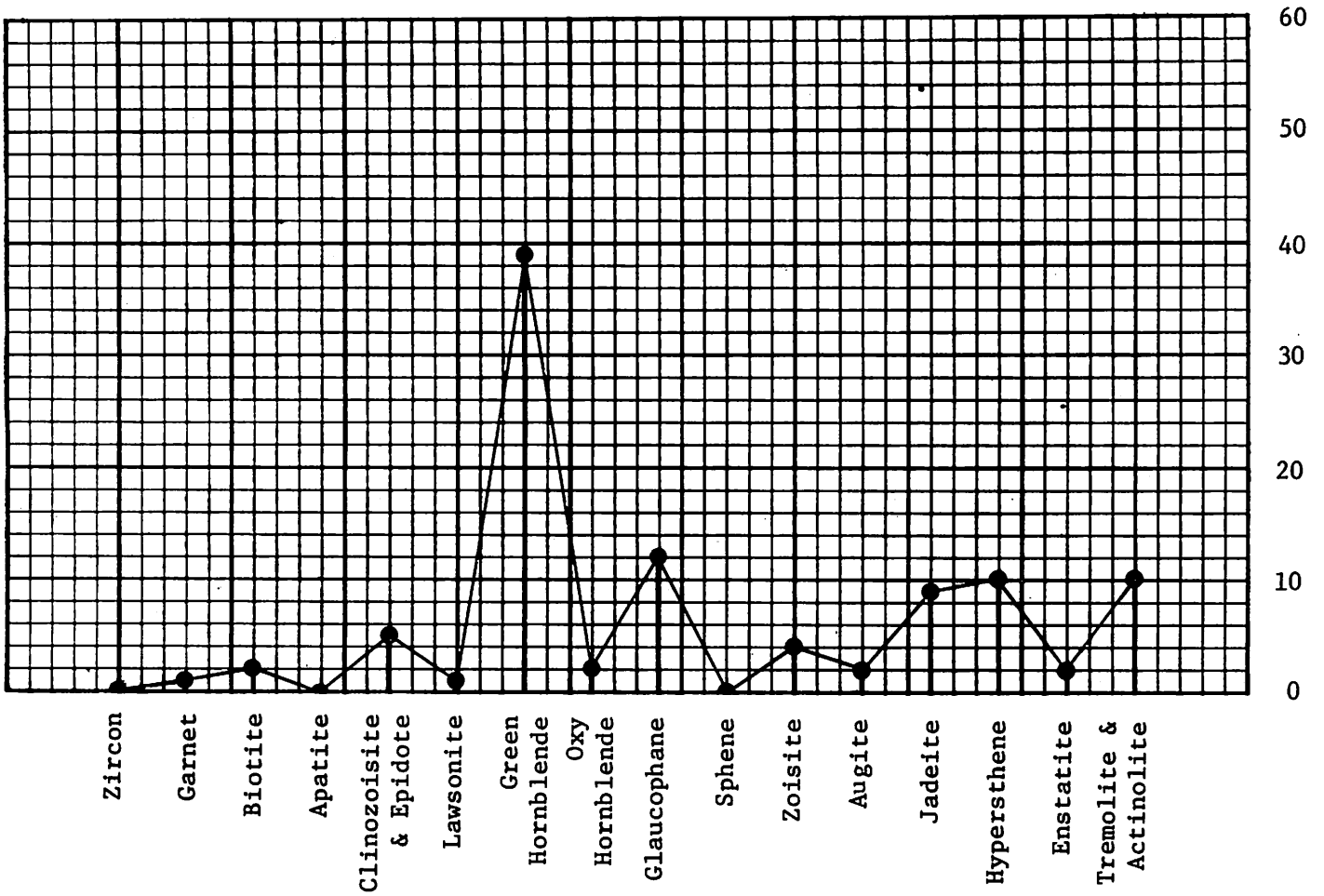
Wt. % of HM/SF 0.40

Total Grains Counted 311

% Transparent Grains 34

% Opaques 15.4

% Alterites and Unknowns 50.4



Other Transparent Minerals

Mineral	No. Grains Counted
Carbonate	2

Other Opaque Minerals

Mineral	No. Grains Counted
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

Depth mean tide meters _____ fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 2.80

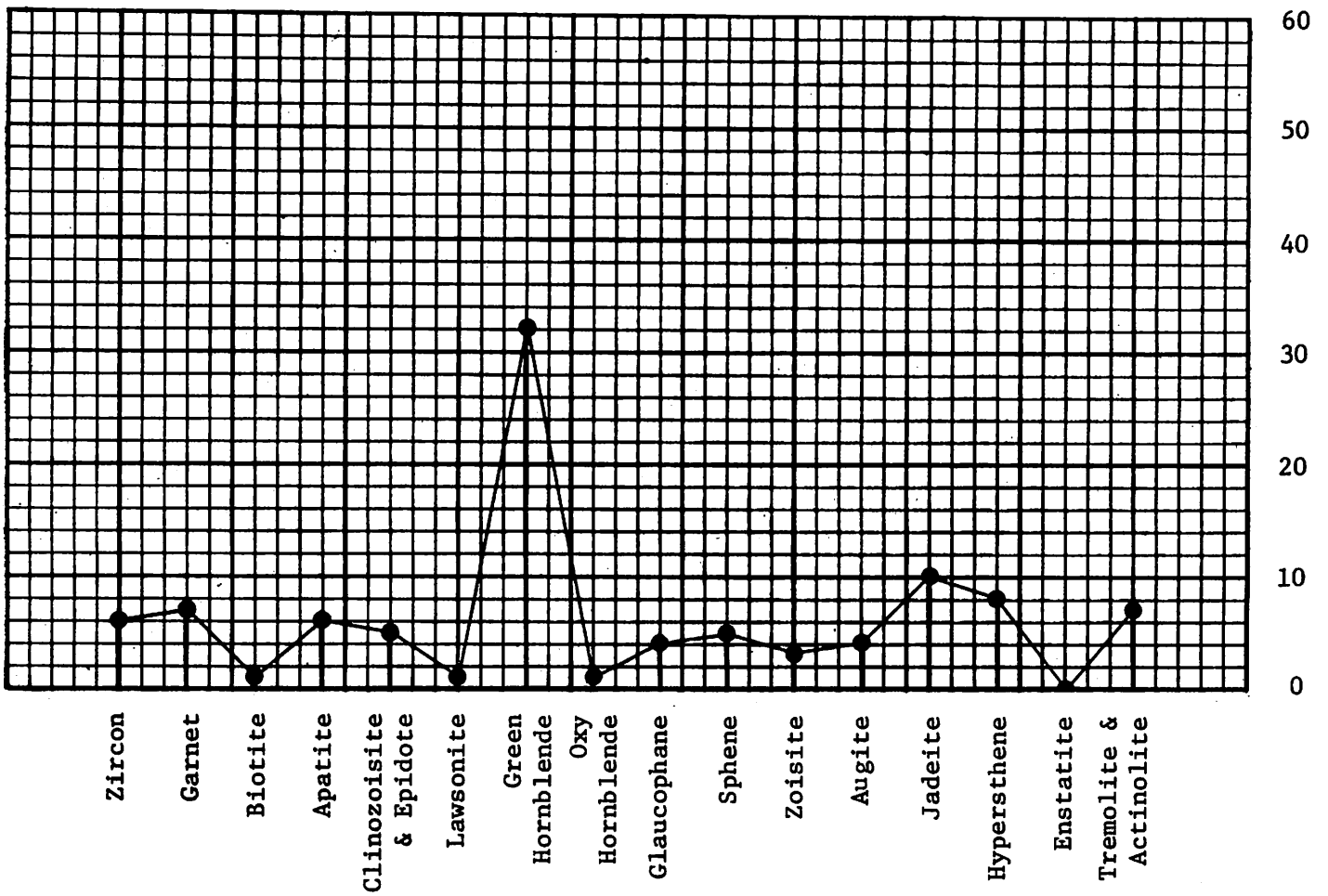
Wt. % of HM/SF 5.05

Total Grains Counted 240

% Transparent Grains 45.0

% Opaques 12.1

% Alterites and Unknowns 42.9



Other Transparent Minerals		Other Opaque Minerals	
Mineral	No. Grains Counted	Mineral	No. Grains Counted
		Hematite	5
		Magnetite	8
		Picotite	5
		Pyrite	1
		Rock Frag.	10

Analyst C. Isselhardt

SAMPLE 2026

Location 37°54'17"N 122°41'3"W

Depth mean tide meters fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 0.114

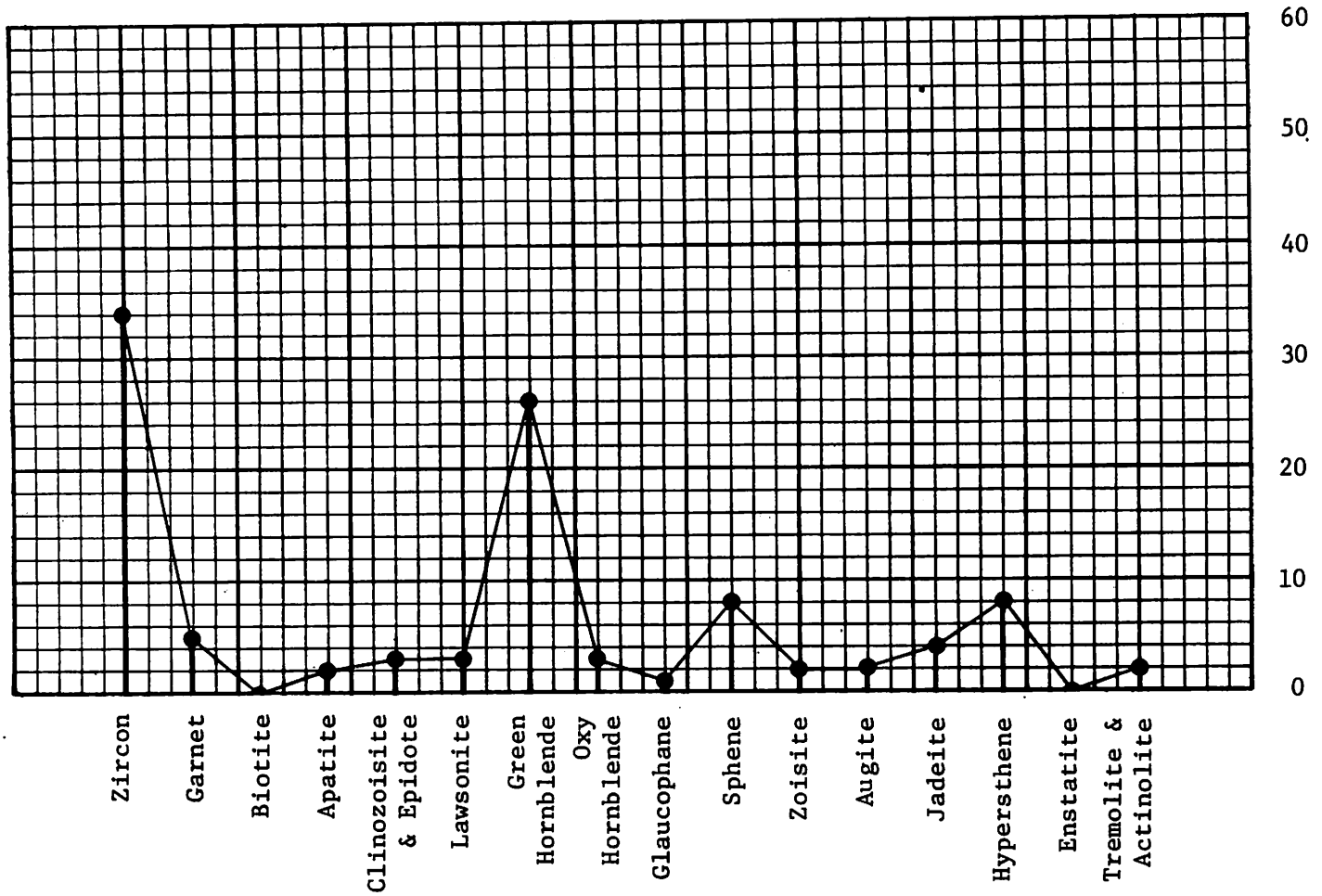
Wt. % of HM/SF 31.4

Total Grains Counted 236

% Transparent Grains 50.4

% Opaques 35.2

% Alterites and Unknowns 14.4



Other Transparent Minerals

Mineral	No. Grains Counted

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	4
Magnetite	48
Picotite	22
Rock Frag.	9

Analyst C. Isselhardt

SAMPLE 2030

Location 37°54'30"N 122°40'53"W

Depth cliff meters _____ fathoms

Size Fraction (SF) 0.124 - 0.088 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 12.3

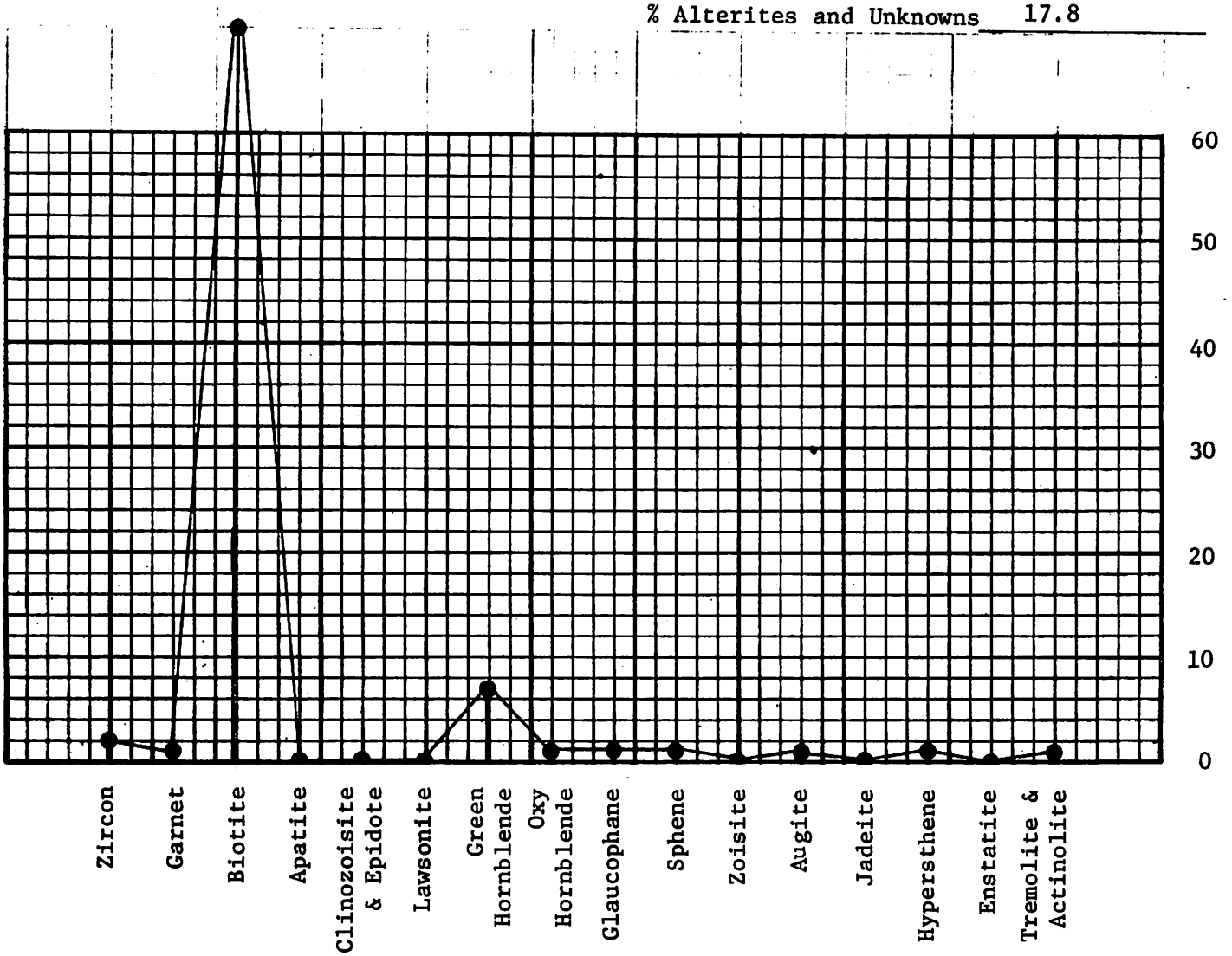
Wt. % of HM/SF 1.45

Total Grains Counted 129

% Transparent Grains 77.5

% Opaques 4.7

% Alterites and Unknowns 17.8



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	14

Other Opaque Minerals

Mineral	No. Grains Counted
Hematite	1
Magnetite	4
Pyrite	1

Analyst C. Isselhardt

SAMPLE 2030

Location 37°54'30"N 122°40'53"W

Depth cliff meters _____ fathoms

Size Fraction (SF) 0.088 - 0.061 mm

Graph % = Total % of Each Mineral / Total % of Transparent Grains

Wt. % of SF/Total Sample 29.6

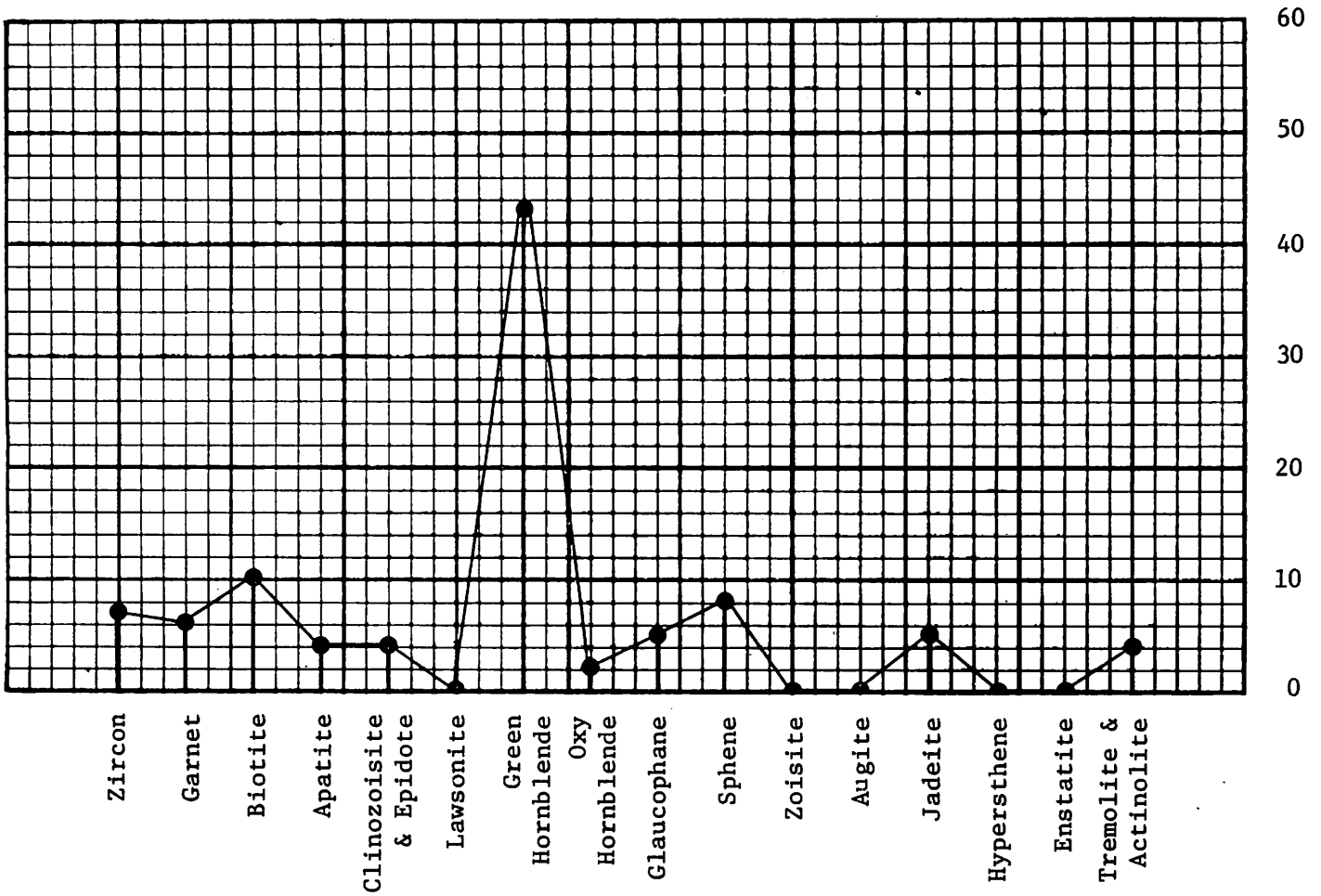
Wt. % of HM/SF 2.72

Total Grains Counted 147

% Transparent Grains 68

% Opaques 8.8

% Alterites and Unknowns 23.2



Other Transparent Minerals

Mineral	No. Grains Counted
Chlorite	2

Other Opaque Minerals

Mineral	No. Grains Counted
Magnetite	7
Picotite	2
Pyrite	1
Rock Frag.	3

Analyst C. Isselhardt